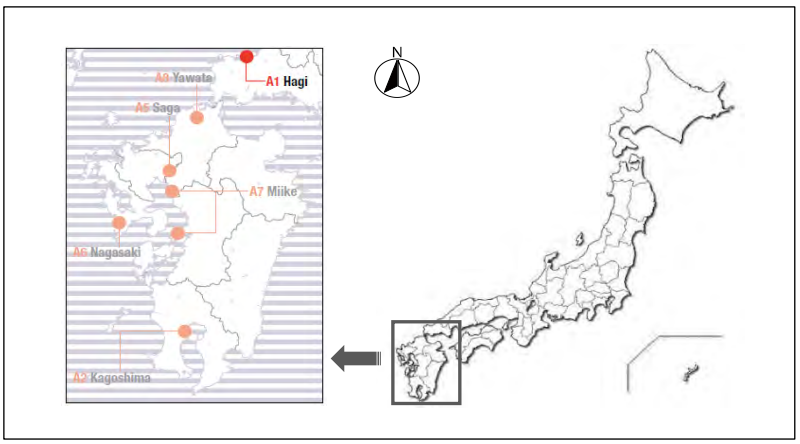
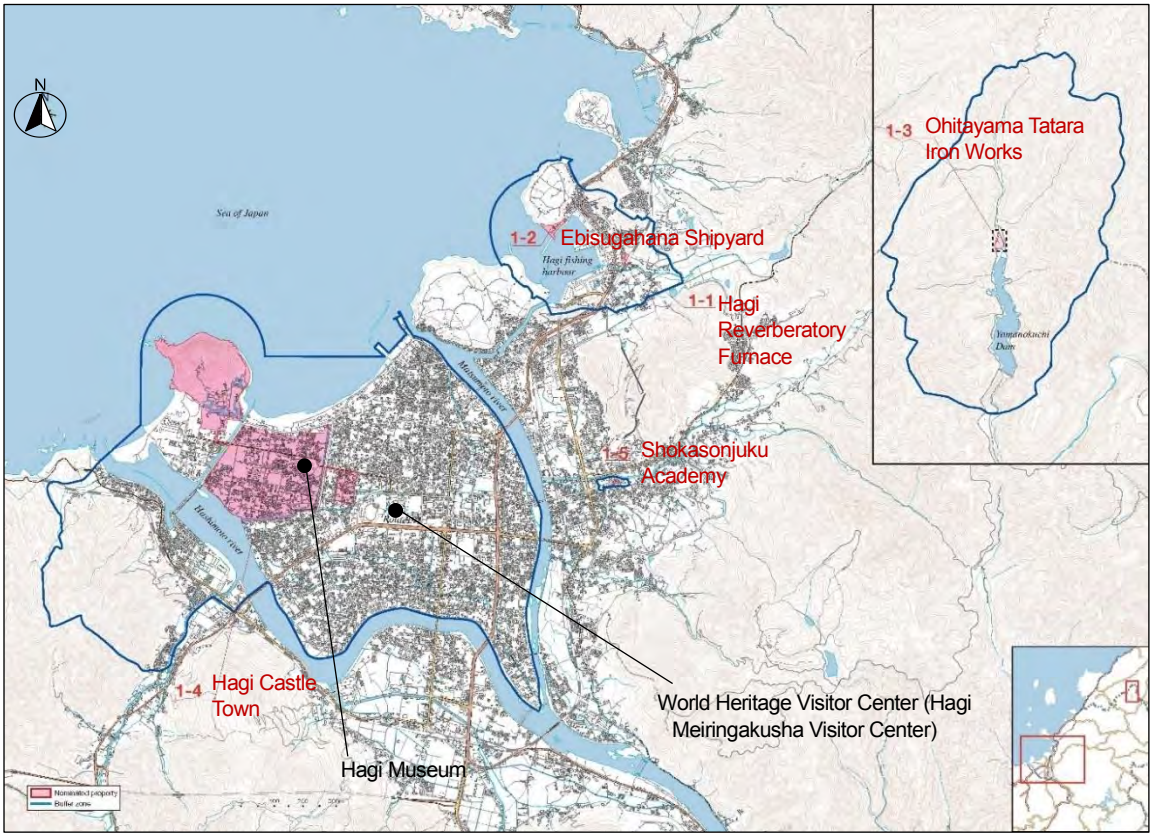
Conservation work programme and implementation programme for Hagi Reverberatory Furnace (Area 1 Hagi/ Component Part 1-1)

Hagi City drew up a "Conservation Work Programme and Implementation Programme" for Hagi Reverberatory Furnace in FY 2016 and 2017, pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by the World Heritage Committee at its 39th session in 2015. The Programme comprises detailed measures for the conservation and restoration 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").

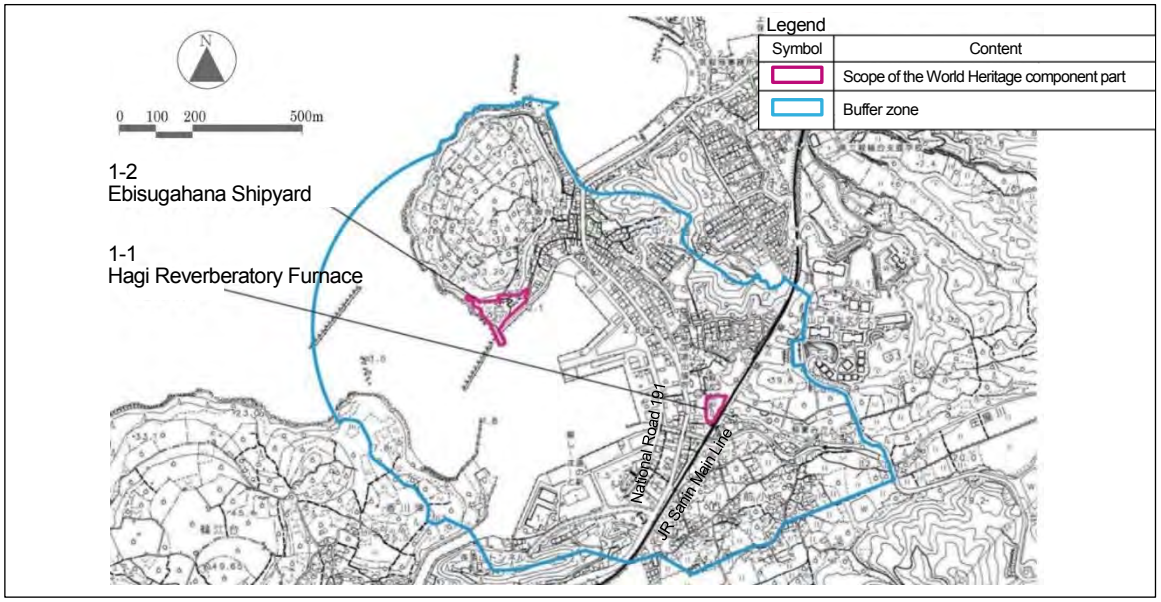
(1) Area 1 Hagi: Location



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



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



1. Approach to conservation

Recognizing the site as embodying the early industrialization process of trial and error in the iron-making field, by restoring degraded materials and strengthening structures, the conservation work will conducted to maintain the furnace in a stable condition.

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.

In the Conservation Management Plan (CMP) for Hagi Proto-industrial Heritage, which was prepared for nomination of "Sites of Japan's Meiji Industrial Revolution" for World Heritage inscription. The list of elements constituting Hagi Reverberatory Furnace and their value categories are shown as **Table 1**.

Component Part	Period	Element	Value Category of Element		
			OUV	State	Region
Hagi Reverberatory Furnace	Period of construction and operation of reverberatory furnace	Body of reverberatory furnace	○	○	○
		Underground ruins	○	○	○
	Element during the period from the end of operation to designation as a National Historic Site				
	Elements during the period from designation as a National Historic Site to the present				

Table 1: The elements constituting Hagi Reverberatory Furnace and their value categories

Out of these elements in the **Table 1**, while the Conservation Work Programme for Hagi Reververatory Furnace will mainly focus on the constituent elements that contribute to the Outstanding Universal Value, due attention will also be given to the elements that represent the value categorized as national and/or regional respectively, and others in view of the process of historical changes and developments of the component part.

Based on the approach for conservation and categorized value of elements mentioned above, Hagi City will firmly conduct projects for conservation, restoration and presentation of the component part with a central 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) Conservation and restoration to maintain the furnace's unique form

Maintaining 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.

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.

2. Policy

The policy consisting of following five items has been set to approach conservation:

(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 construction[1] 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 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.

(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) Implementing projects

The city will be responsible for managing and operating the projects included in the Programme, 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 Programmes 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.

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

(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 of the iron making system in the component part

(a) Zoning

The city has created the following zoning to 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 National 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 planning

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.

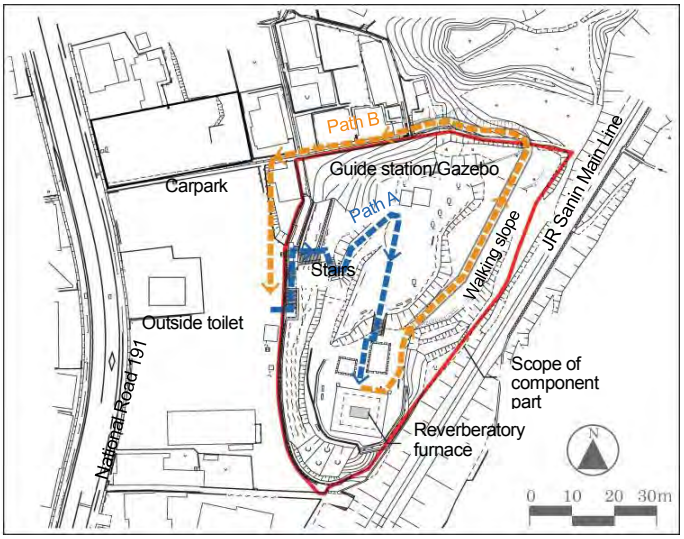


Figure 1: Path map

(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

Hagi City will set up guidance and explanation boards 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.

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.

4. Project implementation

(1) Order of priorities

The implementation schedule will be as in **Table 2**.

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 Programme 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 related 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 of the iron making system in the Component Part	(c) Terrain correction (repair surface as needed)		▬▬▬▬	
	(d) Arranging and improving landscape and planting vegetation (tree management, etc.)		▬▬▬▬▬▬▬▬	
	(e) Guidance and explanation board	▬▬▬▬	▬▬▬▬	
	(f) Update administration and convenience facilities (carpark improvement, etc.)		▬▬▬▬	
(4) Arranging and improving landscape in the Buffer Zone		▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬

Table 2: 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.

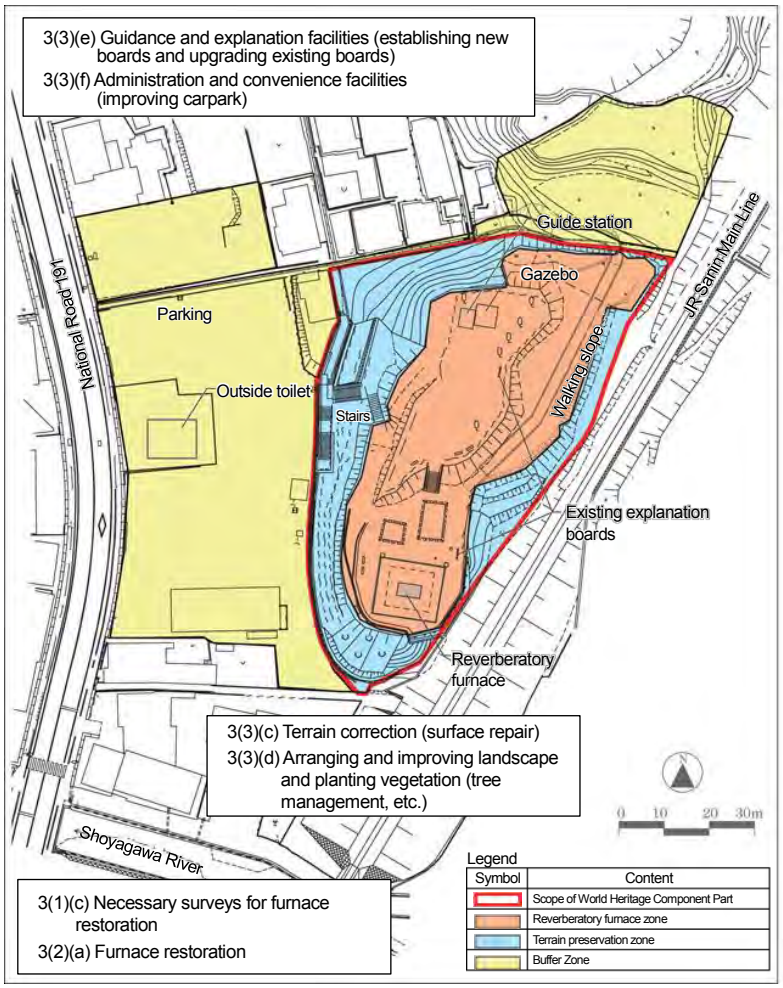


Figure 2: Master Plan

Figure 3: Conceptional drawing after projects completion of the site

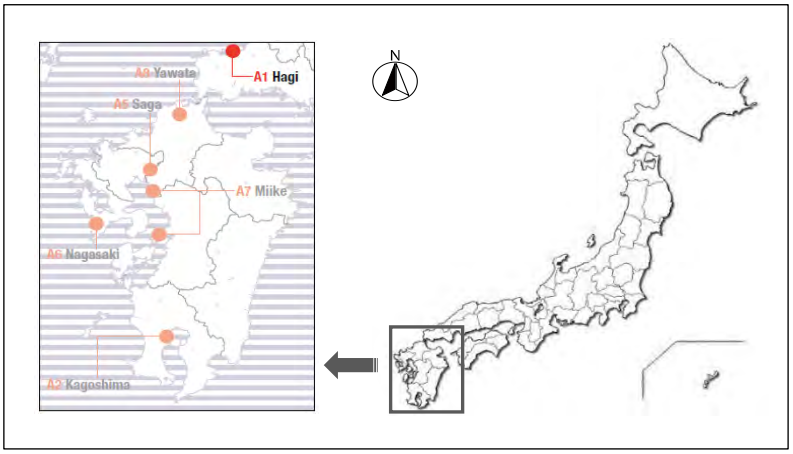
6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Hagi Reverberatory Furnace, which became a source of "Conservation Work Programme and Implementation Programme" is available on Hagi City's web site. <http://www.city.hagi.lg.jp/site/sekaiisan/h19508.html>

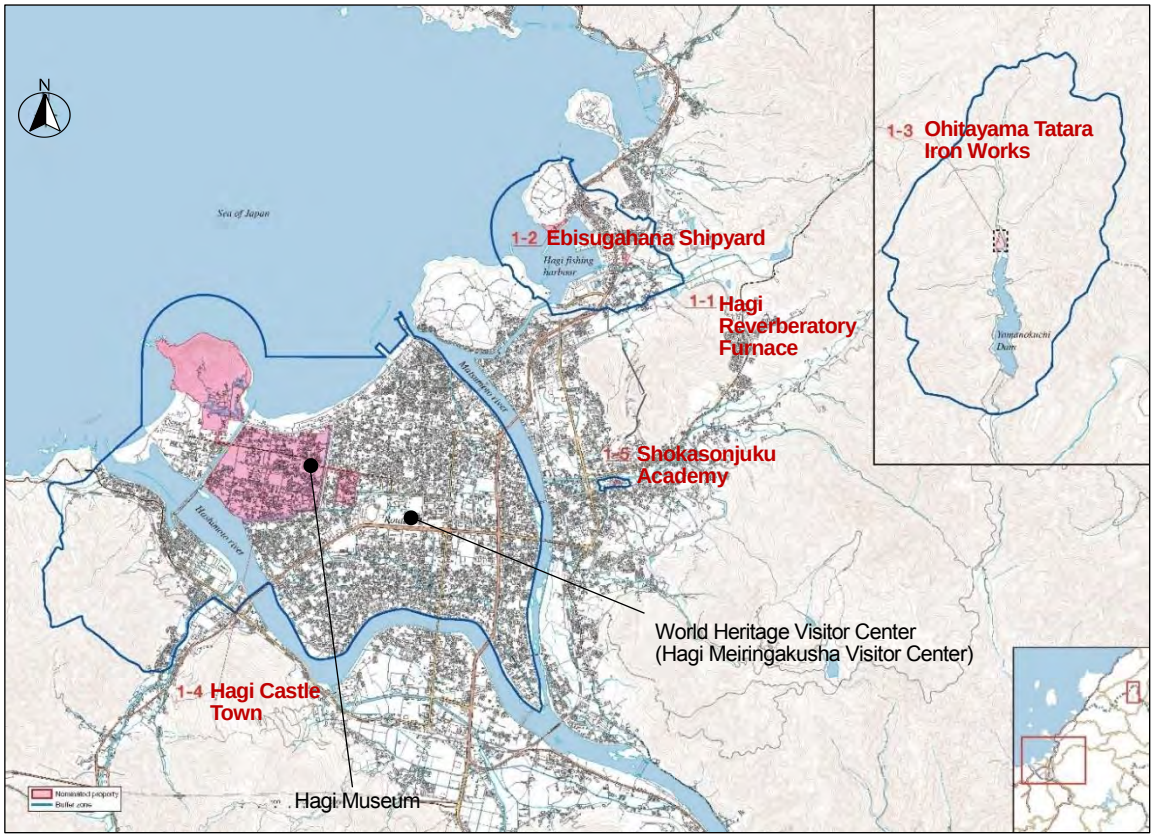
Conservation work programme and implementation programme for Ebisugahana Shipyard (Area 1 Hagi/ Component Part 1-2)

Hagi City drew up a "Conservation Work Programme and Implementation Programme" for Ebisugahana Shipyard in FY 2016 and 2017, pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by the World Heritage Committee at its 39th session in 2015. The Programme comprises detailed measures for the conservation and restoration 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").

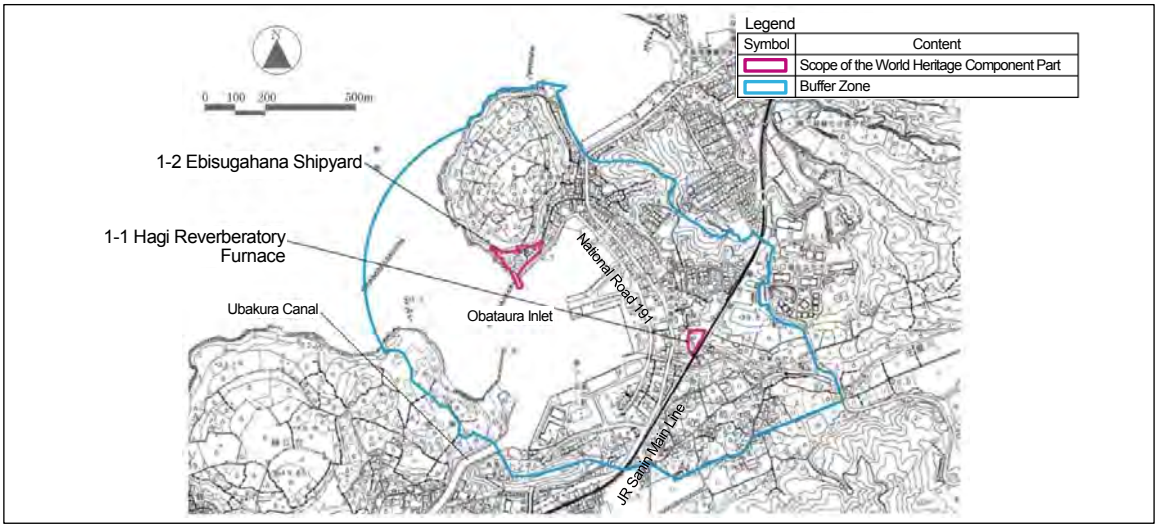
(1) Area 1 Hagi: Location



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



(3) Scope of the Programme (scope of Ebisugahana Shipyard component part and buffer zone)



1. Approach to conservation

Maintain in a stable condition as archaeological remains embodying the process of trial and error in the shipbuilding field when Western technologies and traditional Japanese technologies were fused to build Western-style warships, and conduct the conservation work for the remains with consideration to the special features of the surrounding location, port facilities included.

The Ebisugahana Shipyard site is the remains of a shipyard where two Western-style wooden sailing vessels—the warships Heishin-Maru and Koshin-Maru—were built by the Hagi (Choshu) Clan using Western shipbuilding technologies from two different countries based on the limited information available in the period immediately after Japan was opened to the rest of the world. Concerned about maritime defense, the Hagi (Choshu) Clan's aim was to reinforce its military power. One of the five component parts of Area 1 Hagi, the shipyard illustrates the challenge phase of trial and error in the iron and steel manufacturing and ship-building fields.

In the Conservation Management Plan (CMP) for Hagi Proto-industrial Heritage, which was prepared for nomination of "Sites of Japan's Meiji Industrial Revolution" for World Heritage inscription. The list of elements constituting Ebisugahana Shipyard and their value categories are shown as **Table 1**.

Component Part	Period	Element	Value Category of Element		
			OUV	State	Region
Ebisugahana Shipyard	Before establishment of shipyard	Nakanodai Breakwater	○	○	○
	During operation of shipyard	Ruins of shipyard	○	○	○
	Element for the period from closing the Shipyard to Designation as National Historic Site				
	Element for the period from Designation as National Historic Site to the present				

Table 1: The list of elements constituting Ebisugahana Shipyard and their value categories
※In drawing up this programme, constituent elements stated in CMP are partly reviewed.

Out of these elements in the **Table 1**, which the Conservation Work Programme for Ebisugahana Shipyard will mainly focus on the constituent elements that contribute to the Outstanding Universal Value, due attention will also be given to the elements that represent the value categorized as national and/or regional respectively, and others in view of the process of historical changes and developments of the component part.

Based on the approach for conservation and categorized value of elements mentioned above, Hagi City will firmly conduct projects for conservation, restoration and presentation of the component part with a central focus on the following four points.

(1) Study and restore exposed structures

The stone structures pf Nakanodai Breakwater, which was built before the shipyard and retains its original shape today with some restoration work, will be subjected to ongoing observation using a monitoring chart to check for changes or deterioration in the stone structures. Restoration work to date will be confirmed and additional repairs and restoration work undertaken where necessary, keeping the stone structures stable.

(2) Study and preserve underground structures

The city will conduct partial excavation surveys of the underground structures that remain from the shipyard's various work huts, confirming their location and scale. Their stability will then be maintained by covering them with an earth layer of an appropriate thickness. Planar markers of the location and scale of the underground archaeological remains will be placed on the ground surface immediately above the earth layer as information deepening visitors' understanding.

(3) Identify the fusion of Western and traditional Japanese technologies

The Heishin-Maru is a Western-style warship built with Russian shipbuilding technology, whereas the Koshin-Maru employs Dutch technology. Where, in addition to clear identification in the historical documents, excavation surveys confirm archeological remains indicating shipbuilding technologies from two different countries or structures enabling understanding of the shipbuilding systems, information on the planar position and scale of these underground remains will be indicated to the greatest extent possible, increasing visitors' understanding of the site. The city will also install visiting paths and an observation deck in the site, so that visitors can learn about the shipbuilding systems employed while also getting an idea of the whole shipyard remains overlooked from a relatively high place, making it easy for visitors to get around and also enhancing their understanding.

(4) Maintain and improve the surrounding terrain and landscape

The landscape of the Ebisu Shrine Compound, of which buildings existed before the shipyard was open and maintained its form even after the shipyard closed, along with the hillside and forests spreading out behind it, and the appearance of the pretty fishing ports and villages that fringe the Obataura Inlet will be maintained, and improved where necessary.

2. Policy

The policy consisting of following five items has been set to approach conservation:

(1) Promoting research and study

The city will undertake systematic excavation surveys to confirm the scope of the underground archeological remains related to the shipyard. To obtain the maximum results from the minimum survey scope, a ground probing radar survey will be conducted beforehand, narrowing the excavation survey scope accordingly. Artifacts will be studied from an archaeological and physico-chemical perspective.

In pursuing studies of related historical documents and other drawings, because there are insufficient historical materials to offer clues on shipbuilding methods and how to recreate the structures of the various work sheds, the city will continue to discover, collect, analyze, and research documents and photographs.

In addition, the city will conduct a field survey using 3D laser measurement and other methods on the stone

stuructures of Nakanodai Breakwater as well as the stone structures that links with the northwestern side of the breakwater, using the results as basic materials for monitoring any changes or deterioration in stone structures and for conducting a survey of the restoration work to date on those structures.

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 chart to observe the component part over time to identify any changes in structures or the surrounding landscape.

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

Underground archeological remains could be damaged by rock fall and landslides in the area north of the shipyard where steeply sloping land may slip. The city will therefore install the minimum necessary structures from the slope back to the foothills to prevent rock fall and hold back soil, keeping visitors safe as well as maintaining the stability of underground archaeological remains.

The stone structures of Nakanodai Breakwater and the exposed stone structures connecting to it to the northwest will be monitored to identify any changes or deterioration, and if the city determines that there is a high level of risk, the stone structures will be repaired or restored. If the scope of stone structures with such risk needs temporarily dismantling, it is generally to be restored to the stable state before dismantling.

(3) Illustrating the system of shipbuilding in the component part and the Area

The city will install planar markers displaying the locations and scales of underground archaeological remains to enhance understanding of the shipbuilding system. Visiting paths will be built on the periphery of the shipyard to make it easier for visitors to get around the site, and an observation deck will be created to provide a view of the entire site.

(4) Arranging and improving landscape from a scenic perspective

Close to where the water intake for the shipyard is thought to have been located within the component part, trees and concrete structures still remain from houses that were built after the shipyard closed, but these are now obstructing the view of the water intake from within the site. The city will deal appropriately with them and restore and improve the landscape to close to the original landscape with no obstructions. The minimum facilities necessary to prevent terrain collapse will be installed in the hillside forest behind the shipyard ruins, respecting the natural forest and maintaining the rich natural landscape while also ensuring the safety of steeply sloping land that could potentially collapse.

In the buffer zone, the city will coordinate work conducted by the relevant organizations to maintain the fishing port scenery that stretches along Obataura Inlet. The city will set up the viewing spot in the site for Ubakura Canal on the opposite shore as the source of the earth used to build the shipyard, and will trim the vegetation around the adjoining Hagi Reverberatory Furnace, another component part, so that the furnace can be seen from the shipyard site.

(5) Implementing projects

The city will be responsible for managing and operating the projects included in the Programme determining the appropriate content 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 the Yamaguchi Prefectural Government to secure financial resources and the necessary specialist knowledge and personnel for implementation of the projects.

First, the city will continue systematically conducting excavation surveys as well as establishing a viewing paths to enhance visitors' understanding of the site and ensure their safety. Based on the survey results, the city will maintain the shipyard's underground remains in a stable state and install planar markers displaying their scale and location on the ground surface. Specific methods will be implemented based on guidance and advice from an expert committee, the Government of Japan, and Yamaguchi Prefectural Government.

3. Methods

(1) Research and study

(a) Excavation surveys

The city will conduct excavation surveys to verify the consistency between underground archaeological remains and the scale and structure of the work sheds as noted in old maps and documents, and it will also set out planar markers on the ground surface to display the accurate locations and scales. The excavation surveys will embrace the entire shipyard site, but to make steady progress with planar displays of the structures alongside the surveys, three broad areas (I-III) as shown in **Figure 1** will be delineated and excavation surveys and planar display work pursued in each.

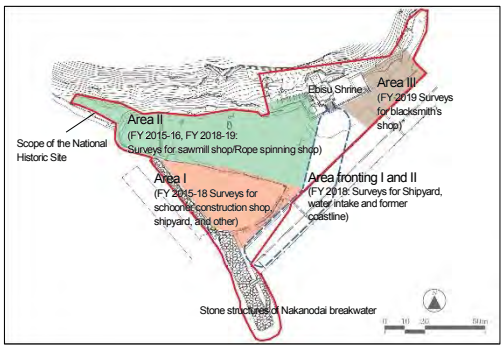


Figure 1: Excavation survey map

(b) Studying historical documents and drawings

"Copy of the Order to Build the Heishin-Maru"and Kansen ikken [Heishin-Maru production instructions and Ship, single item] for the Heishin-Maru and "Copy of a Series of Orders to Build Big Warships"for the Koshin-Maru are the basic documents, and the city will continue to study these, as well as identifying and collecting new historical documents. Studies will also be conducted of shipbuilding materials from Izu Heda and the Nagasaki Naval Training Institute as the source of production technology for the two ships, and circumstantial evidence will be gathered from the document that the Hagi (Choshu) Clan used as a textbook for Western-style warship construction in order to surmise the shipbuilding methods for the Heishin-Maru and the Koshin-Maru.

(c) Ground probing radar survey

Before launching excavation survey work, the city will conduct a non-destructive ground probing radar survey, narrowing the excavation survey scope.

(d) 3D laser survey

The city will conduct a 3D laser survey of stone structures starting with the exposed portion of the Nakanodai Breakwater, as well as a field survey of the underwater portion, creating the basic materials necessary for detailed monitoring, and also conducting a detailed examination of the restoration history of the exposed stone structures based on the results.

(e) 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.

(f) Monitoring

The city is producing monitoring charts that comprehensively and systematically aggregate current information, and will regularly assess the state of the component part and the buffer zone and enhance the content of the monitoring chart accordingly. 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 remains

(a) Preservation and restoration of underground and exposed remains

The city will cover the underground archaeological remains confirmed through the excavation surveys with a protective earth layer and place planar markers on the ground surface immediately above to show their location and scale. In areas outside the excavation survey scope, archaeological remains are to be kept stable underground.

(b) Restoration of exposed stone structures

According to the degree of urgency, the city will repair or restore stone structures which fixed-point observations reveal to be changing or deteriorating. If the scope which has changed temporarily needs dismantling, it is generally to be restored to the stable state before dismantling. In addition, to enhance fishing port functions, they city will consult with the organizations concerned and remove later modern structures and repaired portions that no longer have a relevant function, restoring to the original state.

(c) Harmonization of surrounding terrain and landscape

In the surrounding hillside forest area where steeply sloping land presents the danger of collapse, the city will cut down unnecessary trees, install rock fall prevention nets on the slope, and install gabions or large sandbags at the foot of the slope to keep visitors safe as well as to maintain the stability of underground archaeological remains.

(d) Repair of other constituent elements within the site

Hagi City will coordinate with the owners of the Ebisu Shrine to ensure that when repairs are carried out, appropriate methods are to be used which are in harmony with the shipyard site.

(3) Presentation of the shipbuilding system in the component part

(a) Zoning

The city has created the following zoning to increasing understanding of the Ebisugahana Shipyard remains (see **Figure 3**).

Zone name	Zone outline and features
Shipyard zone	Underground archaeological remains which were the shipyard work sheds and the exposed stone structures of the Nakanodai Breakwater. This zone will focus on stable maintenance of the remains and presentation and public utilization of the remains to promote understanding of the shipbuilding system.
Ebisu Shrine zone	Existing before the shipyard was set up and still a site of local worship today, the shrine is an important zone in terms of understanding the process of the historical changes and developments of the shipyard and the surrounding environment.
Landscape harmonization zone	The zone where the Ebisu Shrine and the landscape since the time before the shipyard was built can be seen. The mountain forests behind the shrine, the fishing ports and villages along Obataura Inlet, the Ubakura Canal on the opposite shore which sparked the construction of the shipyard, and other spots all fall within this zone, which requires unified harmonization.

(b) Planar markers for presentation of the underground archaeological remains

The city will place planar markers indicating the locations and scales of the underground archaeological remains of the various work huts identified through excavation surveys on the surface above protective earth layer. Where the underground archaeological remains exist in good condition, another option may be to use a semi three-dimensional display method for physical presentation based on the results of the research and study of the remains.

(c) Installing viewing paths

The city will establish viewing paths, including an observation deck from which visitors can enjoy a perspective of the component part, based on a design and structure that gives full consideration to preservation of the remains, harmonization of the surrounding landscape, and the safety of visitors.

(d) Path planning

The city will establish Path A, from which visitors can stand on the shipyard site where underground archaeological remains are indicated with planar markers and look out, and Path B, which will enable visitors to gain a perspective of the stone structures of Nakanodai Breakwater and the periphery of the shipyard remains from a newly-installed observation deck.

Path A will enable visitors to understand the Western warship-building process and shipbuilding system as gleaned from the historical documents and from the results of excavation surveys.

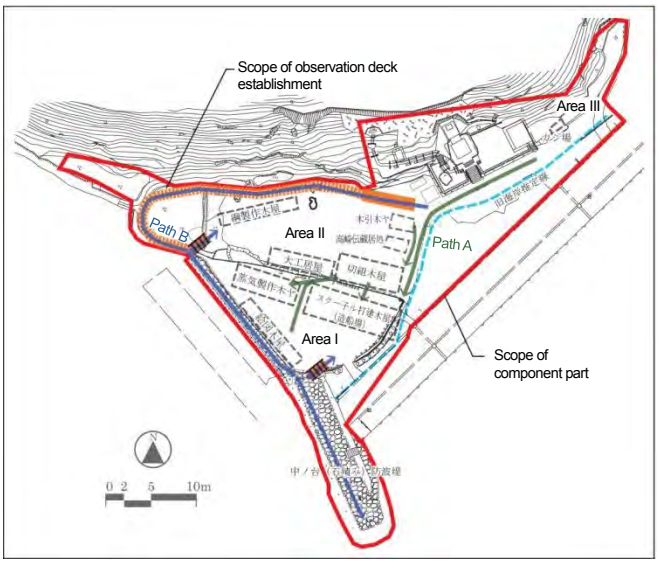


Figure 2: Path map

Path B will be an observation paths that enables visitors to understand locations and connections from a broader perspective, including the Hagi Reverberatory Furnace near the shipyard and the Ubakura Canal on the opposite shore.

(e) Terrain maintenance and correction

There appear to have been no major changes to the surrounding environment through to the present day. Hagi City will work to maintain that terrain with the exception of the minimum possible changes required for safety purposes. The city will also engage in regular cleanups of the rubbish which washes up on the shore, working to maintain and harmonize the environment around the component part with the help of local residents.

(f) Arranging and improving landscape and planting vegetation

Trees and concrete structures post-dating the establishment of the shipyard will be removed in conjunction with excavation surveys, ensuring views of the Obataura coast and the Ubakura Canal opposite. Planar markers for presentation of the underground archaeological remains will be installed on the ground surface, and new trees will not be planted in order to maintain those underground remains in a stable condition.

(g) Information and explanatory boards

The city will install a new information boards at a nearby crossroad to which visitors are directed by national road signs.

(h) Management and convenience facilities

The city will ascertain trends in visitor numbers and install guide stations and toilets of an optimal scale to facilitate visitors' use of the shipyard site. There is currently no carpark adjoining the shipyard, but the city will consult with the related organizations owning the land with a view to putting in a carpark in future.

(4) Landscape conservation and harmonization in the buffer zone

The city will work to conserve landscape elements that have been maintained since before the shipyard opened, including the buildings of Ebisu Shrine located in the north-east hillside of the component part and the verdant forest extending to the slope behind, and the sea surface of Obataura Inlet and the Ubakura Canal on the opposite shore to the southeast.

4. Projects implementation

(1) Order of priorities

The implementation schedule will be as in **Table 2**.

The city began systematic excavation surveys in FY 2015 toward elucidating the character of the Ebisugahana Shipyard site and placing planar markers to present the locations and scales of the underground archaeological remains. The implementation schedule, including this current period, will comprise a short-term phase of five years, a medium-term phase from the sixth year onward, and a long-term phase as of the 10th year.

Over the short- and medium-term phases, the city will undertake phased excavation surveys in areas I-III and install planar markers indicating the locations and scales of underground archaeological remains. When this work within the shipyard site has been completed, the city will consider the possibility of establishing convenience facility in the vicinity, taking into account the state of monitoring from a long-term perspective.

The city will prioritize excavation surveys and the ground probing radar survey to ensure that the results of studies and research are reflected immediately in restoration work, compiling the results of the survey conducted in the areas I to III within the shipyard site. At the same time, the city will also move ahead with the conservation and improvement of the surrounding terrain and the harmonization of the landscape, the establishment of observation paths, and the phased installation of planar markers, aiming to have this work completed over the medium-term. Given the above, priority will be given to the following tasks:

- Undertaking excavation surveys (including the ground probing radar survey and 3D laser survey)
- Preserving and restoring underground archaeological remains and artifacts
- Installing rock fall prevention nets, etc.
- Installing planar markers showing the locations and scales of underground archaeological remains
- Installing observation paths
- Selective removing of trees and structures post-dating the shipyard
- Installing signs and explanation boards

(2) Review of implementation schedule

After the scheduled medium-term period (up until 2026), the implementation schedule will be revised in line with the progress. However, if any new measures become necessary, the city will review the schedule without waiting for 2026.

Category	Project	Short term (2015 to 2019)	Medium term (2020 to 2023)	Long term (2024 onward)
(1) Research and study	(a) Excavation surveys	■		
	(b) Historical documents survey	■	■	■
	(c) Ground probing radar survey	■		
	(d) 3D laser survey		■	
	(e) Visitor survey	■	■	■
	(f) Monitoring	■	■	■
(2) Restoring ruins	(a) Preserve and restore underground archaeological remains and artifacts	■	■	
	(b) Restore exposed stone structures	■	■	■
	(c) Preserve surrounding terrain (install rock fall prevention nets, etc.)		■	
	(d) Restore other elements within the site	■	■	■
(3) Presentation of the shipbuilding system in the component Part	(b) Install planar markers for presentation of the underground archaeological remains		■	
	(c) Install observation paths		■	
	(e) Maintain and correct terrain	■	■	■
	(f) Improve landscape (manage trees, etc.) (selectively remove trees and structures post-dating the shipyard)	■	■	
	(g) information and explanatory boards		■	
	(h) Build management and utility facilities		■	
(4) Landscape conservation and harmonization in the buffer zone		■	■	■

Table 2: Project implementation schedule

(3) Other

The city has carried out conservation and restoration work, etc. for the Ebisugahana Shipyard 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 11 million yen was spent in FY2016 and 6 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 Ebisugahana Shipyard master/zoning plan and conceptional drawing after projects completion of the site are shown in **Figures 3 and 4** below.

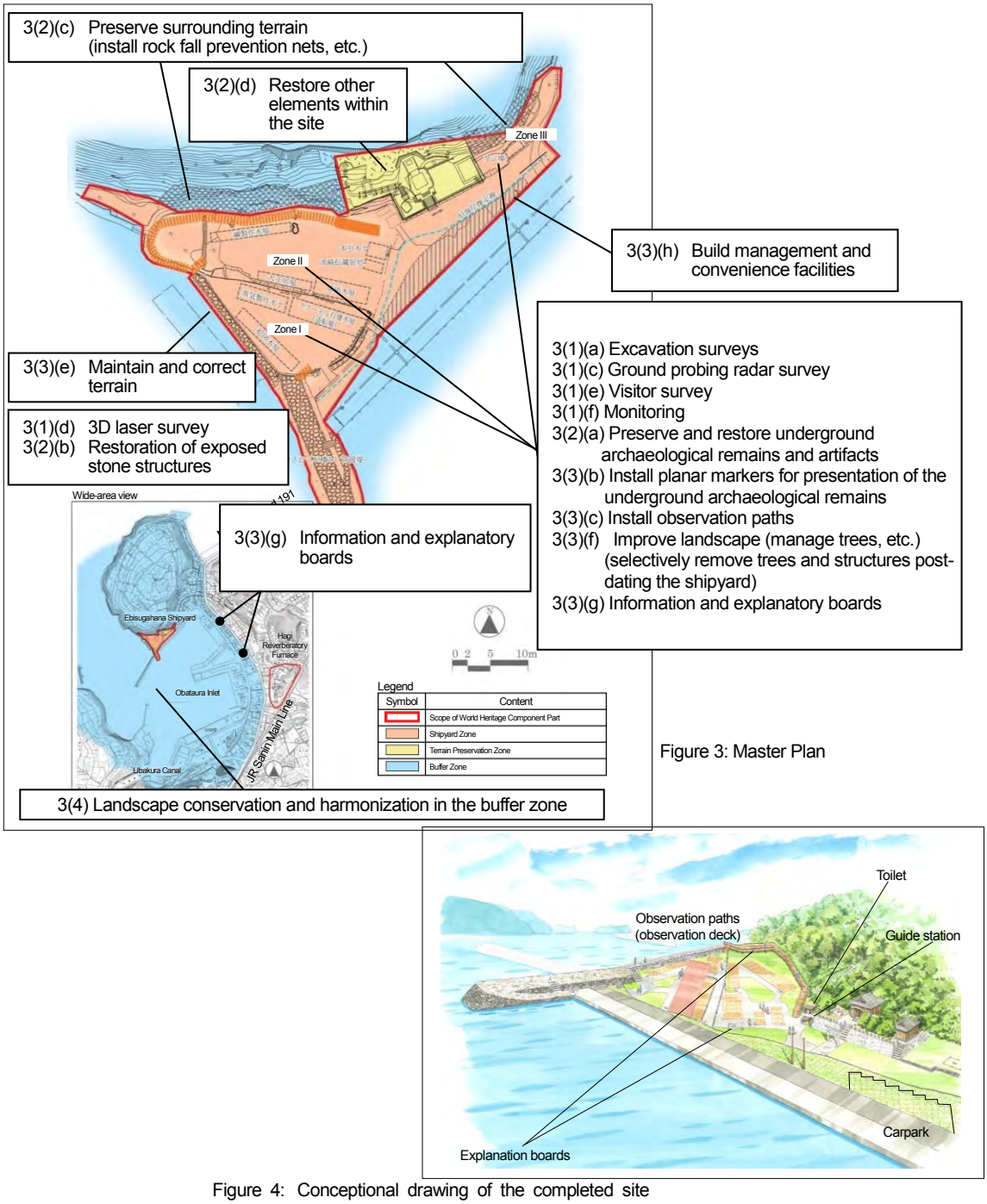


Figure 3: Master Plan

Figure 4: Conceptional drawing of the completed site

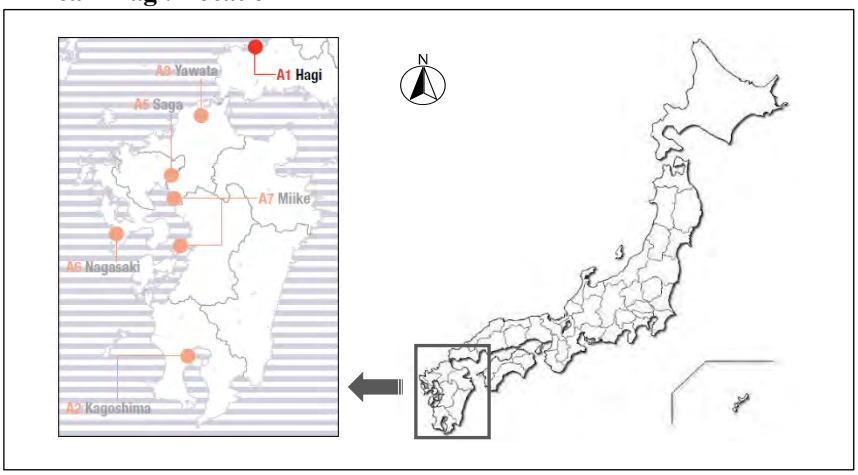
6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Ebisugahana Shipyard, which became a source of "Conservation Work Programme and Implementation Programme" is available on Hagi City's web site. <http://www.city.hagi.lg.jp/site/sekaiisan/h19508.html>

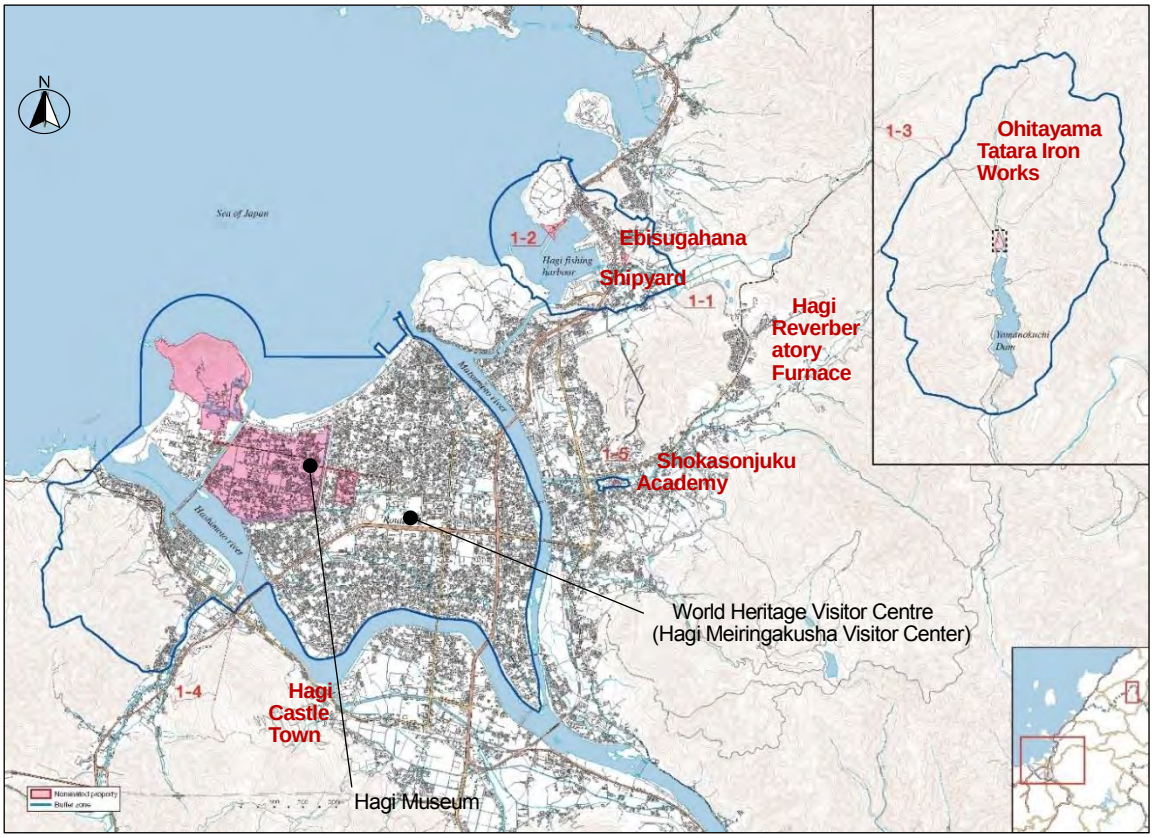
Conservation work programme and implementation programme for Ohitayama Tatara Iron Works (Area 1 Hagi/ Component Part 1-3)

Hagi City drew up a "Conservation Work Programme and Implementation Programme" for Ohitayama Tatara Iron Works in FY 2016 and 2017, pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by the World Heritage Committee at its 39th session in 2015. The Programme comprises detailed measures for the conservation and restoration 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").

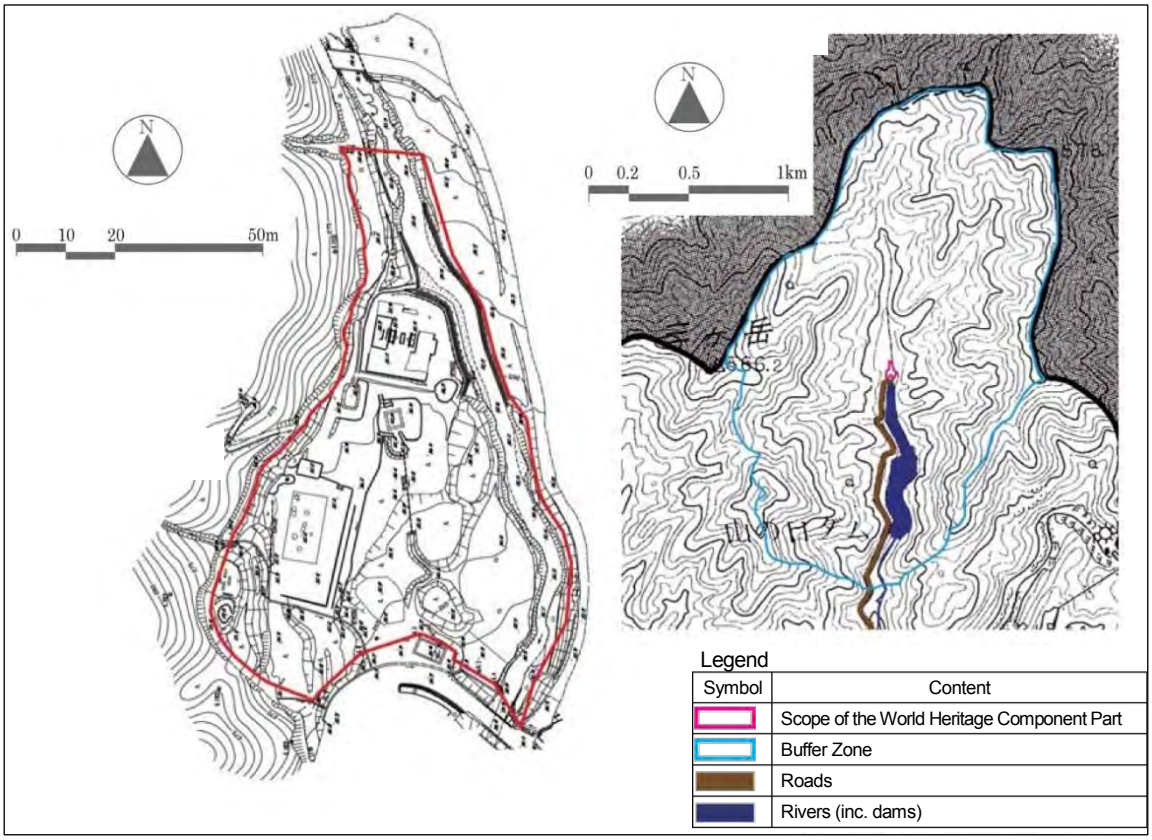
(1) Area 1 Hagi: Location



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



(3) Scope of the Programme (scope of Ohitayama Tatara Iron Works component part and buffer zone)



1. Approach to conservation

Restore the site from the perspective of stable maintenance of exposed stone materials as archaeological remains evidencing the traditional Japanese "tatara" method of making iron, and approach conservation work with consideration to the site's relation to the Ebisugahana Shipyard.

The Ohitayama Tatara Iron Works is the archaeological remains of an ironworks that utilized the ancient Japanese tatara 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.

In the Conservation Management Plan (CMP) for Hagi Proto-industrial Heritage, which was prepared for nomination of "Sites of Japan's Meiji Industrial Revolution" for World Heritage inscription. The list of elements constituting Ohitayama Tatara Iron Works and their value categories are shown as **Table 1**.

Component Part	Period	Element	Value Category of Element		
			OUV	State	Region
Ohitayama Tatara Iron Works	Operation period during Horeki, Bunka-Bunsei and at the end of the Edo Period	Production equipment ruins	○	○	○
		Connection to Iron Road	○	○	○
		Yamanokuchi river	○	○	○
	Element during the period from the end of operation at the end of the Edo Period to designation as a National Historic Site				
	Elements during the period from designation as a National Historic Site to the present				

Table 1: The list of elements constituting Ohitayama Tatara Iron Works and their value categories
※In drawing up this programme, constituent elements stated in CMP are partly reviewed.

Out of these elements in the **Table 1**, which the Conservation Work Programme for Ohitayama Tatara Iron Works will mainly focus on the constituent elements that contribute to the Outstanding Universal Value, due attention will also be given to the elements that represent the value categorized as national and/or regional respectively, and others in view of the process of historical changes and developments of the component part.

Based on the approach for conservation and categorized value of elements mentioned above. Hagi City will firmly conduct projects for conservation, restoration and presentation of the component part with a central focus on the following three points.

(1) Maintain and restore in a sustainable condition those remains embodying the ancient Japanese tatara 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 tatara ironmaking technique to production processes and the construction of Western-style warships

Various remains related to tatara 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, and 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 tatara 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 five items has been set to approach conservation:

(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 tatara 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 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.

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 tatara 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) Implementing projects

The city will be responsible for managing and operating the Programme, 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) Historical document surveys

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 tatara 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 Tatara Iron Works played in tatara 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 Tatara 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 of the iron making system in the component part

(a) Zoning

The city has created the following zoning as a means of increasing understanding of the remains of Ohitayama Tatara Iron Works.

Zone name	Zone outline and features
Tatara zone	The zone where the main tatara ironmaking structures are located
Landscape improvement zone	The zone where the surrounding mountain forest landscape will be preserved and the type of forestscape 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 planning

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.

Symbol	Content
	Key structure viewing course
	Overview course
	Loop course

(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.

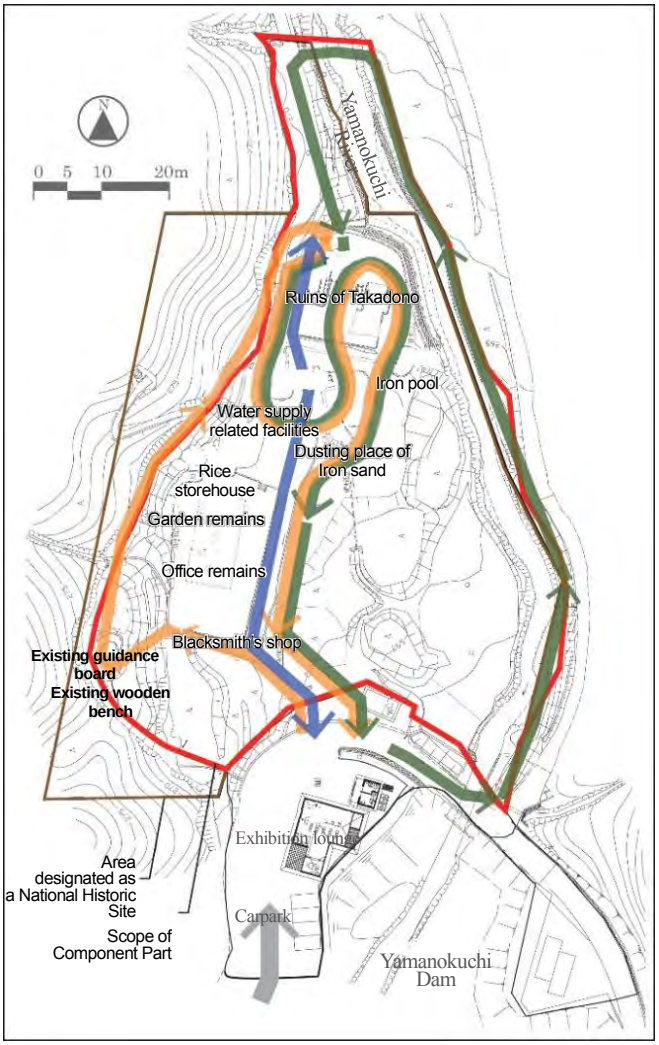


Figure 1: Flow plan

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 locations and scales 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.

(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.

(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.

4. Project implementation

(1) Order of priorities

The implementation schedule will be as in **Table 2**.

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 locations and scales of underground archaeological remains.

Excavation surveys will be undertaken to clarify currently unknown parts of the tatara smelting process, with underground archaeological remains conservation work and other 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
- 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 2023, the implementation schedule will be revised in line with Programme progress. However, if any new measures become necessary, the city will review the schedule without waiting for 2023.

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 of iron-making systems in the component part	(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)			
(4) Buffer zone conservation and harmonization	Improve type of surrounding forest landscape			

Table 2: Project implementation schedule

(3) Other

The city has carried out conservation and restoration work, etc. for the Ohitayama Tatara 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 Tatara Iron Works master/zoning plan and conceptional drawing after projects completion of the site are shown in **Figures 2 and 3** below.

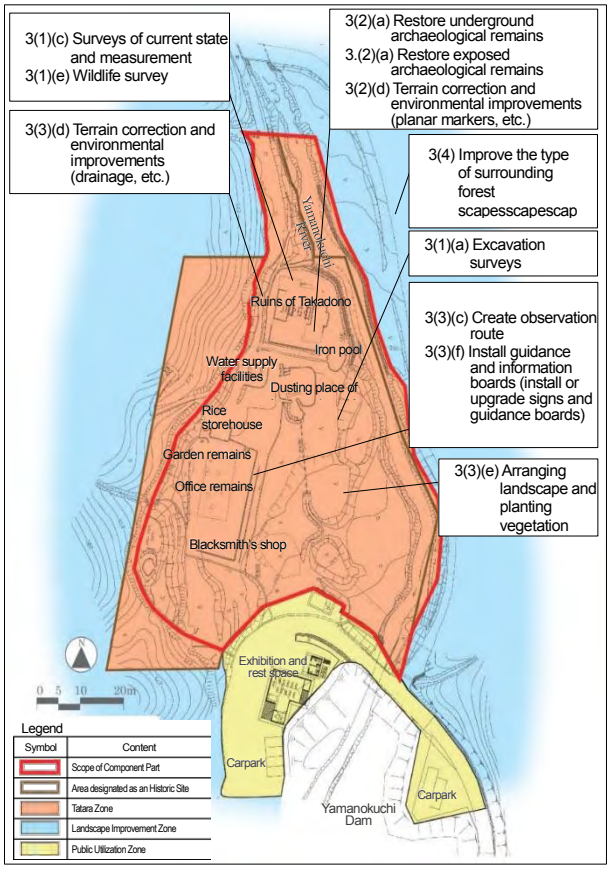


Figure 2: Master Plan

Figure 3: Conceptional drawing after projects completion of the site

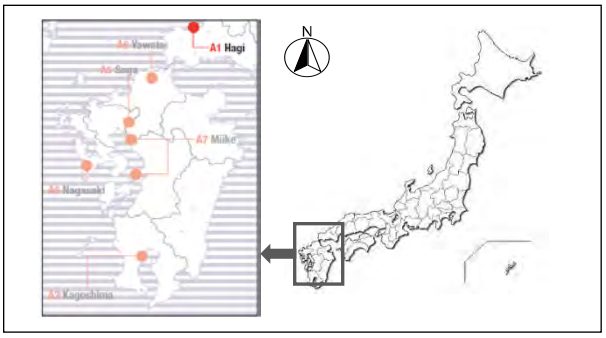
6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Ohitayama Tatara Iron Works, which became a source of "Conservation Work Programme and Implementation Programme" is available on Hagi City's web site. <http://www.city.hagi.lg.jp/site/sekaiisan/h19508.html>

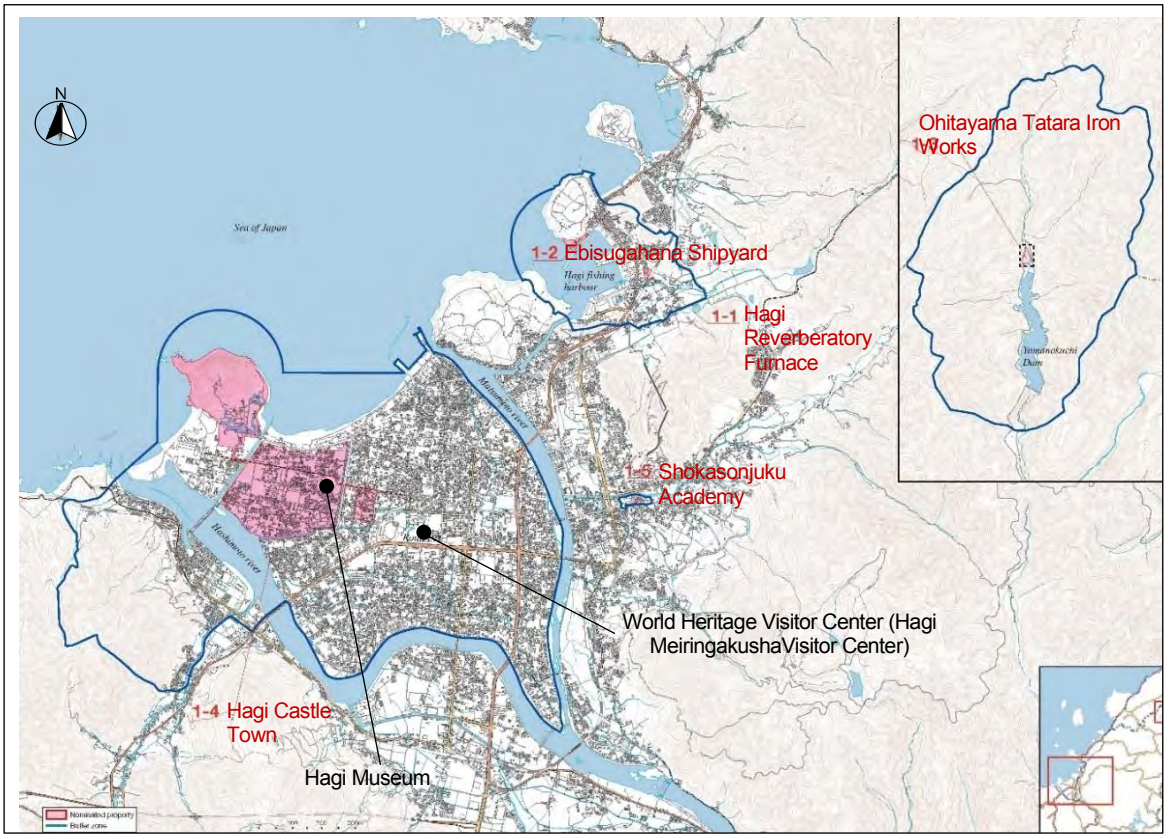
Conservation work programme and implementation programme for Hagi Castle Town (Area 1 Hagi/Component Part 1-4)

Hagi City drew up a "Conservation Work Programme and Implementation Programme" for Hagi Castle Town in FY 2016 and 2017, pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by the World Heritage Committee at its 39th session in 2015. The Programme comprises detailed measures for the conservation and restoration 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").

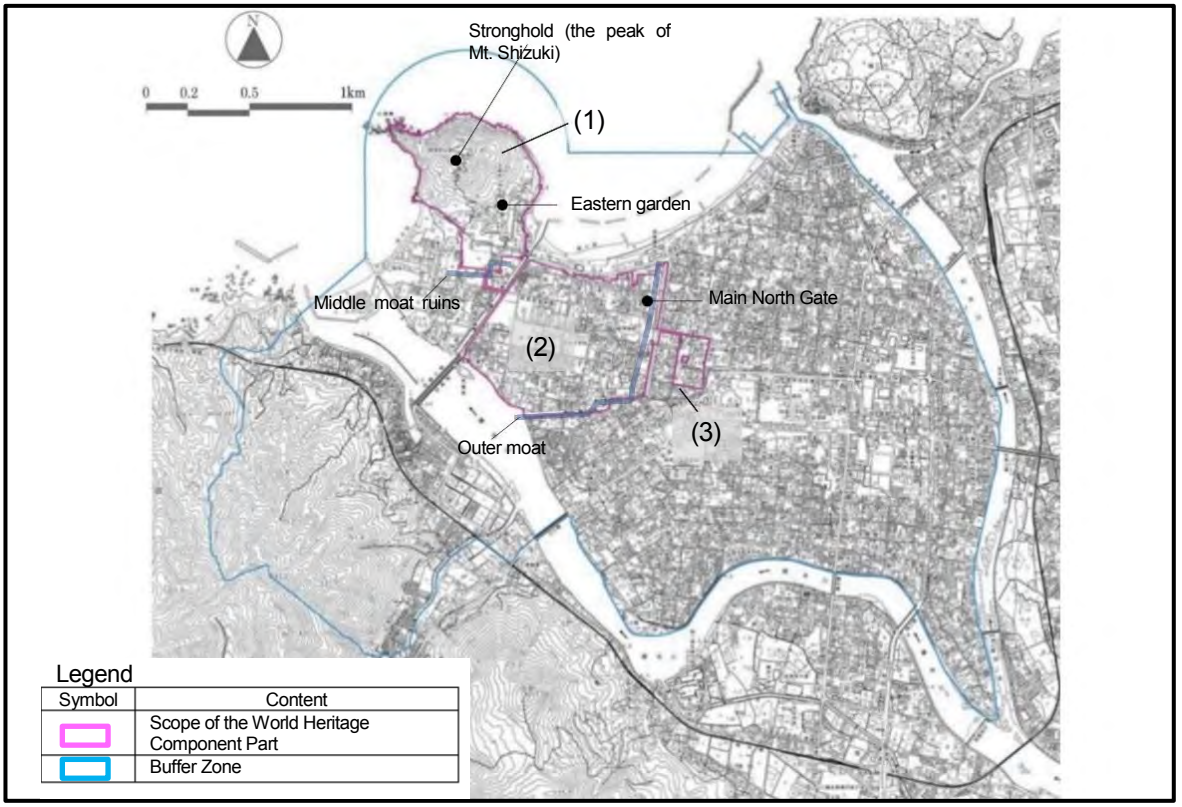
(1) Area 1 Hagi: Location



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



(3) Scope of the Programme (scope of Hagi Castle Town component part and buffer zone)



1. Approach to Conservation

Conserve and restore the roads, blocks and buildings, etc., constituting the townscape in a manner that hands down to the present day the aspect of a castle town that was a starting point for modern industrialization, approaching conservation based on the nature of the town as a place where people still live today.

Hagi Castle Town comprises the remains of Hagi Castle and the accompanying town, built on a delta at the mouth of the Abu River by Mori Terumoto, who lost in the battle of Sekigahara in 1600. Hagi Castle (1) was originally built on Mt. Shizuki and its foothills, and while none of the original buildings survive, the stone walls and moats are still virtually intact. Across virtually the entire residential blocks of District of the Upper Class Samurai (2), the sprawling those blocks belonging to Hagi (Choshu) Clan senior vassals have been converted to modern housing along with the mandarin orchards reclaimed to provide livelihoods for former samurai families after the Meiji Restoration, but generally remain in good condition, while the mud and stone walls dividing the residential blocks have been maintained through to the present day. Residential blocks of District of the Merchant Class (3) was where the properties of government-patronized merchants and middle- and lower-class samurai were located, and the townscape of samurai's residential compounds and merchant houses remains in good condition. Along with the other four component parts of Area 1 Hagi, Hagi Castle Town is a component part embodying an entire local community during the challenge phase of trial and error in the iron and steel manufacturing and ship-building fields.

In the Conservation Management Plan (CMP) for Hagi Proto-industrial Heritage, which was prepared for nomination of "Sites of Japan's Meiji Industrial Revolution" for World Heritage Inscription. The list of elements constituting Hagi Castle Town and their value categories are shown as **Table 1**.

Component Part	Period	Element	Value Category of Element		
			OUV	State	Region
Hagi Castle Town (Ruins of the Castle)	Clan government period	Fort	○	○	○
		Castle Grounds	○	○	○
		Intermediate outworks	○	○	○
		Underground ruins	○	○	○
		Mt. Shizuki	○	○	○
	Elements during the period from relocation of Clan Office to designation as a National Historic Site				
	Elements during the period from designation as a National Historic Site to the present				
Hagi Castle Town (District of the Upper Class Samurai)	Clan government period	Layout of the town	○	○	○
		Buildings of samurai premises	○	○	○
		Structures of samurai premises	○	○	○
		Underground ruins	○	○	○
		Outer moat	○	○	○
	Elements during the period from relocation of Clan Office to selection as a National Important Preservation District for Groups of Historic Buildings				
	Elements during the period from selection as a National Important Preservation District for Groups of Historic Buildings to the present				
Hagi Castle Town (the District of the Merchant Class)	Clan government period	Layout of the town	○	○	○
		Buildings of middle- and lower class samurai premises and district of merchant class	○	○	○
		Structures of middle- and lower class samurai premises and district of merchant class	○	○	○
		Underground ruins	○	○	○
	Elements during the period from relocation of Clan Office to designation as a National Historic Site				
	Elements during the period from designation as a National Historic Site to the present				

Table 1: The list of elements constituting Hagi Castle Town and their value categories
※In drawing up this programme, constituent elements stated in CMP are partly reviewed.

Out of these elements in the **Table 1**, while the Conservation Work Programme for Hagi Castle Town will mainly focus on the constituent elements that contribute to the Outstanding Universal Value, due attention will also be given to the elements that represent the value categorized as national and/or regional respectively, and others in view of the process of historical changes and developments of the component part.

Based on the approach for conservation and categorized value of elements mentioned above, Hagi City will firmly conduct projects for conservation, restoration and presentation of the component part with a central focus on the following two points.

(1) Restore the districts and buildings, etc., to maintain historical ruins and the castle town appearance

In Hagi Castle Town, the work for conservation and restoration will be carried out using appropriate methods to maintain those historical buildings, etc., above ground as well as underground archaeological remains in a stable condition, preserving an outstanding landscape of the Hagi Castle ruins and Hagi Castle Town. For Ruins of the Castle, to maintain the stability of the stone walls, which convey the ambience of the original castle, any areas where there is swelling or loosening will be restored using primarily traditional methods. The outer wall has already been completely restored, so in general only the necessary spot restorations will be made to maintain the wall in its current state. Traditional buildings in District of the Upper Class Samurai and District of the Merchant Class will generally be restored to maintain them in a stable condition in their current

state, with places that were clearly added at a later time converted to traditional materials.

(2) Conservation and restoration to convey Hagi Castle Town's history as a starting-point for industrialization

To throw more light on the history and functions of the three districts making up Hagi Castle Town—(1) Ruins of the Castle, (2) District of the Upper Class Samurai, and (3) District of the Merchant Class—multiple tour routes will be set up and road signage and explanatory signage installed to convey information to visitors.

For Ruins of the Castle, the stone walls and moats, etc., created for defense of the castle will be restored so as to highlight the castle's military functions. The castle's eastern garden namely To-en, which still remains within the ruins, will be restored into the appearance of the recreation space used by the feudal lord back in those days, and opened to the general public as an introduction to the lifestyle of the feudal lord within the castle grounds. Trees obstructing the view from the stronghold (at the peak of Mt. Shizuki) will be trimmed or felled and a viewing point set up so that visitors can look out over Hagi Castle Town as a whole.

In District of the Upper Class Samurai and District of the Merchant Class, facilities and equipment will be put in place to help visitors understand the social structure and daily life during the rule of the Hagi (Choshu) Clan from the appearance of the town. Facilities and equipment will be designed to maintain and enhance the historical atmosphere of a castle town, making effective use of land that has become public property, etc., to set these up.

2. Policy

The policy consisting of following five items has been set to approach conservation:

(1) Promoting research and study

For the stone walls of Ruins of the Castle and outer moat, as well as the eastern garden, preliminary excavation surveys will first be conducted to identify the layout of the castle grounds and the structure of the garden's remains, and the findings will be reflected in the methods for future conservation, restoration, presentation and public utilization. In the cases of upgrading park facilities and trees, exploratory surveys and on-site observation will be used to design measures for preserving the underground archaeological remains, aiming to accumulate the necessary information for the future work for conservation, restoration, presentation and public utilization.

In District of the Upper Class Samurai and District of the Merchant Class, where any digging is involved in restoring traditional buildings and historical remains, a prior excavation survey will be undertaken to elucidate structures and reflect this in the conservation and restoration. In other places, when new housing is built or existing housing is extended, rebuilt, or removed, an exploratory survey and on-site observation will be used to preserve underground archaeological remains and accumulate information.

A survey of visitors will be undertaken to confirm the extent of their impact on the site, and the city will also create a monitoring charts to trace changes over time.

(2) Conserving and restoring buildings and remains (preserving, reinforcing, and stabilizing materials and structure)

The city will conserve and restore the stone walls of Ruins of the Castle and outer moat based on risk-based annual plans. Areas where change is detected will be temporarily undertaken dismantling and the cause of the change identified before being rebuilt in order to stabilize the structure. Trees close to the walls where roots are pushing out the stones or otherwise negatively impacting on them, or could potentially do so, will be moved elsewhere or cut down. Conservation and restoration of the outer moat has been completed to the greatest extent possible, so from now on, the focus will be as a rule on systematic spot conservation and restoration of any areas where this is necessary to maintain the current state.

In District of the Upper Class Samurai and District of the Merchant Class, owners of traditional buildings will be directed and assisted by the city to systematically restore as a rule any areas where this is necessary to

maintain the current state, such as rethatching roofs and re-plastering walls. From now on, when buildings, earthen walls, and other structures are restored, areas that do not fit with traditional forms will be improved, and when the original form is unclear, they will be recreated in line with the surroundings or else hidden behind hedges.

(3) Illustrating feudal society as a key agent in industrialization in Hagi Castle Town

To highlight the role of Hagi Castle Town as a starting point for industrialization and modernization in the late Edo period, the city will undertake conservation, restoration and other projects that treat the Ruins of the Castle, District of the Upper Class Samurai, and District o the Merchant Class as a single unit. Routes will be laid out and signs and information boards installed to help visitors gain an overall picture of the town as they move around the various constituent elements.

(4) Arranging and improving landscape from a scenic perspective

For the Ruins of the Castle, the city will trim and otherwise manage vegetation so that visitors can see the entire main enclosure of the castle and the base of the castle keep. A viewing spot will also be setup at the stronghold at the top of Mt. Shizuki so that the whole of Hagi Castle Town can be seen at a glance. The viewing spot will be used to monitor and identify any changes to the scenery it looks out on, and if a problem occurs, the spot in question and its vicinity will be improved as appropriate.

In District of the Upper Class Samurai, the mandarin trees which are symbolic of post-Meiji history have been disappearing as housing increases. The city will work with groups such as NPOs as well as local residents to protect the remaining trees and plant new trees. When owners of concrete block walls and modern housing renovate these, the city will provide support for these structures to be removed or brought into harmony with the castle town ambience.

District of the Merchant Class retains areas that well preserve appearances of the town in the late Edo Period. To maintain the landscape, when owners of these areas intend to build new buildings or repair existing ones, Hagi City will give appropriate guidance to them. When existing concrete block walls and modern houses are to be renovated by their owners, they will be removed and the landscape modified under the city's technical and financial support.

(5) Implementing projects

The city will be responsible for managing and operating the Programme, 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.

Restoration and maintenance work on the stone walls of Ruins of the Castle and the outer moat will be continued. The city will also continue its excavation survey of the eastern garden to clarify the structure and change over time before restoring the garden, rebuilding the tea house and other architectural elements such as roofed mud walls and gates.

The city will continue to conserve, restore and improve districts, buildings, and other structures that comprise key elements of District of the Upper Class Samurai and District of the Merchant Class. The city will provide repairs and direction and guidance for improvement to the owners of structures which have aged, are in danger of collapse, or which impact negatively on the look of the town, as well as providing appropriate subsidies and other funding for restoration and improvement costs in order to lighten the financial burden. The city will also serve as the main agent in conservation, restoration and improvement of constituent elements that have become public property so as to contribute to their public utilization, first building consensus with local residents to that end.

3. Methods

(1) Research and study

(a) Excavation surveys

The city will prioritize conservation and restoration of the stone walls, with Hagi City's buried cultural property experts undertaking an excavation survey of the top of the stone walls, locating and measuring the cornerstones of turrets and other castle elements, the foundations of earthen walls, and other structural elements to create a record. Decisions will then be made about the scope of stone wall dismantling work, and the scope of archaeological remains which will be impacted as a result of, for example, stones being temporarily removed as part of the dismantling process. Because the remains of past conservation and restoration work or new structures may be discovered inside the stone walls when dismantling, Hagi City's experts will go along to observe the work from time to time, conducting a record survey where necessary.

The city also began excavation surveys in the eastern garden in FY 2008. These surveys will be continued, with the results serving as the basis for rebuilding architectures and installing planar markers indicating underground archaeological remains. Excavation surveys will also be conducted sequentially on backfill for the pond's stones and on the remains of roofed mud walls and gates, using the information gained as the basis for recreating the original scenery.

Projections of the central building of the main enclosure of the castle as surmised from pictures are currently being superimposed on maps of the current state. When park facilities are updated and trees felled or shifted, the city will take the opportunity to conduct an exploratory survey to try and identify the location of the central building and its state of archaeological remains, also bearing in mind the future placement of planar markers indicating the locations and scales.

In FY 2007, the whole area embracing the District of the Upper Class Samurai and District of the Merchant Class was designated as an area containing recognized buried cultural properties under the Law for the Protection of Cultural Properties. Where development work is undertaken, the city may therefore require excavation surveys, inspections by local government officials, or particular care to be taken in the construction process. The city will continue to preserve and confirm underground archaeological remains.

(b) Historical document surveys

Because there are still many documents which have not yet been studied, historical document surveys on the castle town formation process and the changes which took place through to the end of the Edo period will be continued, finding, collecting, and analyzing new documents, drawings, old photographs, and other materials.

Specialist history curators of the Hagi Museum will conduct these surveys with support of local residents such as NPOs.

(c) Building survey

While virtually all the original castle buildings have been lost, the main building of the post-Meiji Shizukiyama Shrine remains, as does the building of former Fukuhara family's study, transferred from Hagi Castle Town. Because these buildings which were transferred after modernization are also useful materials in terms of explaining the process of historical changes and developments of Hagi Castle Town, the city will continue with building surveys, linking these to the future conservation, restoration and preservation work. In addition, because in some cases returning a building to its original state can boost its value as a cultural property, the city will also consider that possibility.

The city conducted building surveys of District of the Upper Class Samurai in FY 1986 and FY 2004. Preservation measures are currently underway in line with a preservation plan drawn up based on those surveys, and that work will be continued. Over the medium- to long-term, the city will also conduct a review of which buildings merit preservation.

The city has already conducted a building survey of District of the Merchant Class, followed by large-

scale restoration. More restoration work will now be implemented through the same process to ensure the preservation of the various buildings.

(d) Survey for recreation of the middle moat

Re-digging the middle moat which was filled in 1924 will contribute to re-create the shape of the outer citadel of Hagi Castle. The city will undertake a historical document survey, a measurement survey, and a survey of the scenery, etc., toward the long-term re-creation of the moat, gradually purchasing the land where the moat remains are located as public property.

(e) 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.

(f) 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 report 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) Conservation and restoration of buildings and remains

(a) Castle ruins and the outer moat

In restoring the stone walls, the city has been restricting dismantling work only to those areas where change has occurred, creating a chart on each stone material before dismantling the relevant section, and then re-creating it using traditional techniques and avoiding modern techniques to the greatest extent possible. Restoration will continue based on the same policy.

For the eastern garden, the city will use the results of excavation surveys and historical document surveys, etc., to rebuild architectures, install planar markers indicating the locations and scales of the underground archaeological remains, and repair the pond's stones. Overgrown vegetation will be pruned or transplanted to another location.

Relocated buildings such as the Fukuhara family's study may be returned to their original locations in the long term, but for the meantime they will be maintained by the owners in their current locations as buildings in a sound condition, with the city engaging in regular monitoring.

Because the outer moat has deteriorated over the years since the last round of conservation, restoration and environmental improvement work, some of the earthwork, etc., has washed away, woodwork shaping the waterway has rotted, and gravel has built up in the waterways. The city will monitor the state to confirm the degree of deterioration, re-thatch the roofs of the Main North Gate namely Kita-no-somon, and the roofed wall of the rammed earth bridge, and re-plaster the walls, repair the earthwork, replace the waterway woodwork, and dredge the waterway, generally taking a systematic approach to the restoration of the necessary sections for stable maintenance of the current condition.

(b) Former samurai and merchant/craftsman districts

The city will restore buildings with the agreement of the owners so as to maintain and improve the historical appearance based on the standards laid down in the preservation plan. In so doing, the first step will be to understand the particular features of each building, and then generally re-create the same state as before the restoration. However, areas that were added in later restorations and extensions, and areas that impact negatively on the townscape, such as aluminum window frames, will be converted to traditional materials or returned to their original state.

In cases where the city decides based on the results of excavation and building surveys that the re-creation of buildings that were already lost as at immediately prior to restoration but that can be proved to have originally existed will be valuable in maintaining building value, consideration will be given to their re-

creation.

(3) Presentation of Hagi Castle Town as a key agent in industrialization

(a) Zoning

The city has created the following zoning to promote conservation and restoration as a means of increasing understanding of Hagi Castle Town.

Zone name	Zone outline and features
Castle remains zone	Zone where stone walls remain in good condition, including the main closure of the castle and outer citadel, as well as the stronghold at the top of Mt. Shizuki.
Mt. Shizuki zone	Forest zone preserved as a castle forest since the Edo period. Also has value as a National Natural Monument.
Outer moat zone	Zone containing the moat separating the castle from the castle town; the outer moat has been well-preserved through conservation, restoration and presentation in the same form as in the Edo period.
Town district zone	Zone containing the districts of the upper class samurai and the merchant class, with the districts remaining much the same as during the Edo period. Various traditional buildings are scattered throughout, very evocative of the original townscape.
Scenery preservation zone	The sea and river banks and other water areas surrounding the component part, combining with the component part to create an outstanding view.
Public utilization zone	The zone from which paths around the component parts begin, containing the carpark from which visitors tour the component parts and the World Heritage Visitor Center (Hagi Meiringakusha Visitor Center), which is the guidance facility for Area 1 Hagi.

(b) Path planning

To promote understanding of the social structure back in the Edo period, the city will suggest that visitors follow standard tour routes that go from the Ruins of the Castle to the District of the Upper Class Samurai to the District of the Merchant Class.

Visitors will also be recommended to follow the same route either on board the Hagi City Circular Hop-on Bus or by foot from the World Heritage Visitor Center, which is conveniently located next to the national road with good public transport access, which will make it even easier to promote understanding of the component part.

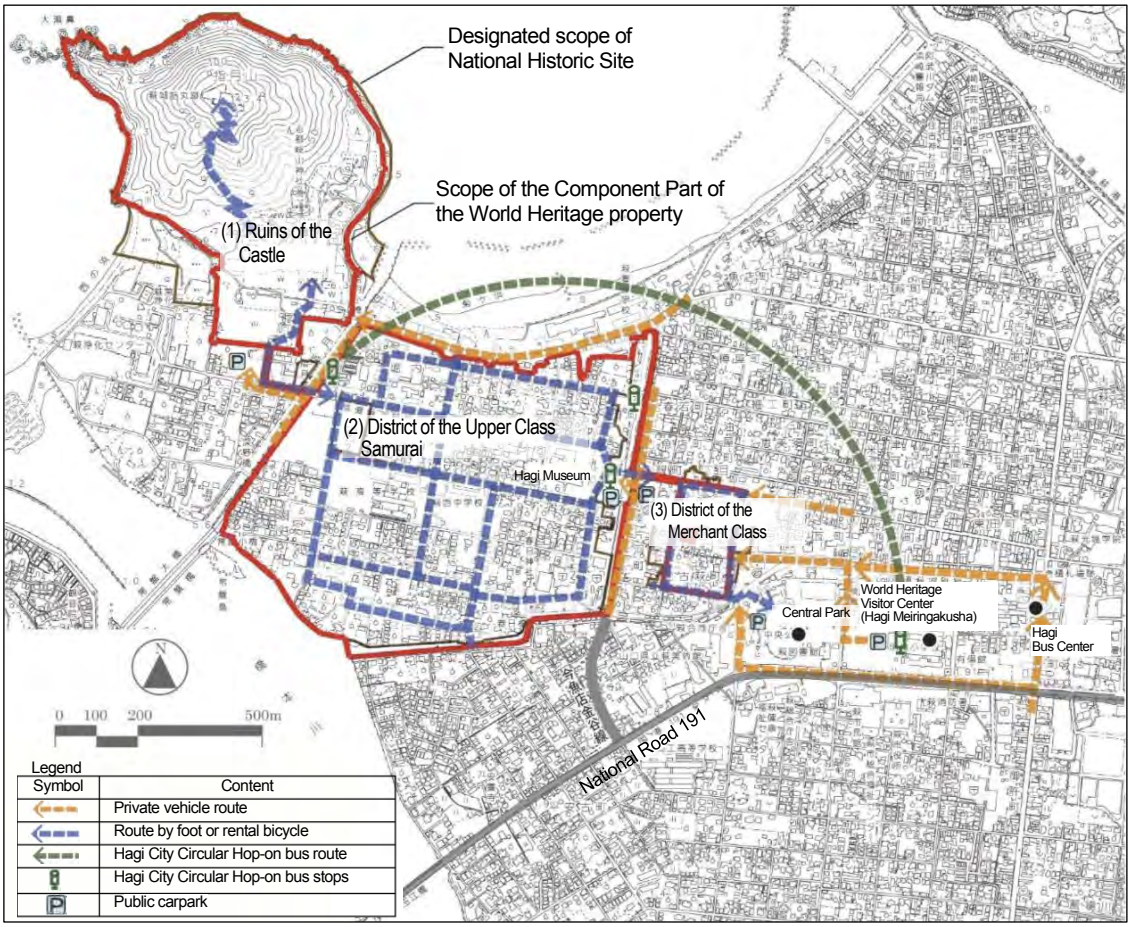


Figure 1: Path planning map

(c) Improvement of tour routes

The tour route within Ruins of the Castle was established post-modernization as Shizuki Park, but the city will maintain the path as it is for the meantime with appropriate management. The Mt. Shizuki mountain trail still has stone stairs from the Edo period, but other places have been newly built where the old stone stairs have collapsed. Heavy rain and typhoons also often cause tree-fall and landslides. The city will continue to monitor the situation and maintain and repair the current trail, but in the long term, it may need to be repaired more extensively so that visitors can climb the hill safely and with peace of mind. In that case, the city will make the repairs with sensitivity to the value of Mt. Shizuki as a National Natural Monument.

(d) Terrain correction and environmental improvement

As a rule, the current terrain will be maintained with the exception of the minimum necessary changes. In cases where the city is aiming to install re-created castle earthwork and moat facilities in the long term, this work will be based on detailed surveys.

Because the water quality of the outer moat could deteriorate, the city will clean it regularly and, based on monitoring results, may in some cases dredge out the mud in order to purify the water.

Power poles and power lines have already been set up within the component part. The city will use national subsidy schemes to bury these underground. Water and sewerage pipes are also buried beneath the road, and roadside ditches still maintain the form and design from back in the Edo period even through the current repair process. Because many spots are still functioning today, the city will continue to use these ditches on the basis of an appropriate maintenance and management scheme.

If it becomes necessary to install new infrastructure such as sewerage and telecommunications networks for the purposes of civil safety, the city will address this using methods and locations with maximum

consideration to the preservation of underground archaeological remains and the harmonization with surrounding landscape and based on full consultation with the relevant institutions.

(e) Arranging and improving landscape and planting vegetation

(i) Castle ruins and outer moats

Since the Meiji period, Yoshino cherry trees have been planted from the main enclosure of the castle ruins to the outer citadel, and the ruins have become a popular cherry blossom viewing spot for locals. At present, the trees are having little impact on the stone walls or underground archaeological remains, but because they could start to cause the stone walls to swell or loosen or disturb underground archaeological remains, for example, as they grow, based on monitoring results, the city will either systematically fell them or transplant them to another place in the ruins where they cannot do damage to underground archaeological remains.

Other trees that have grown tall will also either be trimmed or felled based on monitoring results so that the main enclosure of the castle ruins and the base of the castle keep can be seen in their entirety, maintaining harmony between site preservation and conservation of the surrounding landscape.

Because an observation spot will be set up to enable visitors to look out over the entire site as well as the buffer zone from the stronghold at the peak of Mt. Shizuki, trees will be trimmed or felled while taking care not to damage the value of Mt. Shizuki's natural forest, which has been designated a National Natural Monument.

(ii) District of the Upper Class Samurai and District of the Merchant Class

In the case of concrete block walls and other privately-owned modern structures installed before the component part was designated as a cultural property, the city will direct the owners to replace these with more traditional-looking structures, providing financial assistance for this. The city will also ensure that these structures can be differentiated from Edo period structures.

For hedges that have become overgrown and are no longer in harmony with the surrounding landscape, the city will direct the owners to make improvements such as gradually trimming them back, providing financial support to that end.

(f) Guidance and explanation boards

Because touring around the castle town helps visitors to understand the site, guidance boards and other signage will be maintained and managed.

(g) Management and convenience facilities

Rest spots, public toilets, and other convenience facilities have already been installed at various locations, and the city will continue to maintain and manage these.

(4) Arranging and improving landscape in the buffer zone

Pursuant to the Hagi City Landscape Regulations and other related laws and regulations, 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 constrain unplanned development, such as regulating the height of buildings that might obstruct Hagi Castle Town views, as well as working to preserve, maintain, and manage local scenery. The city will give strict administrative guidance regarding guidance boards and outdoor advertisement displays in accordance with the city's outdoor advertising regulations stipulated for creating a healthy landscape, and will ensure their appropriate installation, maintenance and improvement.

In particular, for waterside spaces around the component part, such as the sea and river cliffs, because the sandy beach, seawall masonry, pine trees, and planted trees work together with the component part to create an attractive landscape, the city will work to maintain and enhance that landscape.

4. Projects implementation

(1) Order of priorities

The projects implementation schedule will be as in **Table 2**.

The city has created a 30-year implementation schedule designed to preserve the historical buildings and underground archaeological remains in Hagi Castle Town, undertake ongoing conservation and restoration work to maintain the castle town ambience, and facilitate understanding of the functions and history of the various constituent elements of Hagi Castle Town. The schedule will begin in FY 2017 and end around FY 2046.

The schedule is divided into 10-year short-, medium- and long-term phases, with the phases, the intent behind implementation, and specific projects as follows:

- Short term (10 years): Undertake those products which need to or can be begun or completed immediately.
- Medium term (10 years): Projects requiring surveys longer than the short- term that will then be implemented based on the results
- Long term (10 years): Projects that will lead to greater value but that will require time for surveys and coordination.

Among short-term projects, the city will place particular priority on the following for reasons such as visitor safety, urgency arising from the deterioration of buildings, etc., or the project implementation environment:

- Undertaking excavation surveys and conservation and restoration work for the castle's stone walls
- Conserving and restoring buildings in District of the Upper Class Samurai and District of the Merchant Class
- Undertaking excavation surveys and conservation and restoration work for the eastern garden in the castle ruins

(2) Review of implementation schedule

Based on the results of surveys and monitoring, the order of priorities and implementation schedule will be revised at the appropriate time.

(3) Other

The city has carried out conservation and restoration work, etc. for the Hagi Castle Town 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 121 million yen was spent in FY2016 (including the amount spent for establishment of a visitor center) and 20 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 (2017–26)	Medium term (2027–36)	Long term (2037–46)
(1) Research and study	(a) Excavation surveys			
	・ Stone walls*			
	・ Eastern garden			
	・ Remains of the central buildings of the main enclosure of Ruins of the Castle			
	・ Districts of the Upper Class Samurai and Merchant Class			
	(b) Historical document surveys			
	(c) Building surveys			
	(d) Survey for middle moat restoration			
	(e) Visitor surveys			
	(f) Monitoring			
(2) Conservation and restoration of buildings and remains	(a) Castle ruins and outer moat			
	・ Restoration of stone walls*			
	・ Restoration of eastern garden			
	・ Spot restoration of outer moat			
	・ Spot restoration of buildings			
	(b) Districts of the Upper Class Samurai and Merchant Class			
	・ Restoration of buildings			
(3) Presentation of Hagi Castle Town as a key agent in industrialization	(c) Improvement of tour routes (castle ruins)			
	(d) Terrain correction and environmental improvement			
	(e) Arranging and improving landscape and planting vegetation			
	(f) Guidance and explanation boards (maintain/manage and upgrade)			
	(g) Update administration and convenience facilities (maintain and manage current state)			
(4) Arranging and improving landscape in the buffer zone				

* Dotted lines refer to the Third Plan for Stone Wall Conservation and Restoration (Scheduled)

Table 2: Project implementation schedule

5. Master plan

The master/zoning plan is shown in **Figure 2** below.

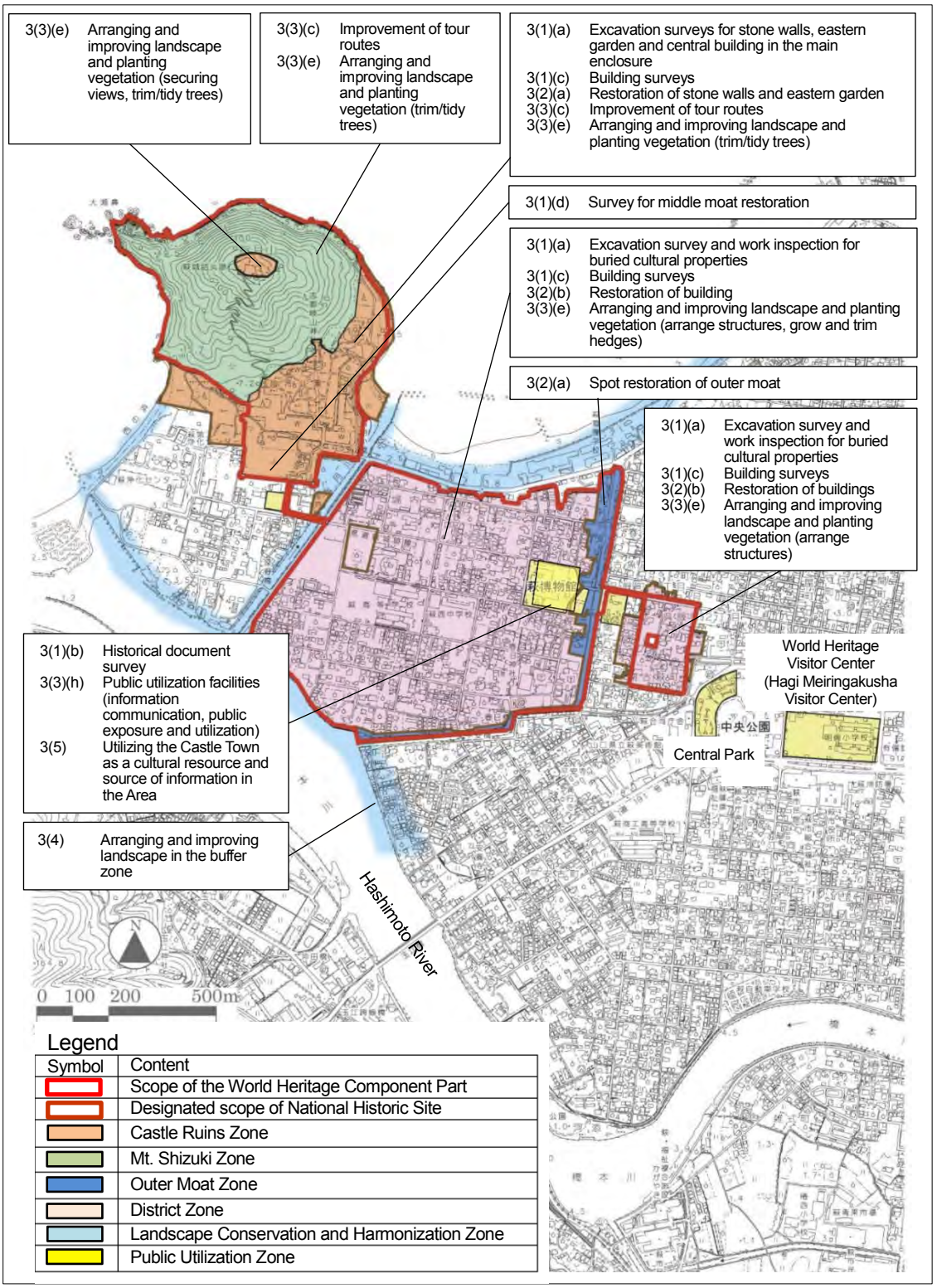


Figure 2: Master plan

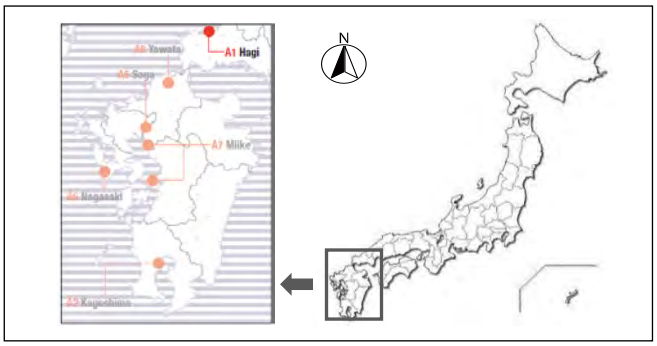
6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Hagi Castle Town, which became a source of "Conservation Work Programme and Implementation Programme" is available on Hagi City's web site. <http://www.city.hagi.lg.jp/site/sekaiisan/h19508.html>

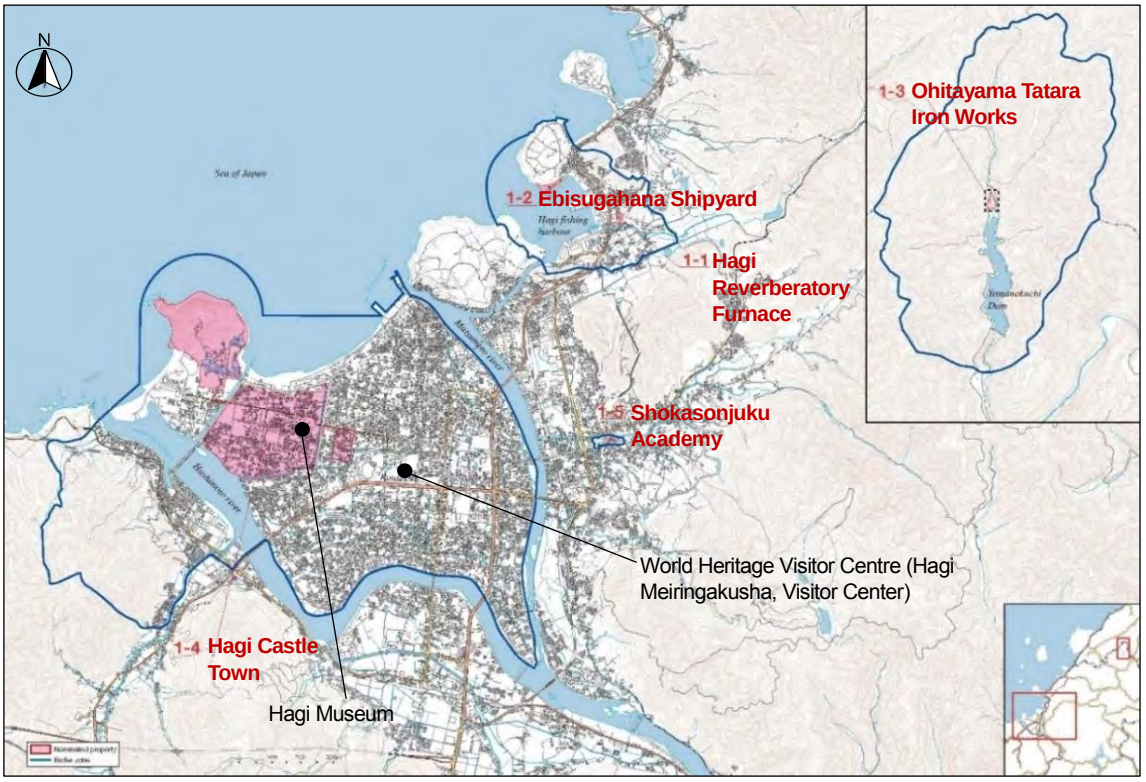
Conservation work programme and implementation programme for Shokasonjuku Academy (Area 1 Hagi/ Component Part 1-5)

Shoin Shrine drew up a "Conservation Work Programme and Implementation Programme" for Shokasonjuku Academy in FY 2016 and 2017, pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by the World Heritage Committee at its 39th session in 2015. The Programme comprises detailed measures for the conservation and restoration 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").

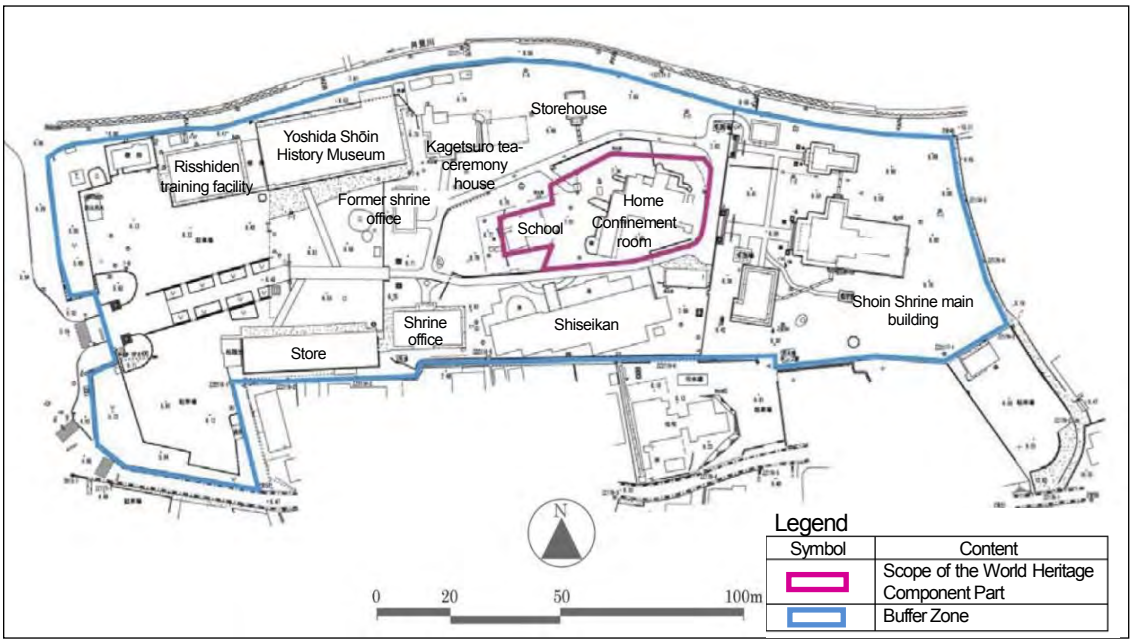
(1) Area 1 Hagi: Location



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



(3) Scope of the Programme (scope of Shokasonjuku Academy component part and the buffer zone)



1. Approach to conservation

Conserve and restore the buildings and grounds comprising Yoshida Shoin's school and home as the educational institution which was the intellectual starting point of the Meiji Restoration and industrialization, implementing conservation work of them and the surrounding environment.

Shokasonjuku Academy is a place of education that fostered many individuals who played an active role in Japan's modernization and industrialization from late Edo into the Meiji period. The school is located within the grounds of Shoin Shrine (which is built for dedication to Yoshida in 1907), and remains in good condition in its original form thanks to its management and operation by Shoin Shrine (religious corporation), which has also opened it to the public. The hedges and other walls around the component part retain the original scale of the grounds and the surrounding environment. Along with the other four component parts of Area 1 Hagi, Shokasonjuku Academy is a component part that illustrates the challenge phase of trial and error in the iron and steel manufacturing and ship-building fields.

In the Conservation Management Plan (CMP) for Hagi Proto-industrial Heritage, which was prepared for nomination of "Sites of Japan's Meiji Industrial Revolution" for World Heritage inscription. The list of elements constituting Shokasonjuku Academy and their value categories are shown as **Table 1**.

Component Part	Period	Element	Value Category of Element		
			OUV	State	Region
Shokasonjuku Academy	Period of opening Shokasonjuku Academy	Shokasonjuku Academy	○	○	○
		Old Residence of Shoin Yoshida's Confinement	○	○	○
		Front Gate of Old Residence of Shoin Yoshida's Confinement	○	○	○
	Element during the period from closing of the Academy to designation as a National Historic Site				
	Elements during the period from designation as a National Historic Site to the present				

Table 1: The list of elements constituting Shokasonjuku Academy and their value categories

Out of these elements in the **Table 1**, which the Conservation Work Programme for Shokasonjuku Academy will mainly focus on the constituent elements that contribute to the Outstanding Universal Value, due attention will also be given to the elements that represent the value categorized as national and/or regional respectively, and others in view of the process of historical changes and developments of the component part.

Based on the approach for conservation and categorized value of elements mentioned above, Shoin shrine will firmly conduct projects for conservation, restoration and presentation of the component part with a central focus on the following two points.

(1) Maintain and restore the buildings as the intellectual starting point of industrialization

Shoin Shrine will maintain Yoshida's home and the school building in a good, stable condition and strengthen any areas that become unstable. Regular monitoring will be undertaken to ensure that repairs are made at the appropriate time, maintaining the original design, form, and structure. The state of the trees and hedges, which contribute to the historical atmosphere, will be improved, forming a landscape that is in harmony with the buildings.

(2) Improvement of the surrounding environment to make it reminiscent of the time

The hedge surrounding the compound will be replanted based on pictures, etc., restoring the scope and the atmosphere of the original grounds. The routes used by shrine worshippers and site visitors will also be separated to prevent crowding within the shrine compound and mitigate visitor pressure on it. Visitors will also be encouraged to visit associated places in the surrounding area to deepen their understanding of the place where Shokasonjuku Academy is located.

2. Policy

The policy consisting of following five items has been set to approach conservation:

(1) Promoting research and study

The city will undertake excavation surveys as necessary, recording and disseminating the results. The city and Shoin Shrine will identify and collect historical documents and organize and analyze them to clarify the Shokasonjuku Academy's contribution to Outstanding Universal Value and the role which the Academy has played in the local community. A detailed investigation will also be made of the conservation and restoration history by carefully condensing records of conservation and restoration work, etc., undertaken to date and organizing these in chronological order.

The city and Shoin Shrine will undertake a survey of visitors to confirm the extent of their impact on the component part, and a monitoring charts will be used to identify changes to building exteriors and interiors and how wear and tear to parts and materials changes over time.

(2) Conserving and restoring buildings and remains (preserving, reinforcing, and stabilizing materials and structure)

The city and Shoin Shrine will elucidate the causes of changes such as the roofs of buildings (the school, Yoshida's home, and the room to which Yoshida was confined while he was under house arrest) subsiding or leaning, or walls and uprights leaning, etc., as well as changes or deterioration in parts and materials (uprights, crossbeams, furnishings, etc.), conducting regular observations to ensure stable conservation and restoration of materials, with monitoring charts used to trace changes over time

In the case that changes or abnormalities are found in the course of everyday management, conservation and restoration will be undertaken on the basis of the map of current state that has been created. Comprehensive measures will be taken in response to surface-soil runoff in the vicinity of the buildings (the school, home, and confinement room) and resulting drainage issues.

The city will work with the Hagi Museum and related institutions to preserve and restore related historical documents in a manner suited to their materials and form.

(3) Illustrating the role of Shokasonjuku Academy as the intellectual starting point of industrialization and modernization in the Meiji Government

To indicate to visitors the importance of the two buildings and grounds comprising Shokasonjuku Academy as a place of education that fostered individuals who contributed to Meiji period modernization and industrialization, the scope of the Shokasonjuku Academy grounds will be clearly delineated within the shrine compound. To promote visitor understanding, the city will provide information in the context of the surrounding region, including laying out a tour route that links Shokasonjuku Academy to associated sites in the same vicinity. Because Shoin Shrine is open day and night, to address concerns about human damage such as graffiti and natural damage such as lightning strikes, the city will systematically improve disaster management equipment and install surveillance cameras. To maintain safety at night, vehicle traffic in and out of the shrine grounds will be restricted.

(4) Arranging and improving landscape from a scenic perspective

Shoin Shrine will systematically replace concrete block walls around the shrine with white walls to improve the appearance of the Shrine. Based on the historical drawings and old photographs, etc., the area around the buildings (the school, home, and confinement room) will be arranged to make it reminiscent of the scenery back when Yoshida Shoin was teaching, bearing in mind the scope of the component part and the layout of the town at the time.

(5) Implementing projects

Shoin Shrine will be responsible for managing and operating the Programme, with the city providing across-the-board support. Shoin Shrine and the city will determine the appropriate projects and schedule with consideration to the state of the component part. They will also work 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.

The main focus will be to maintain the buildings (the school, home, and confinement room) and grounds as elements contributing to the Outstanding Universal Value. In particular, drastic measures will be taken immediately to deal with surface-soil runoff in the vicinity of the buildings and the resulting drainage issues. Information on the current state of buildings and restoration work undertaken in the past will be gathered with a view to rethatching roofs and dismantling and restoring the buildings over the long term.

3. Methods

(1) Research and study

(a) Excavation surveys

The city and Shoin Shrine will implement excavation surveys where necessary within the component part, record the results, and widely disseminate them.

(b) Historical document surveys

Historical document surveys will be undertaken primarily by the Shiseikan specialist history curator, with cooperation also from specialist history curators at the Hagi Museum and NPO groups.

(c) Restoration surveys

The city and Shoin Shrine will create a detailed map of the current state of the buildings (the school, home, and confinement room), recording in detail conservation and restoration work to date and noting this also on the map in preparation for future conservation and restoration work on various scales (minor repairs through to full dismantling and major restoration), as well as structural reinforcement where necessary.

(d) Visitor surveys

The city and Shoin Shrine 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 and Shoin Shrine will present monitoring results in annual report 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 buildings and remains

To maintain the design and structure of the current buildings (the school, home, and confinement room) and the terrain of the grounds in a stable condition, Shoin Shrine will undertake conservation and restoration in line with the particular characteristics of the buildings and grounds as well as conservation and management issues they present. The buildings and grounds will continue to be maintained in a healthy condition and regular monitoring will be undertaken, with spot repairs made where any issues arise. For the buildings, spot repairs will be made to wooden and plaster walls and furniture, while in other areas, repairs will be made or materials replaced in line with the degree of damage. In future, if any structural defects emerge, roofs will be rethatched and major restoration work with dismantling. For the grounds, work will be undertaken to ensure that rainwater drains away smoothly and to keep the ground surface stable. A specialist from the city offices will observe this work. If underground archaeological remains are affected, or there is a risk of this occurring, the city will first conduct an excavation survey.

(3) Presentation of Shokasonjuku Academy as the intellectual starting point of modernization and industrialization

(a) Zoning

The city has created the following zoning as a means of increasing understanding of Shokasonjuku Academy.

Zone name	Zone outline and features
Shokasonjuku Academy Zone	Zone where the school and home (including the confinement room) stand
Scenery Preservation Zone	Zone forming a visual unit together with the grounds where the school and home stand
Public Utilization Zone	Zone containing facilities and equipment for public utilization of Shokasonjuku Academy

(b) Path planning

The birthplaces and former homes of various individuals who contributed significantly to Japan's modernization as well as other component parts in the Area are located in the vicinity of Shokasonjuku Academy, and the city and Shoin Shrine will work to create a course in the context of its accessibility and connection to these other places.

Yoshida Shoin's home presents a good example of the residential compound of a middle- to lower-class samurai in the late Edo period, and the northern gate also remains in good condition, with the stone path from the gate to the entranceway also visible. A course will be signposted that has visitors entering from the northern gate, moving from the confinement room at the eastern side of the house to the open space on the southern side and on to the school building. Explanations will also be provided along that course to help visitors experience Yoshida Shoin's life and education (Figure 1).

(c) Arranging and improving landscape, and planting vegetation

In some spots, surface-soil runoff caused by rainfall, etc., is causing drainage ditch and drainage basin exposure, as well as poor drainage as a result of drainage facilities clogging up. Shoin Shrine will maintain and utilize the current facilities to the greatest extent possible, while also creating soil-based paths that are less likely to suffer surface-soil runoff and restoring drainage facility functions.

The hedge around the compound and the hedge between the home and school will be recreated and improved based on the historical drawings, etc. Where evergreen trees planted in later years are now obstructing the view, they will be pruned or felled.

Shoin Shrine will plant vegetation to create divisions in and undertake scenic arrangement around the school, home, and confinement room based on historical drawings and old photographs, etc.

As the black pines on the northern side of the site grow taller, this might lead to falling branches or trees damaging the school and house buildings, so the pines will be watched and pruned when necessary. In some cases, they may be transplanted or felled as appropriate.

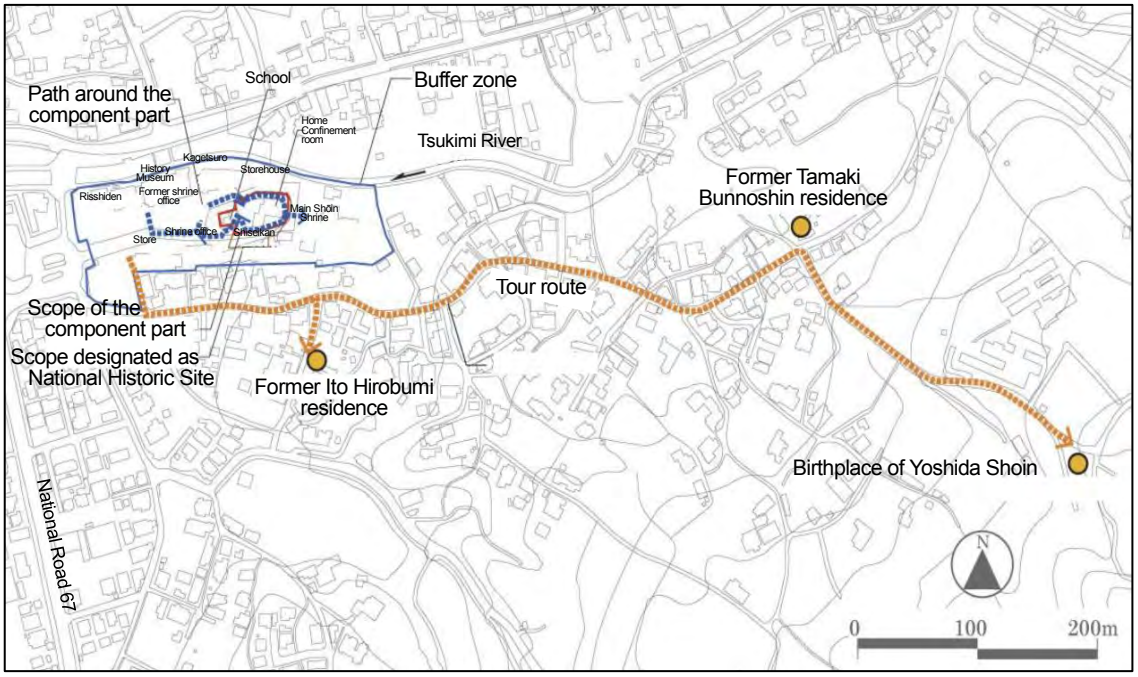


Figure 1: Shokasonjuku Academy and nearby associated places

(d) Guidance and explanation boards

Shoin Shrine will install signage to explain the psitioning of Shokasonjuku Academy in the context of the Sites of Japan's Meiji Industrial Revolution and Area 1 Hagi and its relation to the process of historical changes and developments of Shokasonjuku Academy and other component parts in the Area.

The city and Shoin Shrine will also install signage explaining the tour route, which brings in associated places in the vicinity such as the former Ito Hirobumi and Tamaki Bunnoshin residences and the birthplace of Yoshida Shoin (**Figure 1**).

(e) Establishment of related facilities

Because Shoin Shrine is open day and night, there is the danger that buildings will be damaged or set alight, or that exhibit items and equipment will be stolen. Disaster management equipment will therefore be systematically improved and surveillance cameras installed. Vehicle traffic in and out of the shrine grounds at night will be restricted by installing car stop poles.

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

The front (western entrance) part of the wall around the shrine has been converted to a white earthen wall, and Shoin Shrine will systematically convert the northern and southern concrete block walls in the same manner. The former shrine office—a single-story wooden building with a tile roof—still stands on the western side of the component part, but is no longer in service and is gradually deteriorating. If this building is removed, the view of the component part from the entrance to the shrine should improve. In the case that plans are made for this kind of building removal within the shrine compound, the history will first be researched and experts

asked for their view as to whether the building should be preserved or could reasonably be removed, with decisions made accordingly. Where a building is removed, a map will first be drawn up, photographs taken, and building survey records stored. If new buildings are constructed after the old ones have been removed, full consideration will be given to the design, form, and impact on the appearance of the shrine frontage.

When Shoin Shrine management renovates the store and convenience facilities within the shrine compound, the exterior of these structures will be brought into harmony with the rest of the shrine compound.

When surface and other repairs need to be made to the carpark on the eastern side of the shrine compound, which lies outside the buffer zone, Shoin Shrine will coordinate with the relevant administrative organizations about harmonizing methods, such as using materials that fit with the appearance of the shrine frontage. Careful consideration will also be given to whether the carpark needs to be expanded or a new carpark built based on the results of surveys on visitor numbers and trends.

4. Projects Implementation

(1) Order of priorities

The projects implementation schedule has been created to maintain Shokasonjuku Academy in good condition. It will begin in FY 2017, with the short-term phase continuing until FY 2026 and the medium-term phase until FY 2046, with the long-term phase running from FY 2047 onward (**Table 2**).

Building repairs, the establishment or renovation of facilities necessary for preservation, and improvement of the surrounding environment will be undertaken over all of these phases. In conjunction with this work, historical document surveys, visitor surveys, and monitoring of any changes to buildings and other elements will also be undertaken, with measures taken on an ongoing basis to communicate information. Priority will be placed on the following projects in order to maintain Shokasonjuku Academy in good condition.

- Installation of related equipment (disaster management facilities, surveillance cameras)
- Conservation and restoration work (repairs to building exteriors and furnishings, etc.)
- Arrangement and improvement of landscape (trees, soil paths, drainage, hedges)
- Installation of guidance and explanation boards

(2) Review of implementation schedule

During the scheduled short-term period (up until 2026), the implementation schedule will be revised in view of Programme progress. However, if any new measures become necessary, the city will review the schedule without waiting for 2026.

(3) Other

Shoin Shrine (religious corporation) has carried out conservation and restoration work, etc. for the Shokasonjuku Academy 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 4 million yen was spent in FY2016 and 6 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.

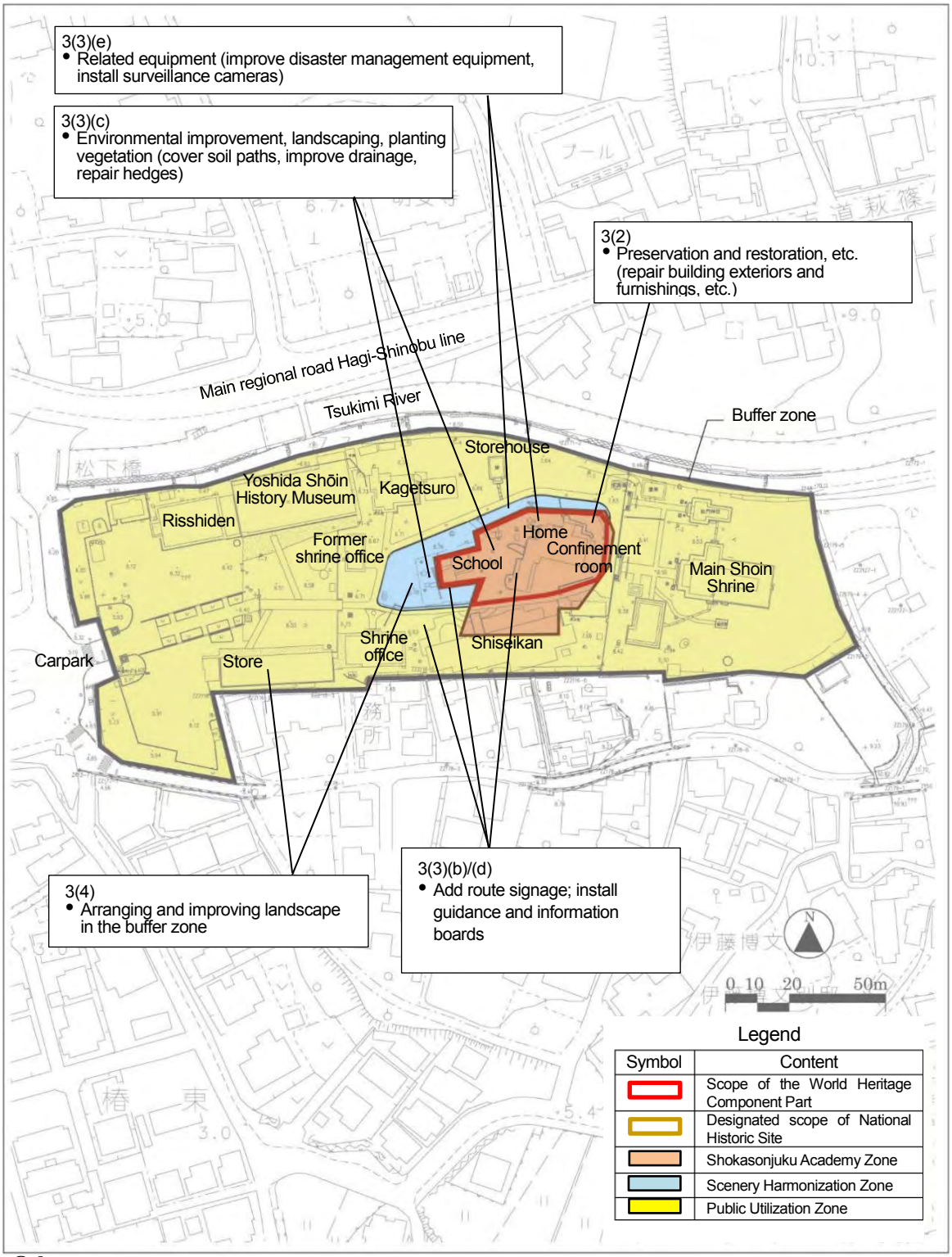
Shoin Shrine will also work on the conservation, restoration, presentation and public utilization of Shokasonjuku Academy, in conjunction with Hagi City and the other four component parts in Area 1, to ensure the smooth implementation of the projects.

Category	Project	Short term (2017-26)	Medium term (2027-46)	Long term (2047-)
(1) Research and study	(a) Excavation surveys (where necessary)			
	(b) Historical document survey			
	(c) Restoration surveys			
	(d) Visitor surveys			
	(e) Monitoring			
(2) Building restoration	Restoration of buildings and remains		Roof rethatching, etc.: Every 30-50 years	Deconstruction and restoration: Every 100-150 years
(3) Presentation of Shokasonjuku Academy as the intellectual starting point of industrialization and modernization	(b) Path planning (route signage)			
	(c) Arranging and improving landscape, and planting vegetation (cover soil paths, improve drainage, repair hedges)			
	(d) Guidance and explanation boards			
	(e) Establishment of related facilities (improve disaster management equipment, install surveillance cameras)			
(4) Arranging and improving landscape in the buffer zone				

Table 2: Project implementation schedule

5. Master plan

The master plan is shown in **Figure 2** below.



6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Shokasonjuku Academy, which became a source of "Conservation Work Programme and Implementation Programme" is available on Hagi City's web site. <http://www.city.hagi.lg.jp/site/sekaiisan/h19508.html>