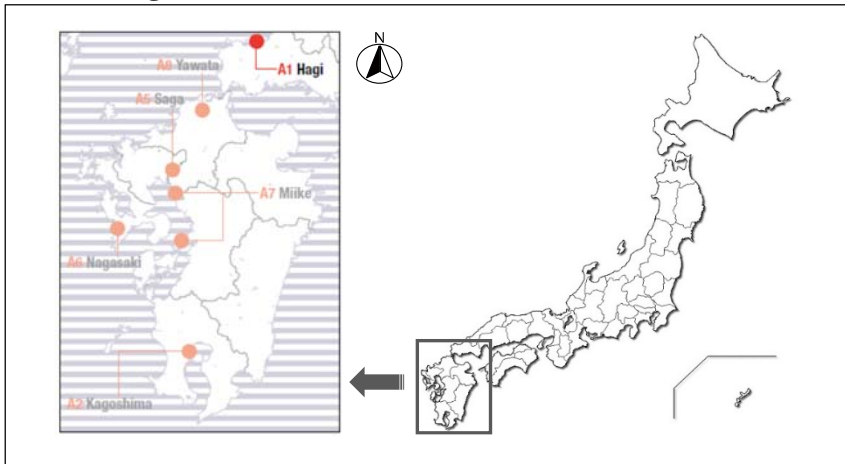


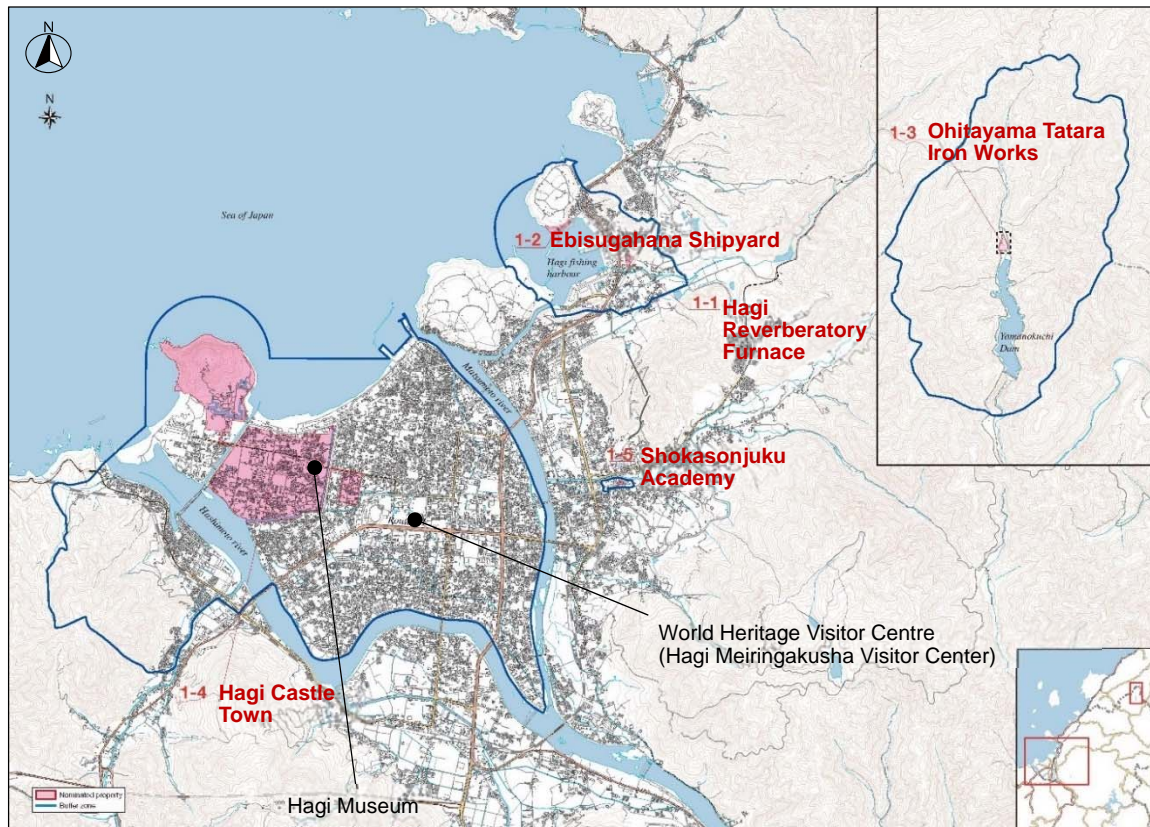
**Component Part No. 1-3 of the “Sites of Japan’s Meiji Industrial Revolution”
Conservation, Restoration, Presentation and Public Utilization Plan
for the Ohitayama Tataru Iron Works (Area 1 Hagi) (Abstract)**

Hagi City drew up a Conservation, Restoration, Presentation and Public Utilization Plan for the Ohitayama Tataru Iron Works (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.

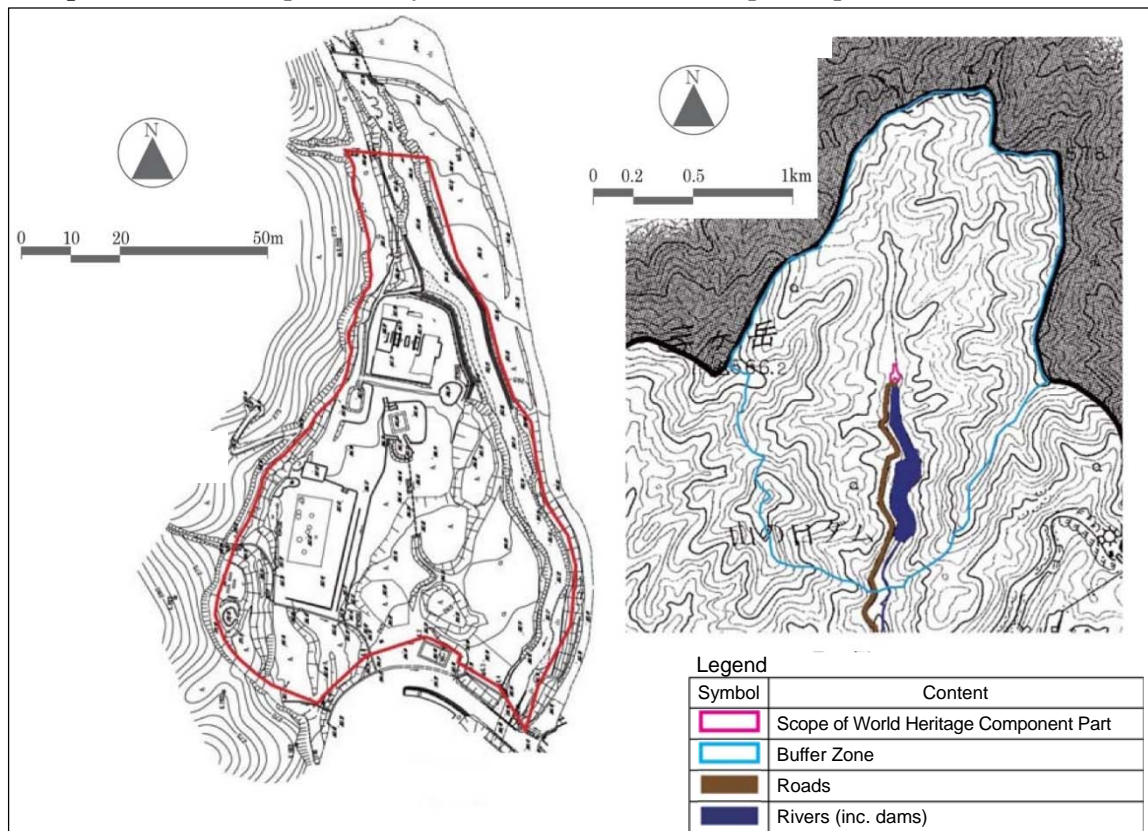
(1) Area 1 Hagi: Location



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



(3) Scope of the Plan (Scope of Ohitayama Tataru Iron Works component part and buffer zone)



1. Vision

Restore the site from the perspective of stable maintenance of exposed stone materials as archaeological remains evidencing the traditional Japanese “tataru” method of making iron, and approach public utilization with consideration to the site’s relation to the Ebisugahana Shipyard.

The Ohitayama Tataru Iron Works is the archaeological remains of an ironworks that utilized the ancient Japanese tataru ironworking technique to supply the iron for making the necessary nails and anchors, etc., for building Western-style wooden sailing vessels to reinforce the military power of the Hagi (Choshu) Clan, which was concerned about maritime defense. One of the five component parts of Area 1 Hagi, the ironworks illustrates the challenge phase of trial and error in the iron and steel manufacturing and ship-building fields. Iron was produced using the tataru method at Ohitayama over three periods, but only supplied for Western-style warships during the third of these. However, the Plan addresses the process of historical changes and developments of the Ohitayama Tataru Iron Works, from the first operation in 1751-1763 and inclusive of its management as a mountain forest after operations ceased through to the present.

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

(1) Maintain and restore in a sustainable condition those remains embodying the ancient Japanese tataru ironmaking technique

Work on underground remains will be premised on maintaining these in a sustainable condition in situ. The city will conduct detailed studies of the state of exposed remains such as floor stones in order to identify the deteriorated areas and the causes of deterioration. Restoration methods that minimize the impact on the exposed remains will be studied, with the optimal methods used to maintain and strengthen them.

(2) Promote understanding of the contribution of the ancient Japanese tataro ironmaking technique to production processes and the construction of Western-style warships

Various remains related to tataro ironmaking are scattered throughout the site, but visitors do not necessarily have a sufficient understanding of the role of each and the relationships between them. The city will install paths that enable visitors to clearly envision the production process and smelting, using video technologies as well to help visitors gain a full understanding. The connections between the site and the Ebisugahana Shipyard where the warships were built will also be actively highlighted.

Excavation surveys will be undertaken on the basis of a long-term plan for those areas that have yet to be surveyed.

(3) Arrange landscape and improve the surrounding scenery

The surrounding forests were the source of the fuel coal for the ironworks, while the river provided the huge amount of water necessary to scour the iron sand which was the raw material for tataro ironmaking. The city will therefore ensure that landowners and managers manage the harmoniously inter-related forest and river landscape appropriately, and in relation to forests in particular, ensure that the city and forest owners and managers recreate over the long term the same type of forestscape that existed back when the ironworks was operating.

2. Policy

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

(1) Promoting research and study

The city will undertake excavation surveys of areas not yet surveyed pursuant to a long-term plan to clarify the entirety of the smelting process. In terms of historical document surveys, the city will continue to discover and collect new documents and pictures, etc., with a particular emphasis on elucidating the connections with the Ebisugahana Shipyard (Component Part 1-2) and the Hagi Reverberatory Furnace (Component Part 1-1), as well as the route taken by the “iron road” used to bring in raw materials and take out products. Surveys will also be made of the other 23 tataro ironwork sites remaining within the territory of Hagi (Choshu) Clan, conducting analyses and research on similarities and unique features, etc. A further survey will examine the negative impacts caused by wildlife within the component part.

A visitor survey will be undertaken to confirm their influence on the remains as well as visitor trends, and the city will also use a monitoring sheet to observe the component part over time to identify any changes in structures or the surrounding landscape.

(2) Restoring archaeological remains (preserving, reinforcing, and stabilizing materials and structure)

To protect underground and exposed archaeological remains, the city will supplement protective earth layer that have partially eroded and nurture the surface of the current layer, taking further steps to prevent earth from washing away.

The city will also install observation paths within the site so as to clarify locations offering useful views and the scope of these, as well as alleviating the impact on exposed and underground archaeological remains of compaction and vibration from visitor traffic. The substrate of deteriorating floor stones, etc., in exposed remains will be strengthened using conservation treatment based on analysis results from detailed surveys. In such cases, empirical experiments will be conducted on samples of the same types of stone, looking closely at the results.

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

Because there are currently no observation paths, it is difficult for visitors to understand the smelting process. The city will therefore install observation paths along the smelting process to direct visitor flow. The exhibition and rest space which the city built in March 2017 at the southern side of the site entrance will also be used to display models of production equipment and explanation boards, while planar markers showing in-situ the location and scale of the archaeological remains within the site will also be set up and information provided using virtual reality technologies to teach visitors about the tataro ironmaking system.

In spots where stone walls have been restored with adding new stones on the original stone structures remained, it can be difficult to tell the difference between original and added parts, so the city will make the distinction clear using explanatory boards and materials, avoiding visitor misunderstanding.

(4) Arranging and improving landscape from a scenic perspective

The surrounding forests played an important role in the traditional tataro ironmaking process. The city and landowners and managers of the forest will therefore coordinate with related organizations with the aim of creating over the long term a type of forestscape that closely resembles that at the time when the ironworks was operating.

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

The city will use the World Heritage Visitor Center (Hagi Meiringakusha Visitor Center) which it opened in March 2017 in the buffer zone of the Hagi Castle Town as the central source of guidance and information for Area 1 Hagi, and the existing Hagi Museum, also in the Hagi Castle Town, to conduct research and communicate academic and specialist information, with the site of ironworks and the nearby exhibition and rest space serving as guidance and information communication satellite facilities. A tataro model will be set up in the exhibition and rest space.

The city entrusts site management and guiding to the Fukue Cultural Asset Utilization and Preservation Group formed by local residents. The city will continue to consult fully with the group and work with it to use the site as a cultural resource and source of information.

The city will also 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 management and conservation of World Heritage property as a whole.

(6) Implementing projects

The city will be responsible for managing and operating 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 the case of chemical substrate strengthening such as conservation treatment of exposed structures, the city will need to determine the appropriateness of such a step from the perspective of whether or not it will be possible to maintain reversibility. The period of time necessary for this will be built into the schedule and full investigations undertaken, including empirical experiments.

3. Methods

(1) Research and study

(a) Excavation surveys

The city will conduct excavation surveys based on a long-term plan in relation to areas not yet surveyed, including the part adjoining the “iron road,” so as to elucidate the entirety of the smelting

process. These surveys will be conducted efficiently within the minimum scope under the guidance by the Government of Japan, Yamaguchi Prefectural Government, and an expert committee with the aim of gleaning the necessary information for conservation, restoration, presentation and public utilization measures.

(b) Surveys of historical documents

The city will continue to discover and collect new historical documents with a focus on elucidating connections with the Ebisugahana Shipyard, pictures of the ironworks in operation, and the route taken by the “iron road” by which raw materials were brought in and manufactured products transported out.

Historical materials on the other 23 tataro ironwork sites remaining within the territory of Hagi Clan will be analyzed and comparative research conducted on technical similarities and differences in relation to cases outside the territory of Hagi (Choshu) Clan, ascertaining the role that the Ohitayama Tataro Iron Works played in tataro ironmaking at the end of the Edo period.

(c) Surveys for existing states and measurement

At the site, some parts of the remains, including stone walls and corner and floor stones, etc., are displayed exposed, and various portions are deteriorating. A survey will therefore be undertaken on the state of deterioration and restoration methods determined for each section. A 3D survey will be conducted to create a detailed map of the current state of stone walls and elevational views and ortho-images, etc., created which show areas that were restored in the past to serve as basic materials for monitoring.

(d) Artifact survey

To verify the connections between the Ohitayama Tataro Iron Works and the Ebisugahana Shipyard from the perspective of artifacts, a constituent analysis will be conducted of ship nails, anchors, and other iron products excavated from the shipyard, comparing these with iron artifacts excavated from the ironworks and referencing the historical document to draw up materials backing the connections between the two sites.

(e) Wildlife damage survey

A survey will be conducted on negative impacts caused by boars and other wildlife.

(f) 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.

(g) Monitoring

The city will create monitoring charts that comprehensively and systematically aggregate current information and periodically assess 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 archaeological remains related to ironworks

(a) Restoration of constituent elements contributing to the Outstanding Universal Value within the site

(i) Underground archaeological remains

To maintain underground structures in a stable condition in situ, the city will supplement the earth layer in those spots where some earth has been washed away, and will also nurture the earth surface to prevent further erosion. In addition, while visitors currently have access to exposed stone walls and corner stones, etc., the city will install observation paths and restrict those areas which people can walk through, alleviating the negative impact on the remains of compaction, etc., caused by

visitor traffic.

(ii) Exposed structures

Deterioration caused by ultraviolet light and the impact of compaction and vibrations caused by visitor traffic have caused cracks and detachment in some stone walls, corner and floor stones, and exposed rock in the remains of garden pond, etc. To deal with the problem, the stone substrate will be strengthened through conservation treatment, etc. In such cases, experiments will first be conducted using the same type of stone and observations conducted over time before determining what chemical agents and methods to use.




(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 public utilization as a means of increasing understanding of the remains of Ohitayama Tataro Iron Works.

Zone name	Zone outline and features
Tataro zone	The zone where the main tataro ironmaking structures are located
Landscape improvement zone	The zone where the surrounding mountain forest landscape will be preserved and the type of forest returned to the same state as in the days of the ironworks was in operation
Public utilization zone	The zone where information will be communicated to local residents and visitors

(b) Path

Symbol	Content
	Key structure viewing course
	Overview course
	Loop course

The city will establish three model courses starting at the exhibition and rest space shown in Figure 1 to promote visitor understanding of the iron-making system.

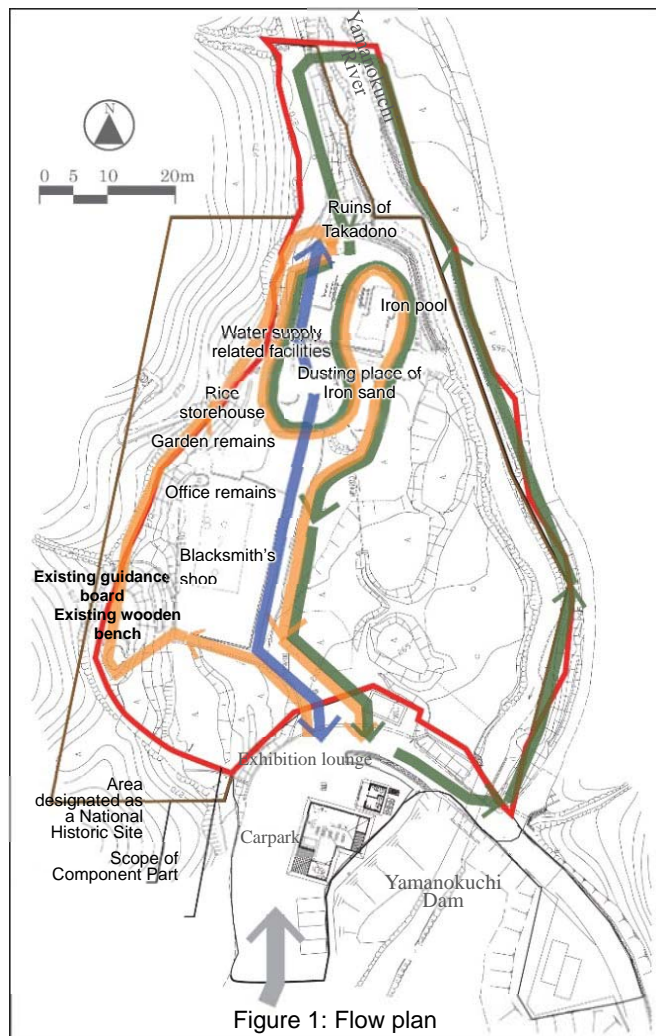


Figure 1: Flow plan

(c) Creation of observation routes

Because there are underground and exposed archaeological remains scattered throughout the site, once earth layer have been added, observation paths comprising low wooden structures will be built. The paths will basically be structures that stop visitors from walking on the surface of exposed stones and earth. In steeply sloping areas where it would be difficult to create a wooden path, earth will be used instead as the building material. The paths will be designed in such a way that they can be removed, lightening the burden on the structures.

(d) Terrain correction and environmental improvement

Drainage facilities will be improved as a means of dealing with the rainfall that flows down from the steep mountain area adjoining the western side of the site, preventing erosion of planar markers and earth layer.

To maintain the overall site in a stable condition, underground archaeological remains included, the drainage capacity of existing culvert pipes and the open conduits of concrete secondary products will be checked and improvements made if that drainage capacity proves to be insufficient.

Planar markers displaying the location and scale of underground archaeological remains will be installed on the surface of earth layer, particularly for those remains from the third phase of ironmaking at the ironworks over the 1855-60 period.

(e) Arranging and improving landscape and planting vegetation

The impact on underground archaeological remains of the artificial forest extending out from the center of the site over the eastern and western slopes will be checked, and if an impact is confirmed or if excavation surveys will be conducted there pursuant to the long-term plan, trees will be cut back or removed.

(f) Information and explanatory boards

Signs will be set up in effective locations to guide visitors around the site in line with the flow plan. Existing guidance boards which have deteriorated will be upgraded and content included that reflects the process of historical changes and developments of the ironworks. The content will be translated into multiple languages.

(g) Conservation and management facilities

It has been over 20 years since the existing wooden benches were installed, and some deterioration is evident. The safety and performance of these benches will therefore be regularly checked and upgrades made where necessary. In such cases, a design will be chosen that is in harmony with the surrounding landscape.

(h) Display facilities

In March 2017, the city opened a small exhibition and rest space at the southern side of the site entrance attached to the carpark as a facility to supplement the explanation provided at the site. Models of archaeological remains and the surrounding landscape are installed in the facility to provide an integrated explanation of ironmaking process together with the planar markers of the archaeological remains within the site, utilization of imaging technique such as virtual reality and explanations by the guides.

(4) Arranging and improving landscape in the buffer zone

The buffer zone around the component part is managed as a forest reserve. However, because it is an artificial forest, the type of forestscape at the time that the ironworks was operating will be confirmed based on objective information from a historical document survey, and the city will then coordinate with related organizations to return the forest to its original form as a long-term plan.

(5) Utilizing the site of ironwork 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 (Hagi Meiringakusha Visitor Center), which the city opened in the buffer zone in the Hagi Castle Town to provide guidance and information, explanations will be given of the Outstanding Universal Value of Sites of Japan's Meiji Industrial Revolution and the five component parts of Area 1 Hagi. Regular seminars and other events will also be held for local residents, guides, and visitors. The Hagi Museum, which is a more 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.

Effective use will also be made of the exhibition and rest space at the ironworks which was established as a satellite information dissemination facility, with the city pursuing synergistic utilization of this together with the World Heritage Visitor Center.

Explanations will also be available at the actual ironworks site by local guides using explanation boards, pamphlets, and virtual reality images.

(b) Approaches to engagement with local community

The city will provide support to the local residents' preservation group to which guides are affiliated so that it can take the necessary measures to promote understanding of the component part, such as securing the necessary guides, advertising for new guides, and holding study group meetings.

The city will encourage 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 also work closely with the preservation group to continue to hold local events in relation to the ironworks.

4. Project implementation

(1) Order of priorities

The implementation schedule will be as in Table 1.

The schedule will comprise a short-term phase of the five years from FY 2018 to FY 2022, a mid-term phase for the five years from FY 2023 to FY 2027, and a long-term phase from FY 2028 onward.

From the perspective of site conservation and restoration, swift measures will need to be taken to deal with deteriorating sections of the exposed archaeological remains and washed-out portions of earth layer. The city will therefore start by undertaking a survey of the current state to identify those areas that need to be addressed immediately. In launching archaeological remains conservation and restoration, the city will conduct field tests and analyze the results of observation over time before determining detailed methods in terms of restoration, etc. At the same time, the city will also proceed with establishing observation paths. Restoration work will be undertaken together with the installation of planar markers on the earth layer displaying the location and scale of underground archaeological remains.

From a public utilization perspective, explanation boards will be updated, planar markers for underground remains displayed, digital images created, and new models displayed in the exhibition and rest space to promote visitor understanding.

Excavation surveys will be undertaken to clarify currently unknown parts of the tatara smelting process, with underground archaeological remains conservation work and public utilization measures pursued based on the results.

Given the above, priority will be given to the following tasks:

- Undertaking surveys of current state of the site and measurement
- Conserving and restoring underground and exposed archeological remains
- Restoring existing planar markers for presentation of underground archaeological remains
- Installing observation paths

- Installing and repairing signs and guidance boards
- Creating models and virtual reality images
- Conducting excavation surveys for areas of the site not yet surveyed

(2) Review of implementation schedule

After the medium-term period scheduled to run up until FY 2027, the implementation schedule will be revised in line with Plan progress. However, if any new measures become necessary, the city will review the schedule without waiting for 2027.

Category	Project	Short term (2018 to 2022)	Medium term (2023 to 2027)	Long term (2028 onward)
(1) Excavation survey	(a) Excavation survey		■	
	(b) Historical document survey	■	■	■
	(c) Current state and measurement surveys	■		
	(d) Artifact survey	■		
	(e) Wildlife survey	■		
	(f) Visitor surveys	■	■	■
	(g) Monitoring	■	■	■
(2) Restoring ruins	(a) Restore underground archaeological remains		■	
	(a) Restore exposed archaeological remains		■	
	(a) Conduct field tests and observations before restoration	■		
(3) Presentation and public utilization of the component part in light of iron-making system	(c) Create observation routes		■	
	(d) Terrain correction and environmental improvements (drainage, etc.)		■	
	(d) Terrain correction and environmental improvements (planar markers, etc.)		■	■
	(e) Arranging and improving landscape and planting vegetation		■	
	(f) Information and explanatory boards (install and repair signs and explanation boards)	■	■	
	(g) Create models and virtual reality images	■	■	
(4) Buffer zone conservation and remediation	Improve type of surrounding forest landscape		■	■
(5) Utilization of the site as a cultural resource and source of information		■	■	■

Table 1: Project implementation schedule

(3) Other

The city has carried out conservation and restoration work, etc. for the Ohitayama Tataro Iron Works 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 39 million yen was spent in FY2016 (including the amount spent for the construction of the exhibition lounge) and a 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.

5. Master Plan

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

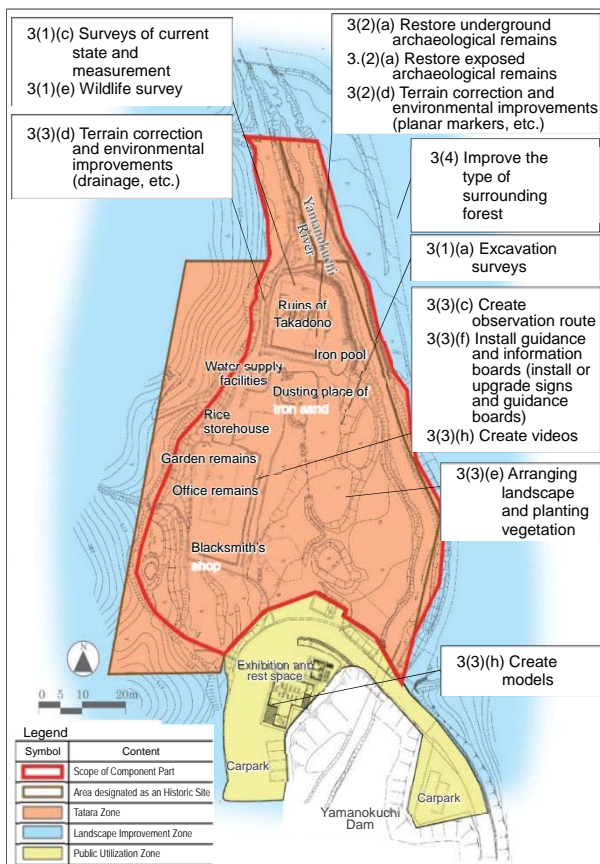


Figure 2: Master Plan



Figure 3: Conceptional drawing after projects completion of the site