Conservation work programme and implementation programme for Mietsu Naval Dock (Area 5 Saga/ Component Part 5-1)

Saga City drew up a "Conservation Work Programme and Implementation Programme" for Mietsu Naval Dock 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. Approach to conservation

By making the "unseen Mietsu" visible, the idea is to show the world how the Saga Clan in the last years of Edo period modernized through trial and error. To this end, the city is carrying out projects to conserve and restore the component part, maintaining its value and conveying that value clearly to visitors, while paying attention to the nature of buried archaeological remains.

Mietsu Naval Dock of Area 5 Saga is a set of archeological remains providing evidence of efforts by the Saga Clan to obtain technology related to Western-style ships, through trial and error, technology improvement and diffusion, and human resource development, from the last years of Edo period to the early Meiji era. It qualifies as a component part contributing to the Outstanding Universal Value of the Sites of Japan's Meiji Industrial Revolution in that it demonstrates how, in the process of Japan's modernization, Western technology was aggressively introduced and transferred, and was merged with Japan's existing technology.

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

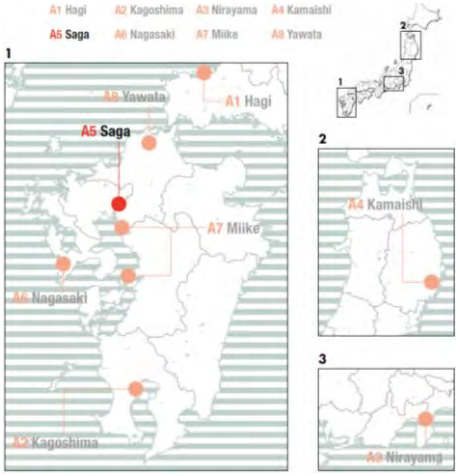


Figure 1 Location of Mietsu Naval Dock

Section	Phase	Element	Classification of value of element		
			OUV	Nation	Regional etc.
Shipbuilding/repair docks and metal works section	Mietsu Naval Facility in operation	Stone remains	○	○	○
		Furnace remains (1•2)	○	○	○
		Ditch remains	○	○	○
		Double–stranded furnace (crucible furnace)	○	○	○
		Scrap pit	○	○	○
		Revetment remains (main dock area)	○	○	○
		Revetment remains (dock entrance area)	○	○	○
		River side revetment remains	○	○	○
		Construction soil	○	○	○
	Saga Maritime Academy	Concrete shipbuilding berth remains			○
		Modern revetment remains			○
Training ground section	Mietsu Naval Facility in operation	Construction soil	○	○	○
		Wooden piles	○	○	○
	Saga Maritime Academy	Stone monument; “Site of Japanese Shipyard”			○
Small boat docks section	Mietsu Naval Facility in operation	Embankment	○	○	○
		Geographical features of inlet	○	○	○

Table 1: The list of elements constituting Mietsu Naval Dock and their value categories

Out of these elements in the **Table 1**, while the Conservation Work Programme for Mietsu Naval Dock 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, Saga City will firmly conduct projects for conservation, restoration and presentation of the component part with a central focus on the following three points.

(1) The advantages and disadvantages of being "unseen"

There are many constituent elements clearly showing the nature of the component part, including the underground archaeological remains of the dry dock and of metal works section at Mietsu Naval Dock. At the same time, however, they are covered by protective layers.

For preservation of the archaeological remains, being buried in the ground is the optimal environment. Keeping this "unseen" state, in other words, is considered as of the utmost necessity for the long-term preservation of the archaeological remains.

From the standpoint of efforts to convey the value of these remains, however, maintaining this optimal environment for preservation has the disadvantage of making it difficult to show them directly to visitors.

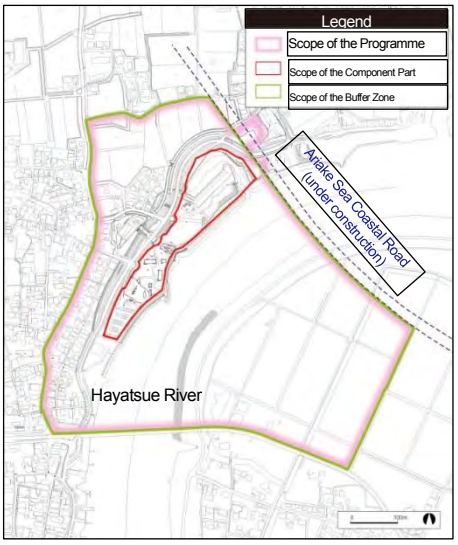


Figure 2 Scope of the Programme

(2) Conveying what is "unseen"

Efforts to overcome the disadvantages for public showing while retaining the advantages of the preservation environment can be thought of as equivalent to the process of solving the issues stemming from the nature of Mietsu Naval Dock archaeological remains. It is necessary to recognize once again the many different causes of being "unseen," such as not physically existing, being buried underground so not visible, being visible but not noticed, or not being noticeable without obtaining information. Moreover, it is important to give careful explanations, including these various causes and reasons, and to provide the basic information for properly understanding the underground archaeological remains. It will be essential also to devise effective means of "visualizing" the remains so they stick in the mind of visitors, from the standpoints of both the landscape at the time as seen from the underground remains and the way the land has been used passed on to today, such as rivers, fishing ports, and nearby villages.

(3) Communicating the significance will make people get involved

Sustainable measures adopting diverse methods are needed for ensuring the component part is passed on to the next generation. The city will therefore create an environment, using various means, enabling people to obtain an accurate understanding of the heritage value and themselves take part in actions for protecting and conveying that value. The city will also go ahead with measures for conservation work of the component part so that the attachment to the heritage resulting from these efforts may help foster pride amongst the local residents.

2. Policy

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

(1) Conducting investigative studies

The city will continue carrying out excavation surveys and historical document surveys to accumulate basic information for the presentation, public utilization and promotion measures aimed at protecting and conveying the value of the heritage and making it a core of the local community. The city will also conduct investigative studies in such areas as visitor behavior analysis, enhancement of monitoring, and methods of exhibiting and presenting the component part to the public.

(2) Enhancing preservation of constituent elements

The city will conduct monitoring to determine the current state of the component part and the buffer zone, and will work to maintain the state of the safely reburied underground remains. At the same time, the city will devise measures to prevent changes in the underground environment that has protected the remains up to now, and will carry out restoration work if damage is found in the superstructures or terrain.

If new excavation surveys are conducted, adequate measures will be taken to preserve the underground remains when reburying them.

Trees or other plantings that may damage the underground remains will as a rule be removed.

In case of a disaster, after promptly confirming the situation and taking necessary emergency measures, restoration measures will be taken for preservation of the component part.

As one measure, the existing parking facilities in the component part will be transferred off site to enhance protection of the underground remains.

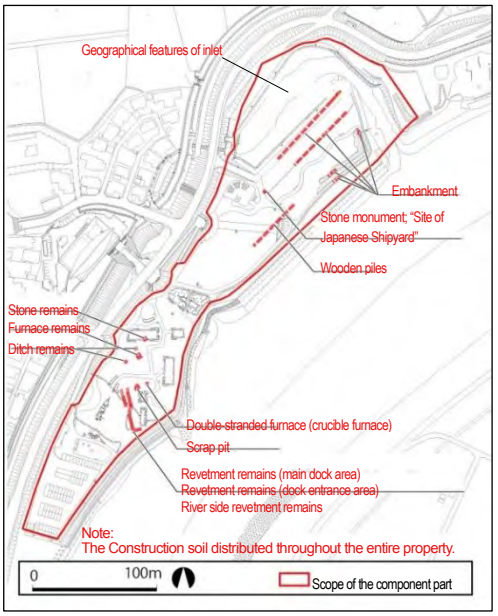


Figure 3 Constituent elements of Mietsu Naval Dock

(3) Presenting systems for shipbuilding and ship-repair

The city plans to avoid exposing the underground remains for viewing, instead choosing to present systems for shipbuilding and ship-repair that treats the exhibits immediately on the underground remains and the exhibits in guidance facilities as an inseparable, integrated exhibit.

(4) Arranging and improving landscape from the standpoint of scenic view

The city, while performing appropriate maintenance, will endeavor to maintain the present state of the superstructures, and the topography of the inlet, etc., which have mostly kept their shape from the period when Mietsu Naval Dock was in operation. As for objects that did not exist when Mietsu Naval Dock was in operation and that obstruct the landscape, these will be removed, moved, or have their appearance improved. In the case, however, of trees, grass and other plantings, so long as they are not likely to damage the underground remains, their current state will be maintained to keep their relaxing function for visitors. Trash and other objects that drift onto the site will be properly removed, endeavoring to maintain the good appearance of the component part and the surroundings.

(5) Implementing projects

The Mietsu World Heritage Division of Saga City will carry out the projects prescribed in this Programme according to a schedule divided into Short Term, Medium Term and Long Term periods, working closely with other related city divisions including the Cultural Promotion Division, the Government of Japan, Saga and Fukuoka Prefectural Governments and other authorities and with local residents. The Short Term period will be five years starting in FY 2017. The Medium Term period will be the next five years, followed by the Long Term period.

3. Methods

(1) Conducting investigative studies

(a) Excavation surveys and historical document surveys

The city will conduct excavation surveys to determine the structural features of the shipbuilding and ship-repair facilities and how the spaces were used. The surveys will be limited to the minimum extent needed, with all due care taken not to damage the underground archaeological remains in the excavation process. Historical document surveys will be conducted to gather information about the process of building Mietsu Naval Dock, transformation of the Saga Clan navy, steamship repair and building, the role of the naval dock in the last years of Edo Period. Japan, technology exchanges with Nagasaki, the people involved in building the naval dock, and the human resources it produced. The historical document surveys will go along with progress in the excavation surveys.

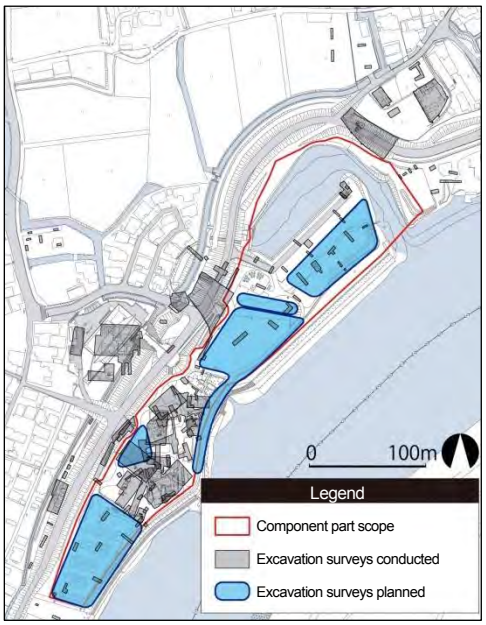


Figure 4 Places Subject to Excavation Surveys

(b) Survey and analysis of visitor behavior

The city will conduct surveys of visitor behavior and awareness, and analyze the results. The surveys will cover such matters as where the visitors came from, their age group, motivation for coming and means of travel, and their satisfaction with the exhibits and staff. The survey results will be used to improve the project.

(c) Enhancement of monitoring

The city will study highly durable materials for on-site presentation of the underground archaeological remains on the surface of the ground, methods for protecting the underground remains from soil pressure, and methods necessary for enhancing protection of the remains. The results of these studies will be reflected in conservation projects. Monitoring charts will be created for comprehensively and systematically bringing together information on constituent elements. These will be used for periodic monitoring of the state of and changes to the component part and the buffer zone through observations over time. Regular monitoring of the underground water levels and quality (dissolved oxygen, etc.), necessary for determining the preservation state of underground wooden structures will be carried out as needed at the future stage of site conservation and restoration, based on sufficient studies of effective and efficient methods.

(2) Enhancing preservation of constituent elements

(a) Maintenance, conservation and restoration of constituent elements

The underground archaeological remains need to be preserved in their buried state and continually maintained in good condition. The city will periodically observe the remains looking for changes in the shape of the soil surface such as unevenness or subsidence, and will assess the state of protective layer covering the remains. In case adverse impact on the underground remains is foreseen, an excavation survey will be considered for checking the situation. Fragile objects of wood or metal unearthed in the excavation process will be properly preserved as the situation warrants.

The city will continue endeavoring to maintain in stable condition terrain left over from when Mietsu Naval Dock was in operation, and will make use of monitoring charts to visually keep track of changes in the shape of the soil surface. If extensive damage is confirmed as in a disaster, the city will restore the part in question using the same materials as before the damage, in consultation with the Chikugo River Office in the Kyushu Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) in charge of river management, the Saga City Southern Area Construction Office responsible for parks management, the Saga City Fisheries Promotion Division managing fishing ports, and other organizations.

(b) Moving of parking facilities

For the sake of stably maintaining the underground archaeological remains, the city will move the present parking lot to a location outside the component part, to reduce compacting of the soil by vehicles and to make the scenery more suitable to the historical heritage site.

(3) Presenting the systems for shipbuilding and ship-repair

The component part will be divided into three zones based on how the naval dock was used: the Shipyard Zone, Training Institute Zone, and Ship-Repair Dock Zone. The buffer zone will be divided into an Agricultural Land Zone, River Zone, and Village Zone for the purpose of maintaining the landscape and land use. In addition to these zones, a Guidance Zone will be established in the northern part of the buffer zone, as an area of the facilities for guidance of the component part and for providing facilities for the convenience of visitors.

The city will implement each of the following based on the above zoning plan.

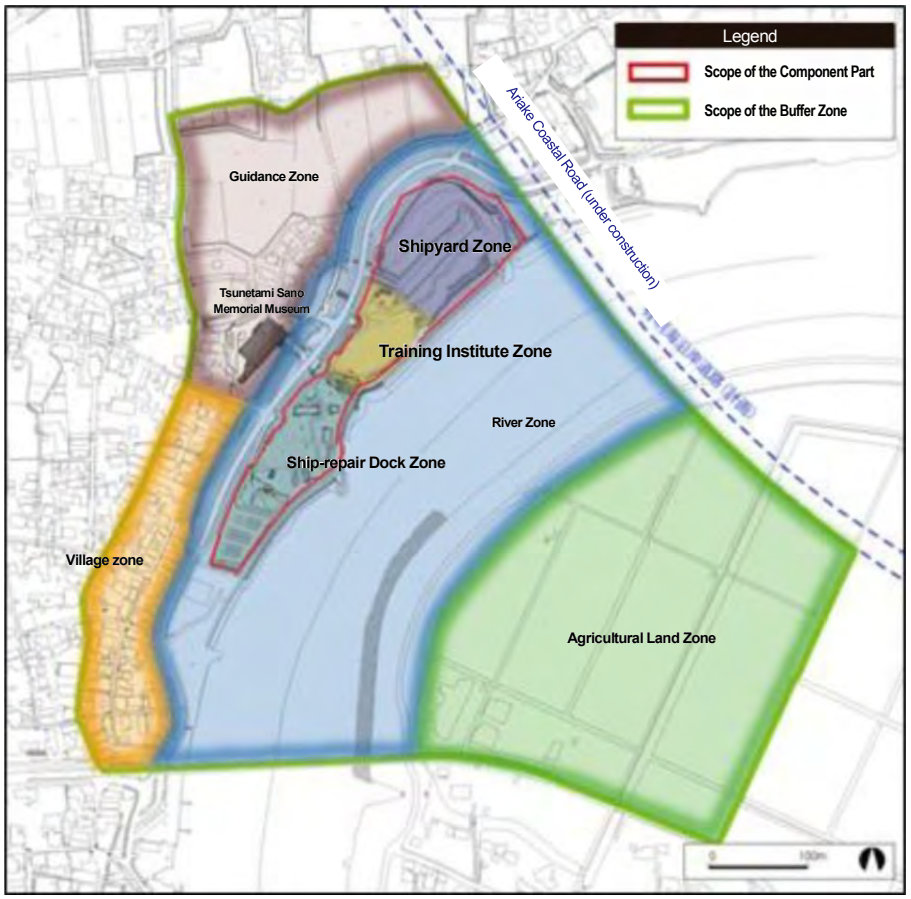


Figure 5 Zoning plan for Mietsu Naval Dock

(a) Setting visitors flow lines

To provide clear explanations of the value of Mietsu Naval Dock and the shipbuilding and ship-repair systems, and to enable handling large numbers of visitors, visitors flow lines will be set from the Guidance Zone parking lot to the indoor exhibits in the guidance facilities, and from there to each of the outdoor exhibits in the Shipyard Zone, Training Institute Zone, and Ship-Repair Dock Zone inside the component part.

(b) Modifying Terrain

The existing topography of the riverbed will be retained, without land filling or other terrain modification.

(c) Presenting above-ground displays indicating buried remains

Two-dimensional and three-dimensional displays on the ground surface will indicate the locations and scales of the remains of metalworking remains, earthen embankments, wooden piles, and other underground archaeological remains. For aspects that are difficult to show, such as the actual three-dimensional appearance of the remains and the roles of each of the remains in the shipbuilding and ship-repair systems, digital technologies will be used to present images on tablets or other information devices.

(d) Arranging and improving landscape and planting vegetation

Arranging and improving landscape and planting vegetation inside and around the component part will be carried out so as not to obstruct the image of the operating naval dock, with its flat work spaces. Plantings that are the cause of such obstruction will therefore be removed or trimmed. While no new planting is planned, trees not likely to adversely damage the underground remains or obstruct the image of the operating naval dock will be retained as much as possible, to provide shade and resting places to visitors.

(e) Installing guidance and explanatory boards

The boards newly installed in and around the component part will have a simple, uniform shape and design in harmony with the landscape.

(f) Installing administrative and utility facilities

The parking lot inside the component part will be removed, to be replaced with a parking area in the new Guidance Zone with an appropriate number of parking spaces. Protective fences will be installed on the riverbanks near the component part to prevent falling, and nets or the like will be used to keep out drifting objects during high tides. If toilets need to be upgraded or moved, the location will be considered consulting with concerned parties, including the option of moving them outside the component part. Additionally, utility facilities in the park will as a rule be upgraded selecting suitable locations. Simple shapes and designs will be used, in harmony with the landscape inside the component part. They should not be wrongly identified as the "outdoor exhibits" of the underground archaeological remains displayed on the surface of the earth layer covering underground archaeological remains.

(g) Installing guidance facilities

The "indoor exhibits," set up in the guidance facilities in the Guidance Zone, will be tied in with the "outdoor exhibits" of the remains covered with the earth layer to further understanding.

(4) Arranging and improving landscape from the standpoint of scenic view

(a) Arranging and improving landscape inside the component part

The city will move, remove, or upgrade the facilities deemed not suitable for location inside the component part, such as the parking lot and the above-ground display facilities based on drawings from the Taisho era (1912-1926). The habitat of the reed beds along the river, reminiscent of the waterside landscape when Mietsu Naval Dock was in operation, will be maintained while keeping down overgrowth. Trees will be removed if they threaten the underground remains, while those trees that function as scenic beauty and shade along the riverbank will be kept, and grass will be planted in open areas. Trash and other objects that drift onto the site will be properly removed, to maintain the good appearance of the component part and surroundings.

(b) Arranging and improving landscape of the buffer zone

The terrain and land usage of the Agricultural Land Zone, River Zone, and Village Zone in the buffer zone

have been largely retained from the time Mietsu Naval Dock was in operation, and will continue to be maintained by Saga City and Okawa City (Fukuoka Prefecture) in accordance with the applicable laws, including the Act Concerning Establishment of Agricultural Promotion Areas and the Landscape Act. A viewing point will be established on the third-story terrace of the Tsunetami Sano Memorial Museum that exists in the Guidance Zone, with an overall view, enabling visitors to imagine the environment around the naval dock when it was in operation.

4. Projects implementation

(1) Order of priorities

The city has set projects implementation periods starting from 2017, consisting of a Short Term period of five years, a Medium Term period lasting the next five years, and a Long Term period following thereafter.

In the Short Term period, integrated exhibits will be carried out linking the "indoor exhibits" in the guidance facilities with the "outdoor exhibits" inside the component part. While conducting excavation and historical document surveys, and moving the parking lot, the indoor exhibits in the guidance facilities will be completed, and work will start on the outdoor exhibits, including displays of the underground remains in the component part.

In the Medium Term period, the progress of projects in the Short Term will be checked, and the work on outdoor exhibits in the component part started in the Short Term period will be completed.

In the Long Term period, visitor surveys and monitoring will be continued along with maintenance and conservation of the constituent elements, and arranging and improving landscape inside and outside the component part. Activities tied to related modern-era remains will also be carried out.

The following items will be carried out with high priority.

- Academic information will be collected, and excavation and historical document surveys will be continued to further the value.
- The parking lot inside the component part will be removed, and replaced with a new parking area in the Guidance Zone.
- The guidance facilities will be established, and after completion of excavation surveys in the component part, outdoor exhibits, including displays of the underground remains on the surface of the earth layer, will be finished.

(2) Review of implementation schedule

Around 2026, the final year of the Medium Term period, a thorough review will be made of the projects conducted in the Short Term and Medium Term periods, and if issues needing remediation are found, the schedule will be revised.

(3) Other

The city has carried out conservation and restoration work, etc. for the Mietsu Naval Dock 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.

* As for Saga Prefectural Government and Saga City, approximately 149 million yen was spent in FY2016 (including the amount spent for plan making, surveys and public utilization of the component part) and 184 million yen has been budgeted for FY2017 (including the amounts earmarked for plan making, surveys, relocation of parking lots and public utilization of the component part), both excluding the cost for day-to-day maintenance.

Categories	Details	Short Term					Medium Term	Long Term
		2017	2018	2019	2020	2021	2022-2026	2027 and after
Conducting investigative studies	Excavation surveys							
	Historical document survey							
	Survey and analysis of visitor behavior							
	Enhancement of monitoring							
Preservation and strengthening of constituent elements	Maintenance, conservation and restoration of constituent elements							
	Moving of parking facilities							
Presenting systems for shipbuilding and ship-repair	Setting visitors flow lines							
	Presenting above-ground displays indicating buried remains							
	Arranging and improving landscape and planting vegetation							Outdoor exhibits
	Installing guidance and explanatory boards							
	Installing administrative and convenience facilities							
	Installing facilities for guidance							Indoor exhibits
Arrangement and improvement of landscape from the standpoint of scenic view	Arranging and improving landscape inside the component part							
	Arranging and improving landscape in the buffer zone							

Table 2 Project implementation schedule

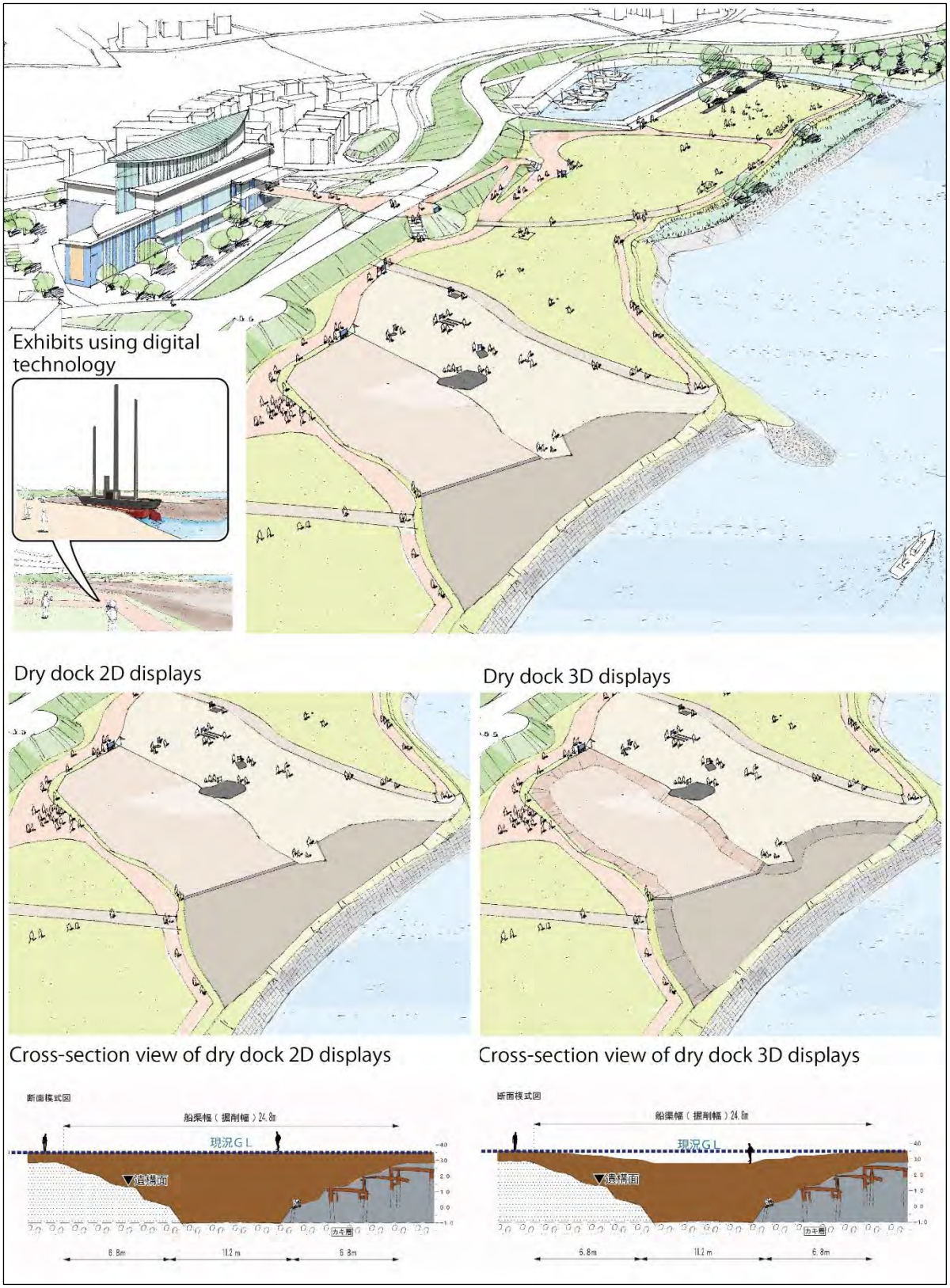


Figure 6 Envisioned state of completion at end of medium term

5. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Mietsu Naval Dock, which became a source of "Conservation Work Programme and Implementation Programme" is available on Saga City's web site. <https://www.city.saga.lg.jp/main/42997.html>

Conservation work programme and implementation programme for Kosuge Slip Dock (Area 6 Nagasaki/ Component Part 6-1)

Nagasaki City and the Mitsubishi Heavy Industries Nagasaki Shipyard (MHI Nagasaki Shipyard) drew up a "Conservation Work Programme and Implementation Programme" for Kosuge Slip Dock in FY 2016 and 2017, pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by attached to the decision of 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. Approach to conservation

When Japan was establishing itself as an industrial power, Kosuge Slip Dock contributed to this process in the shipbuilding field, merging traditional techniques with Western shipbuilding and repair technology. The buildings and remains characteristic of these accomplishments will be conserved, while taking considerations for the environment where they are located.

The eight component parts included in Area 6 Nagasaki of the Sites of Japan's Meiji Industrial Revolution are industrial heritages representative of the shipbuilding and coal industries after the ban on building of large ships was lifted in 1853. They testify to the process of rapid industrialization in heavy industries in Japan. Their special importance is in helping to understand the connections of the two eras in the two industrial fields of shipbuilding and coal mining, namely, the period of directly introducing Western techniques and the period of establishing industrialization.

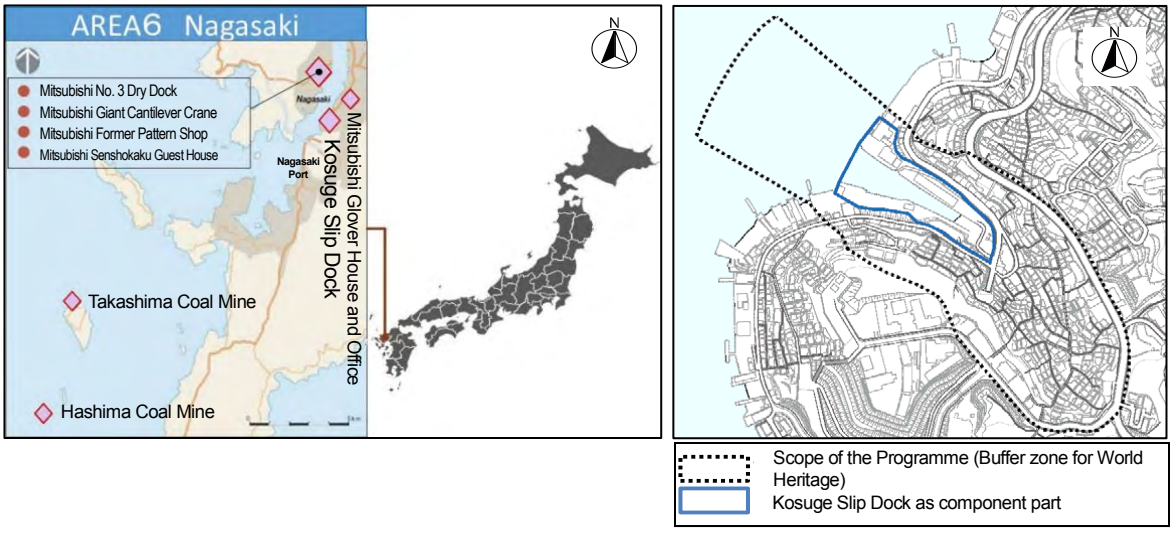


Figure 1 Location of the component part and scope of the Programme

Kosuge Slip Dock is a set of remains demonstrating how Japan's traditional techniques came to be merged with Western industrial technology, and in a very short time industrialization in this field progressed to completion. Central to the component part is the modern Western-type slip dock itself, the first in Japan to be driven by a steam engine, as Western technology was being introduced into Japan. It consists of a hauling hut that is the oldest brick building remaining in Japan, stone masonry bank protections, and other remains characteristic of the Meiji era when the dock was in operation.

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

Section	Period	Element	Value types of elements		
			OUV	Central government	Region, etc.
Slip dock	Meiji Era (1868-1912)	Rail (one rail in the middle)	○	○	○
		Rail (one rail on each side)	○	○	○
	Showa Era (1937-1953)	Rail (two rails on each side, for small ships)		○	○
		Bogie		○	○
Hauling machinery	Meiji Era (1868-1912)	Boiler (renewed in 1901)	○	○	○
		Hauling machine (including grooves for machine installation)	○	○	○
		Chain	○	○	○
	Showa Era (1937-1953)	Rolling winch		○	○
		Rolling winch housing		○	○
Hauling hut	Meiji Era (1868-1912)	Hauling hut	○	○	○
		Stack pedestal	○	○	○
Masonry work remains	Meiji Era (1868-1912)	Stone masonry bank protection	○	○	○
		Stone stairway and remains of the stone wall of the administration building	○	○	○
Left bank	Meiji Era (1868-1912)	Landform	○	○	○
		Stone stairways (2)	○	○	○
Right bank	Meiji Era (1868-1912)	Landform	○	○	○
		Stone masonry of waterway (including arch stone masonry)	○	○	○

Table 1 The list of elements constituting Kosuge Slip Dock and their value categories

Out of these elements in the **Table 1**, while the Conservation Work Programme for Kosuge Slip Dock 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, Nagasaki City and MHI Nagasaki Shipyard will firmly conduct projects for passing down those elements to the next generation in as good condition as possible, with a reciprocal cooperation with a central focus on the following two points.

(1) Conservation and restoration based on characteristics and the present state of Kosuge Slip Dock

Since Kosuge Slip Dock represents the starting point of the shipbuilding industry history, Nagasaki City and MHI Nagasaki Shipyard will faithfully maintain the remains from the initial operation in the Meiji era, as a component part contributing to the Outstanding Universal Value. At the same time, from the standpoint of the process of historical changes and developments relating to the Kosuge Slip Dock, remains not just from the Meiji era but those from the Showa era, during which operation was continued as a boat factory, to the present day, will be conserved based on their individual nature and the history of their transformation.

The first steps will be to determine the current issues and take measures to slow deterioration of each of the remains, for maintaining them in good condition to the extent possible. From the period when the facility was first established to the Meiji operating period, Showa operating period, and the time thereafter, many aspects have not yet been clarified, such as the characteristics in each period and the changes they underwent. These aspects will therefore be investigated. In parallel with these studies, Nagasaki City and MHI Nagasaki Shipyard will start the work for conservation and restoration in cooperation, giving priority to those parts showing notable deterioration.

(2) Indicating systems for shipbuilding and ship-repair based on the characteristics of Area 6 Nagasaki

At the Kosuge Slip Dock, under the cooperation with MHI Nagasaki Shipyard, Nagasaki City will provide information focusing on the constituent elements contributing to Outstanding Universal Value, including Japan's oldest surviving brick building, created by merging traditional Japanese techniques with industrial technology imported from the West, and the modern Western-style slip dock itself, powered by Japan's first steam engine. The city will also provide information on operation of the facilities continuing into the Showa era. These aspects will be provided with a close focus on actual objects. Indications of the component part will therefore show the role of the Kosuge Slip Dock in the Outstanding Universal Value, as well as aiming for understanding of the roles played by the hauling hut, the hauling machinery, and the slip dock rails in the hauling process, and the roles of the foundation,[4] stone masonry bank protections, and other remains, while showing the objects themselves.

2. Policy

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

(1) Conducting investigative studies

To confirm anew the contribution of the component part to Outstanding Universal Value of the World Heritage property, Nagasaki City will carry out excavation surveys and surveys of relevant historical documents to find out more details about the situation during the Meiji operating period and the functions of and changes to each of the elements of the Slip Dock.

In addition, using monitoring charts prepared for the purpose, Nagasaki City and MHI Nagasaki Shipyard will monitor the site and conduct surveys to determine the state of metal deterioration and look for looseness or swelling of the stone masonry. The visitor situation will also be reflected in measures for proper preservation and for presentation, public utilization and promotion.

(2) Preserving, reinforcing, and stabilizing the architectural elements and archaeological remains of the slip dock in terms of materials, substance, and structure

Nagasaki City and MHI Nagasaki Shipyard will maintain and conserve the remains of Kosuge Slip Dock, and improve their environment, with a reciprocal cooperation, to enable harmonious information provision of the nature of the architectural elements and archaeological remains, focusing on the Meiji operating period from the standpoint of Outstanding Universal Value, but including the Showa operating period during which the component part was still in use. The hauling hut, in particular, will be maintained and conserved with due attention paid to its being Japan's oldest surviving brick building, and to the hauling machinery being the first in Japan to be driven by a steam engine, as Japan's first modern Western-style slip dock. From a similar standpoint, the rails and stone masonry remains making up the slip dock from the Meiji operating period will be maintained and conserved. Specific steps will include reinforcement of the bricks, aseismic reinforcement of the brick building, rainwater drainage and groundwater measures, and rustproofing measures. The optimal combination of approaches for these steps will be chosen with due attention to the interworking between methods.

(3) Indicating systems for shipbuilding and ship-repair

To enable understanding of the hauling mechanism, Nagasaki City and MHI Nagasaki Shipyard will set up tour routes in the component part, and indicate the workings of the boiler and gears and how ships were hauled at the slip dock. The cherry trees, azalea, and other plantings around the hauling hut will be trimmed or removed to avoid adverse impact on the building and stone walls, and to improve the scenery, safety, and comfort.

[4] The base built under the slip dock for accommodating the rails

(4) Arranging and improving the landscape from the standpoint of scenic view

The Kosuge Slip Dock is situated on an inlet going to Nagasaki Port. It was created by altering the river channel while making use of the delta topography impacted on both sides by hilly terrain. This surrounding terrain has been retained to this day as a unified part of the slip dock constituent elements, such as the rails and their foundation, the stone masonry bank protections, and the hauling hut; and because of the significance of making visitors aware of both as an integrated landscape, with a reciprocal cooperation, Nagasaki City and MHI Nagasaki Shipyard will improve elements that obstruct this landscape.

The entire Kosuge Slip Dock, situated on the delta terrain, can be seen from the sea inside Nagasaki Port in the buffer zone and from high vantage points in the background. Accordingly, the foreground landscape will be cleaned up to enable easy visibility from ships bound for tours of the Takashima Coal Mine (Component part 6-6) and Hashima Coal Mine (Component part 6-7).

(5) Implementing projects

The MHI Nagasaki Shipyard as owner of the component part, Nagasaki City, experts, and citizens will jointly establish a system for management and project implementation and conserve and restore the building and remains.

3. Methods

(1) Investigative studies

(a) Excavation surveys

Excavation surveys of the Kosuge Slip Dock have not been carried out up to now. Such surveys will be necessary, however, in the case of constituent elements giving evidence that it was the first modern Western-style slip dock driven by a steam engine. These elements include the Lancashire boiler from the beginning of the Meiji operating period, the chimney base, and other underground remains. It will further be necessary to clarify the nature of the slip dock rail (one rail on each side) of Meiji era, which are currently only partially exposed and the masonry work remains on both banks of the slip dock. The results of the studies will then be used to conserve, restore, and reinforce these elements. These above surveys will be conducted by Nagasaki City under the cooperation with MHI Nagasaki Shipyard.

(b) Historical document surveys

Under the cooperation with MHI Nagasaki Shipyard, Nagasaki City will survey historical documents relevant to the remains to gather basic information necessary for clarifying the nature of each of the remains and methods for conservation, restoration, presentation and public utilization of the component part. The systematic collection of data can hardly be called adequate at this point, as only a few materials including old photographs have been confirmed. Accordingly, along with the existing study results, the collection of data will also cover not-yet-confirmed research results in related fields such as industrial history, architectural history, and industrial machinery.

(c) Detailed surveys of current state

While there are topographical maps of the current state, detailed drawings have not yet been made of the individual constituent elements, namely, the hauling hut, hauling machinery, slip dock, and masonry work remains. Records have therefore not been collected of the current state of deterioration and problem locations. Nagasaki City and MHI Nagasaki Shipyard will implement creating detailed drawings of current state of remains and recording of problems of the individual constituent elements.

(d) Monitoring

Nagasaki City and MHI Nagasaki Shipyard will create monitoring charts for comprehensively and systematically collecting information on constituent elements, and use them to keep track of the state of and changes to the component part. The results will be analyzed yearly based on monitoring indicators, and annual report will be made to the Nagasaki Conservation Council (for non-working properties) asking for

its views. The results will also be reflected in the phased conservation, restoration, presentation and public utilization methods for each constituent element. The monitoring results from monitoring charts will be designed to be useful in particular when renovating the building and remains, with the instruction and advice of experts.

(2) Conservation and restoration

(a) Scope

Under the cooperation with Nagasaki City, MHI Nagasaki Shipyard will implement conservation and restoration (including maintenance and repair) focusing on constituent elements from the Meiji operating period that contribute to the Outstanding Universal Value. Methods for conservation and restoration of constituent elements from the Showa operating period will also be studied in detail based on survey results.

(b) Basic concept and methods

➢ **Hauling hut**

The environmental conditions in the area around the hauling hut, where deterioration of the wall bricks is advanced, will be listed and measures will be taken especially to prevent water permeation and inflow from outside into the bricks and building. Bricks that have deteriorated due to water permeation will be repaired, drainage measures will be taken to collect and drain rainwater and groundwater seeping into the building, and aseismic reinforcement of the building itself will be implemented.

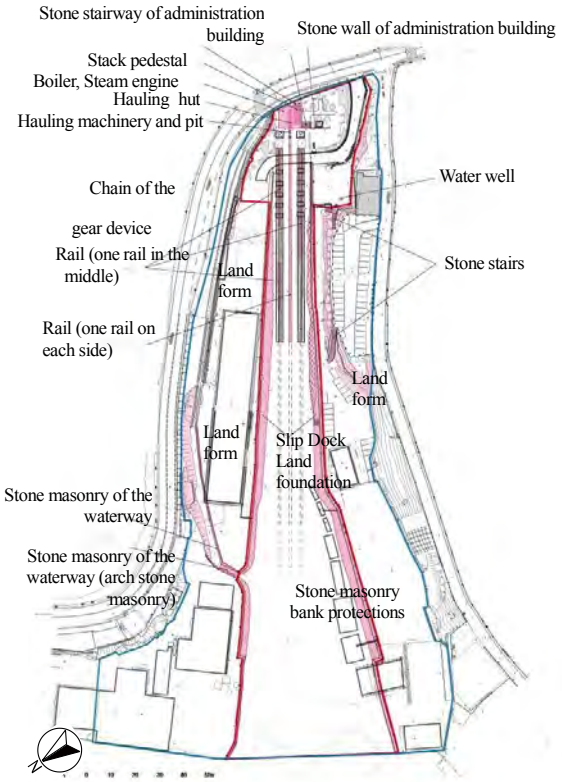


Figure 2 Constituent elements of Kosuge Slip Dock

➢ **Hauling machinery**

Machinery in the hauling hut remaining from the Meiji operating period, including the boiler, steam engine, gears, and chains, will be maintained and repaired. Particular attention will be paid to improving the situation whereby rainwater and groundwater collect in the pit and overflow in rainy weather.

➢ **Slip dock**

In determining priorities in repairs, the following factors are to be considered: value classified as belonging to the Meiji or Showa operating periods; environmental conditions classified as belonging to non-inundation or inundation areas; the state of deterioration of steel objects due to rust (surface rusting, surface flaking or layer flaking, overall swelling). Having considered these factors, priority will be given to places belonging to the Meiji operating period, showing surface rust and/or surface flaking, and located in non-inundation areas.

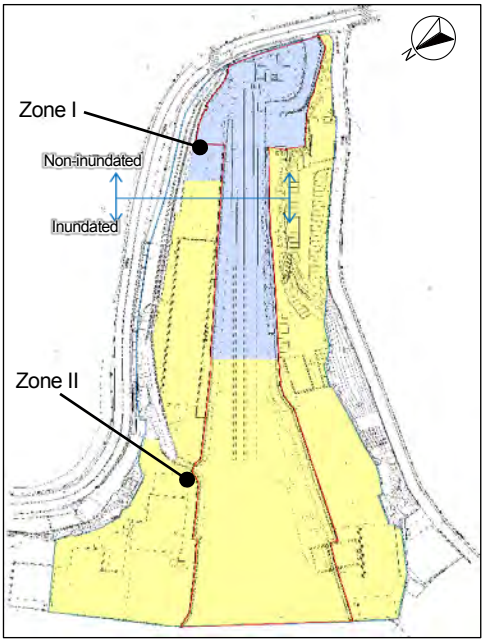
➢ **Stone masonry**

Focusing mainly on the stone masonry bank protections and stone stairs involved in both the Meiji and Showa operating periods, changes up to now will be clarified, and regular monitoring will be conducted to check for changes in the state of stone masonry (looking for swelling, loosening, stone cracks, missing stones, shifting of position, etc.). For cases requiring urgency, a minimum extent will be defined and the stone structure will be restored with dismantling.

(3) Indicating systems for shipbuilding and ship-repair

Dividing into the following two zones, under the reciprocal cooperation, MHI Nagasaki Shipyard and Nagasaki City will carry out designing visitor flow lines for the purpose of indicating the Kosuge Slip Dock remains in the shipbuilding and repair systems.

Zone I is defined as the area where remains from the Meiji operating period are still to be found, and consisting of land areas that can be toured by visitors. Zone II is the area where remains are to be surveyed to clarify the full picture, and where special ingenuity will be needed for showing and explaining the remains to visitors.



Zone I	Land areas that can be toured by visitors
Zone II	Area where remains are to be surveyed to clarify the full picture, and where special ingenuity will be needed for showing and explaining the remains to visitors

Figure 3 Zoning of component part and surrounding area

(i) Flow lines

At this component part, part of a site where corporate activity is taking place will be opened to the public. Since crossing of visitor movement with this corporate activity cannot be avoided, flow lines will be designed that enable corporate actors to readily predict the movement of visitors (see **Figure 4**).

(ii) Terrain modification/environment improvement

No new terrain modification will be carried out, as the existing terrain and pavement will be used. However, paths will be set as visitor flow lines and fences showing deterioration will be removed.

(iii) Arranging and improving landscape and planting vegetation

The main focus of explanations to visitors will be the slip dock rails, stone masonry bank protections, and the hauling hut and hauling machinery itself. To prevent obstruction of the view of the slip dock and hauling hut, not only on the site but from ships in Nagasaki Port, cherry trees impacting the building will be delimbed and azaleas and other plantings will be trimmed back.

(iv) Installation of guidance and explanatory boards

Nagasaki City will install signposts in appropriate spots to guide visitors along the flow lines described in (i) above so that they can receive explanations and have a good look at the site as they take the tour. It will also set up information boards showing how the dock looked when it was in operation in comparison with how it looks today, using illustrations and photos..

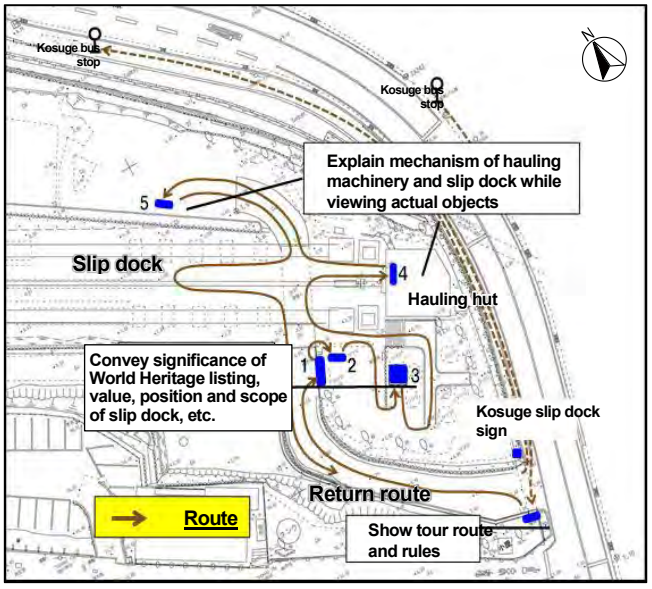


Figure 4 Tour route

(v) Administrative and utility facilities

Visitor surveys up to now have pointed to such issues as the relatively short time spent on the tour of the component part, and concerns about getting in the way of corporate activity inside the component part. According to the former issue, rest facilities etc. for visitors will not be provided for the time being.

(4) Arrangement and improvement for the buffer zone from the standpoint of scenic view

Buffer zone with radius of 500 meters has been set northwest of the component part, to prevent the erection of structures that might obstruct the view of the hauling hut from the sea. The land area of the buffer zone is protected by the Nagasaki City Landscape Plan (general area) formulated based on the Landscape Act, while the harbor area and sea portion are protected by the Ports and Harbor Act, as Nagasaki City and Nagasaki Prefecture are cooperating appropriately in conservation and restoration of the component part. Moreover, since the overall Kosuge Slip Dock terrain and the slip dock as part of the landscape can be visually recognized from the sea, MHI Nagasaki Shipyard will trim or remove trees and other plantings that might obstruct the view from ships headed for tours of Takashima Coal Mine and Hashima Coal Mine.

4. Project implementation

(1) Order of priorities

The projects implementation schedule is as shown in **Table 2**. Dividing the projects implementation period into a Short Term (first 5 years) and Medium to Long Term (6th to 10th years) periods, conservation, restoration, presentation and public utilization will take place in phases.

The following items will be given priority in the Short Term period.

・Measures to conserve hauling hut from rainwater and groundwater seepage; brick preservation measures	・Aseismic reinforcement of hauling hut
・Installation of pit drainage facility	・Hauling machinery conservation measures
・Slip dock rail and ship cradle rust-prevention treatment, etc.	・Creating detailed drawings of current state of masonry work remains and making repairs as needed
・Installing guidance and explanatory boards and route markers, and replacing entrance signs	・Trimming/removal of trees

In the Medium to Long Term period, excavation surveys will be carried out to seek possibilities for furthering the value of the heritage.

(2) Review of implementation schedule

After around ten years, the implementation schedule will be reviewed based on project progress to date. If the need arises for new action, revisions will be considered without waiting for ten years to pass.

Constituent element	Main methods	I (2017-2021)	II (2022-2026)
Hauling hut	Rainwater and groundwater seepage		
	Brick conservation		
	Aseismic reinforcement		
	Guidance and explanation facilities		
Hauling machinery	Pit drainage facility		
	Hauling machinery protection		
Slip dock	Rust-proofing of rails and ship cradle		
Stone remains	Creating detailed drawings of current state and making repairs as needed		
Showing and promotion	Explanatory boards, route markers, entrance sign replacement		
Trees and plantings	Trimming/removal		
Left bank	Investigation of stone stairs, survey of related historical documents		
Right bank	Tree trimming/removal		

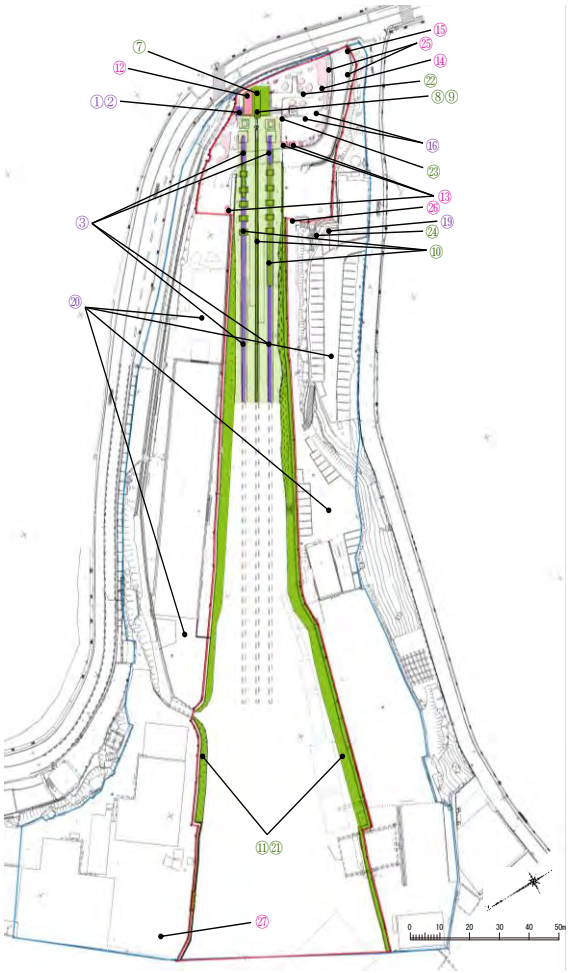
(3) Other

MHI Nagasaki Shipyard and Nagasaki City has carried out conservation and restoration work, etc. for the Kosuge Slip Dock 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 5 million yen was spent in FY2016 (including the amount spent for plan making) and 3 million yen has been budgeted for FY2017, both including the costs incurred or earmarked for the presentation and public utilization of the component part, but excluding the cost for day-to-day maintenance.

5. Basic Plan

The basic plans for Kosuge Slip Dock project implementation items is as shown in **Figure 5**.



Short Term (1st to 5th years)

Investigative studies	(1) Excavation survey of original stack pedestal (2) Excavation survey of original Lancashire boiler remains (3) Excavation survey of slip dock secondary rail (4) Survey of historical documents relating to hauling hut (5) Survey of historical documents relating to hauling machinery (6) Survey of historical documents relating to slip dock
Conservationof buildings and remains	(7) Measures to conserve hauling hut from rainwater and groundwater seepage, rainwater measures, brick preservation measures, aseismic reinforcement, fire prevention measures (8) Hauling machinery conservation measures (9) Pit drainage measures (10) Slip dock rail conservation measures, ship cradle conservation measures, slip dock ground conservation measures (11) Stone masonry bank protection conservation measures (guidelines for renovation)
Component part presentation	(12) Hauling hut exhibits and promotion (13) Putting up explanatory boards (14) Trimming/removal of trees around hauling hut (15) Replacement of entrance signs

Medium to Long Term (6th to 10th years)

Investigative studies	(16) Excavation surveys of government office remains, stone stairs, and stone walls (17) Survey of historical documents relating to well and brick remains (18) Survey of historical documents relating to signpost and brick remains (19) Investigation of remains including area around east stone stairs (20) Excavation surveys of underground remains
Conservation of buildings and remains	(21) Measures for conserving stone remains, and repairs based on urgency (22) Conservation of government building (23) Conservation of stone stairs and walls (24) Restoration including area around stone stairs
Component part presentation	(25) Replacement of existing fences (26) Removal of concrete-block wall, gate, and rails (27) Tree trimming and removal so as not to obstruct view from sea

Figure 5 Basic plan (phased conservation, restoration, presentation and public utilization)

6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Kosuge Slip Dock, which became a source of "Conservation Work Programme and Implementation Programme" is available on Nagasaki City's web site. <http://www.city.nagasaki.lg.jp/kanko/840000/843000/index.html>

Conservation work programme and implementation programme for Takashima Coal Mine (Area 6 Nagasaki/ Component Part 6-6)

Nagasaki City drew up a "Conservation Work Programme and Implementation Programme" for Takashima Coal Mine in FY 2015 to 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. Approach to conservation

By investigating, conserving and restoring the mine shaft and other archaeological remains and arranging and improving the landscape that recall the past when the modern coal industry was born in this place, the component part will be utilized as a resource for learning, for community promotion, and for researching.

The Nagasaki Area where the Takashima Coal Mine is located is home to eight of the 23 component parts. It has a special role that sets it apart from other Areas, in helping to understand the two eras in the three industrial fields of iron and steel, shipbuilding, and coal mining, namely, the period of directly introducing Western techniques and the period of establishing industrialization, as well as the interrelationship of these three fields.

The Takashima Coal Mine is the first mine in Japan to introduce modern coal extraction techniques. Along with the Hashima Coal Mine (Component part 6-7) where the techniques were carried on, it played an important role in providing fuel for steamships and coking coal for iron and steel making, and as the founding place for the modern coal industry.

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

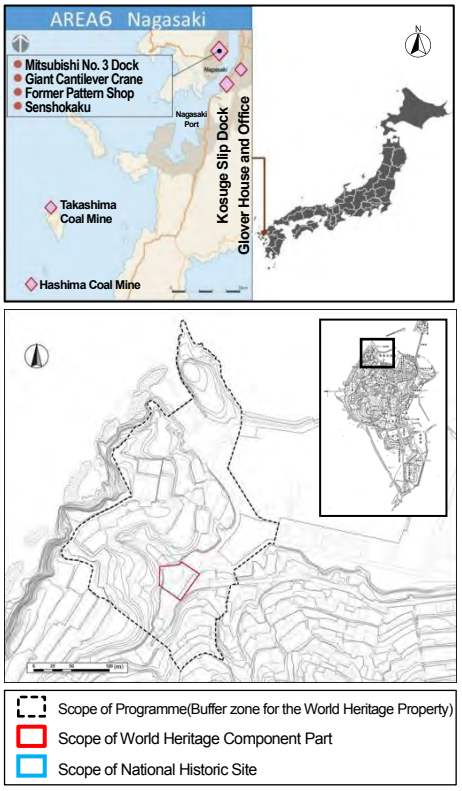


Figure 1 Location of the site and scope of Programme

Component parts	Period		Element	Value Types of Element		
				OUV	Nat'l	Local/Other
Takashima Coal Mine	Meiji	Initial Period	Hokkei Pit remains	○	○	○
			Facility remains around Hokkei Pit	○	○	○

Table 1 The list of elements constituting Takashima Coal Mine and their value categories

Out of these elements in the **Table 1**, while the Conservation Work Programme for Takashima Coal Mine 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, Nagasaki City will firmly conduct projects for conservation, restoration and presentation of the component part with a central focus on the following two points

In Area 6 Nagasaki, the Takashima Coal Mine and Hashima Coal Mine can be regarded as an integrated site for experiencing the history of coal mining. Considering the process of historical changes and developments of Takashima Coal Mine, conservation, restoration, presentation, public utilization, and provision of information to visitors, will be carried out focusing on the functions and links of the remains that enable understanding of the entire coal production system, including coal extraction and transport.

(1) Conservation based on the characteristics of the remains and the current state

Most of the archaeological remains are buried under ground, and other than the Hokkei pit, many aspects have not yet been investigated. Excavation surveys will therefore be carried out regarding the underground archaeological remains other than the pit, to the minimum necessary extent.

To avoid adverse impacts on the remains, day-to-day maintenance will be conducted, including small repairs, basically to improve and stabilize the Hokkei pit and surrounding environment.

(2) Public utilization by diverse methods

Given the lack of compelling communication regarding the contribution of the Takashima Coal Mine to the World Heritage Outstanding Universal Value, and of its role as the starting place of the modern coal industry, the component part will be exploited as a resource for learning and community promotion. For this purpose, old photographs showing the state in the past when the mine was operating and explanatory boards will be placed, and facilities will be installed to introduce the results of excavation surveys. Provision will further be made of a view between the Takashima Coal Mine and former coal loading port, and guidance signs and routes will be set up to the second house of Thomas Glover and the former coal loading port, distant from the component part. In such ways, visitors will be able to envision the entire coal production system including coal extracting and transport.

To improve access to the component part on the island, ship and bus schedules will be revised, rental cycles and the like will be made available, and integrated tours of the entirety of Takashima Island and Hashima Island will be made possible, in such ways aiming to increase the number of visitors.

2. Policy

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

(1) Conducting investigative studies

Nagasaki City will seek to further awareness of the Outstanding Universal Value by continuing with surveys, including (1) field investigations and excavation surveys of the remains, (2) historical document surveys for clarifying the coal production system including extraction and transport, (3) landscape surveys of the World Heritage and surrounding area, and (4) surveys of visitors and their impact on the component part. One purpose for surveys of underground archaeological remains and ongoing historical document surveys is to clarify the individual functions and interrelationship of the Takashima Coal Mine and other mines located on Takashima.

In addition, Nagasaki City will conduct regular monitoring, using monitoring charts, to determine the state of the component part and its buffer zone, and will reflect the results in the annual report.

(2) Maintaining, strengthening, and stabilizing the remains in terms of the material, substance and structure

The city will conduct day-to-day maintenance, along with monitoring, mainly to improve the preservation environment so the remains can be kept in stable state. Phased reinforcement, stabilization and other conservation work will also be carried out, assigning priorities, based on an overall assessment of the role and deterioration state of each of the remains. Along with day-to-day maintenance of the Hokkei pit, future measures will be taken to prevent sand accumulation and to prevent collapse of the west steep slope.

(3) Showing the coal production system including extraction and transport

It will be necessary to foster understanding of not only the coal industry but also the interrelationship among three industries that are iron-making, steel-making and shipbuilding industries whose advances were made possible by coal. To this end, the city will convey to visitors the nature of the Takashima Coal Mine in the early days of Japan's coal industry development, making integrated use of the site including surrounding facilities. Among the means to be used are (1) posting of explanatory boards, (2) providing flat displays on the surface of the underground archaeological remains, (3) showing the locations of rail remains for coal loading, and (4) providing views of the former coal loading port.

(4) Arrangement and improvement of the buffer zone from the standpoint of scenic view

Visitors will need to be able to recognize visually the broad expanse of the land on which the coal mining facilities were located in the past, centering on the Hokkei pit. To aid visitors in picturing the coal production system at the time, from coal extraction to transport and loading on ships, while comparing the site with old photographs, the city will ensure a view of the area between the Takashima Coal Mine and the former coal loading port north of it. For this purpose, plantings around the remaining Hokkei pit will be trimmed, and in the future, the wastewater treatment facility serving residents adjacent to the component part will be removed.

In the buffer zone, appropriate guidance will be provided regarding the appearance of dwellings and protective fences, etc. in consideration of the component part landscape.

(5) Implementing projects

The city will draw up a project implementation schedule for ensuring each of the projects is carried out in phases and on time. It will include such matters as project deadlines, methods for implementing the project in phases, items to be carried out in each fiscal year.

At appropriate times, the city will review the schedule, while ensuring communication with the owners and managers of the land involved in the project, and confirming the project progress each year. As the body with overall responsibility for managing and operating projects as a whole, the city will coordinate with parties and organizations concerned, including advertising, holding of events, and working with stakeholders.

3. Methods

Specific methods for conservation, restoration, presentation and public utilization are indicated below. The city has the main responsibility for each of these items.

(1) Investigative studies

(a) Excavation surveys and on-site investigations

Excavation surveys will be continued for coal mining facilities including the underground archaeological remains around the Hokkei pit and the coal loading rail remains. In the future, all or part of the wastewater treatment facility now in operation for the adjacent community will be removed, and the entire coal production system from extraction to transport and loading will be made clear.

(b) Historical document surveys

After the Takashima Coal Mine was closed, many tunnels were developed on the island making use of and advancing the mining technology. The history of Takashima when it was thriving as a coal island will be investigated based on historical documents on the Takashima Coal Mine held by research institutions, house organs of labor unions, and newspapers from the time. The historical document surveys will provide the role of the Takashima Coal Mine, covering such aspects as the significance of Takashima mines, including the Hashima Coal Mine, for the history of technology, the relation to steelmaking and other industries, and the relation to other coal mines in Japan.

(c) Surveys of visitor numbers and behavior

Surveys will be conducted to verify the effectiveness of the project and determine the impact of visitors on the state of the remains on and under the ground. The results will be reflected in better ways of utilizing the

component part of the World Heritage property. Visitor numbers and behavior will be surveyed as part of this effort.

(d) Monitoring

Monitoring charts have been created for comprehensively and systematically collecting information on the constituent elements, and will be used to keep track of the state of the component part and the buffer zone. The results will be reported to the Nagasaki Conservation Council, in accordance with the World Heritage operational framework, asking for its views. If any negative effects are detected and verified, measures will be taken to remove the causes or lessen the impact. The effectiveness of the measures will then be verified by conducting inspections.

(2) Conservation and restoration of buildings and archaeological remains

(a) Scope

Conservation (maintenance, repair and restoration) applies to the constituent elements of the component part contributing to the Outstanding Universal Value (**Figure 2**).

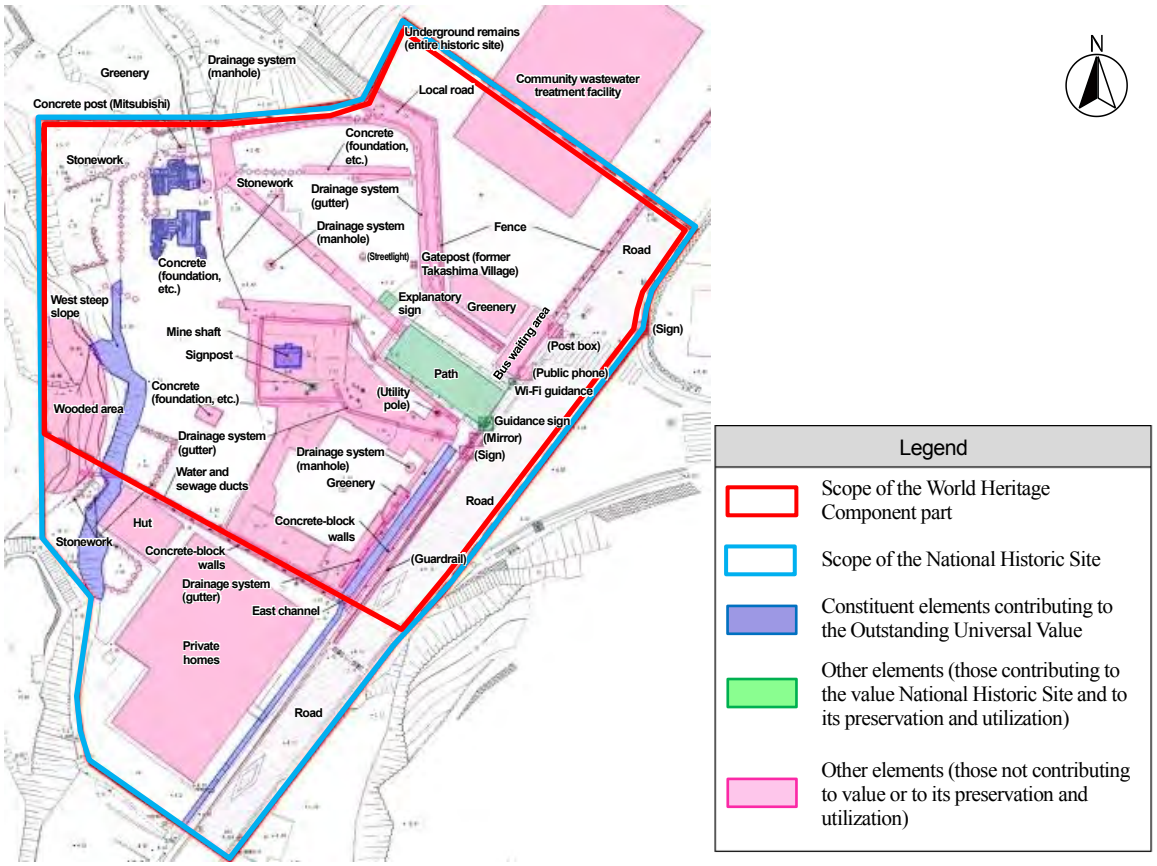


Figure 2 Constituent elements subject to conservation and restoration

(b) Basic concept and methods

- **Hokkei pit**

For the time being, day-to-day maintenance including minor repairs will be carried out to prevent deterioration and keep the remains in stable condition. After the mine was closed, the Hokkei pit came to be used as a well and alterations were made to the frame and other parts exposed above ground. Materials that were clearly added later and that diminish the value of the Hokkei pit remains will be removed. To prevent sand accumulation in the Hokkei pit, measures will be taken to stop the inflow of rainwater, etc.

- **West steep slope**

The situation will be monitored regularly and records will be kept of the results. Day-to-day management of the steep slope will be carried out and trees affecting collapse will be trimmed, to ensure the remains are maintained in stable condition (**Figure 5**).

- **East water channel**

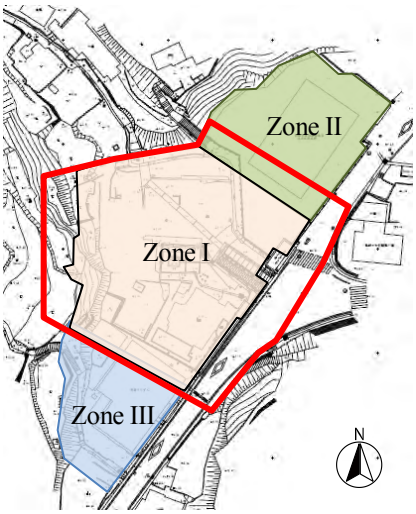
This channel remains as a concrete underground drain. For the time being, records of the current state will be kept and monitoring will be continued. If investigations make clear the original state, restoration will be carried out at that point in time (**Figure 5**).

- **Underground remains (entire area of the component part)**

The remains reburied after excavation surveys, such as the brick structures including chimney, the stone remains, and earthen remains, will be left in their buried state to prevent damage. The remains unearthed in excavation surveys of Takashima Coal Mine to be conducted hereafter will likewise be reburied, covered with protective earth layers of appropriate thickness, and preserved underground.

(3) Presentation of the coal production system including extraction and transport

While expanding the scope for public utilization in phases, from Zone I to Zone III, utilization will be made as a resource contributing to school education and education of the public as well as for tourism.



Zone I	Scope currently open to the public
Zone II	Scope reusable after removal of the community wastewater treatment facility to the north
Zone III	Scope making use of private land
	Scope of the component part

Figure 3 Zoning of the component part and surrounding area

(a) Visitors' flow lines

Visitors' flow lines will be set up in the component part linking learning points and other places where remains are displayed, etc., and it will guide visitors in stages to the former coal loading port in the north. Visitors' flow lines will also be set up connecting the Takashima Coal Mine to the former coal loading port and Glover's second house (**Figure 6**).

(b) Terrain modification/environment improvement

Outdoor paths will be paved with earthen material or other materials appropriate to the landscape. A slope will be installed at the entrance to the component part.

(c) Arranging the landscape and planting vegetation

Trees near the west steep slope (**Figure 5**) will be trimmed and the slope will be stabilized. The water supply and drain pipes on the surface of the concrete block walls bordering the private land on the south will be obscured by shrub plants or by board fencing with a design like that seen in old photographs. Trees that threaten the preservation of the remains will be trimmed as needed, and no new trees will be planted.

(d) Guidance and explanatory facilities

Guidance and explanatory boards will be placed inside the component part and in the surrounding areas. The boards will have a uniform design and size befitting the landscape, and will include support for disabled visitors and multiple languages. As the scope of public utilization is expanded in phases from Zone I to Zone III, guidance and explanatory boards and guide markers leading to surrounding facilities will be installed. Guide markers will show the flow lines on the surface of paved walkways.

(e) Administrative and utility facilities

As the scope of public utilization is expanded in stages, an observation space will be installed on the site where the community wastewater treatment facility is currently located, north of the component part. Diorama models, explanatory boards and other facilities with guidance functions will also be set up (**Figure 5**).

Rest facilities will be installed in the park near Glover's second house, to the north of the component part, and visitor parking areas for cars and bicycles will be provided, as well as toilets and benches (**Figure 6**).

(4) Arrangement and improvement for the buffer zone from the standpoint of scenic view

In the buffer zone, electric wires, utility poles, protective fences, the community wastewater treatment facility, dwellings and other objects detrimental to the landscape will be arranged and improved, and a view will be provided between the Takashima Coal Mine and former coal loading port.

4. Projects implementation

(1) Order of priorities

The city will draw up a 30-year projects implementation schedule starting from the year 2018. The Programme is divided into three phases of ten years each. The priorities and overall Programme are subject to revision based on such factors as the results of investigations and monitoring and progress in purchasing up private land on the south side. Urgently needed conservation and restoration work will be carried out whenever necessary.

The city will proceed with conservation and restoration work in the following order: (1) the scope currently open to public utilization (Zone I), (2) the scope that will become reusable after removal of the community wastewater treatment facility (Zone II), and (3) the scope of the land where the community wastewater treatment facility existed and of usable private land (Zone III). The following items will be given priority in Phase I.

- Removal of unnecessary facilities harming the Outstanding Universal Value
- Trimming of trees on the west steep slope that may lead to collapse of the slope, etc.
- Setting up observation space and explanatory boards that convey value and promote proper understanding

(2) Review of implementation schedule

Around the time Phase I has completed (10 years), the implementation schedule will be reviewed based on project progress to date. If the need arises for new action, revisions will be considered without waiting for ten years to pass.

(3) Other

The city has carried out conservation and restoration work, etc. for the Takashima Coal Mine 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 27 million yen was spent in FY2016 and 14 million yen has been budgeted for FY2017, both including the costs incurred or earmarked for the presentation and public utilization of the component part, but excluding the cost for day-to-day maintenance.

Category	Project implementation items	Phase I (1st to 10th year)		Phase II (11th to 20th year)	Phase III (21st to 30th year)
		1st half	2nd half		
Conservation	(1) Ongoing survey of underground remains	←		→	→
	(2) Reburying following excavation surveys	→	→	→	→
	(3) Removal of facilities diminishing the Outstanding Universal Value	←		→	→
	(4) Measures for maintaining state of west steep slope	←		→	→
	(5) Measures for preventing sand accumulation in the mine shaft			←	
Presentation and public utilization	(6) Installation of communication facilities	←	→	→	→
	(7) Placing of guidance signs and route markers leading to former coal loading port, and environment improvement	←	→		
	(8) Recording and classification of archaeological remains and relics	←	→	→	→
	(9) Communication of classification results	←	→	→	→

Table 1: Project implementation schedule

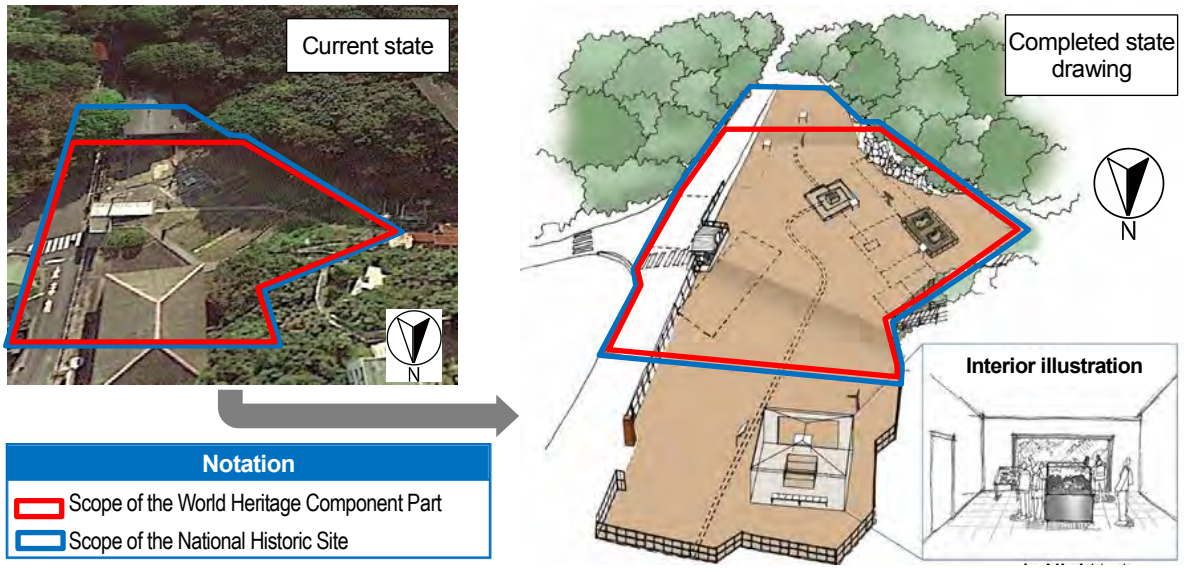


Figure 4 Conceptional drawing of Takashima Coal Mine conservation, restoration, presentation and public utilization

5. Basic Plans

The basic plan showing Takashima Coal Mine projects implementation is given in **Figures 5** and **6**.

6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Takashima Coal Mine, which became a source of "Conservation Work Programme and Implementation Programme" is available on Nagasaki City's web site. <http://www.city.nagasaki.lg.jp/kanko/840000/843000/index.html>

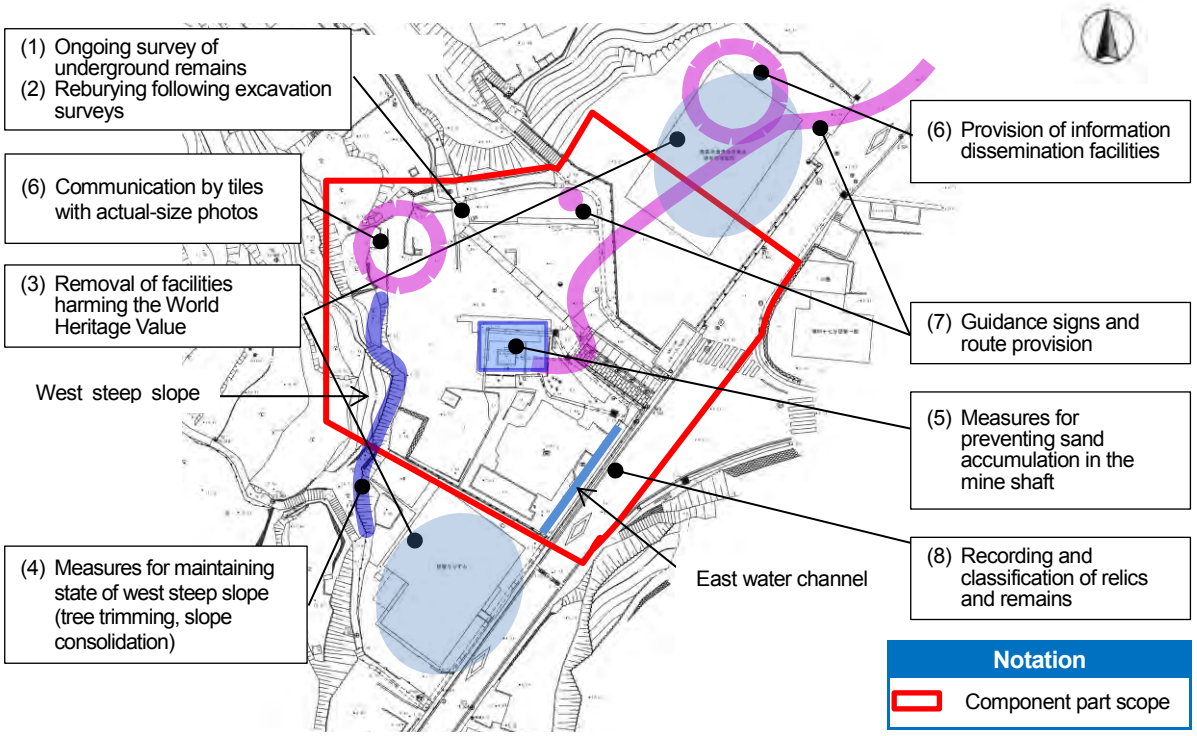


Figure 5 Takashima Coal Mine Plan (numbers correspond to Table 2)

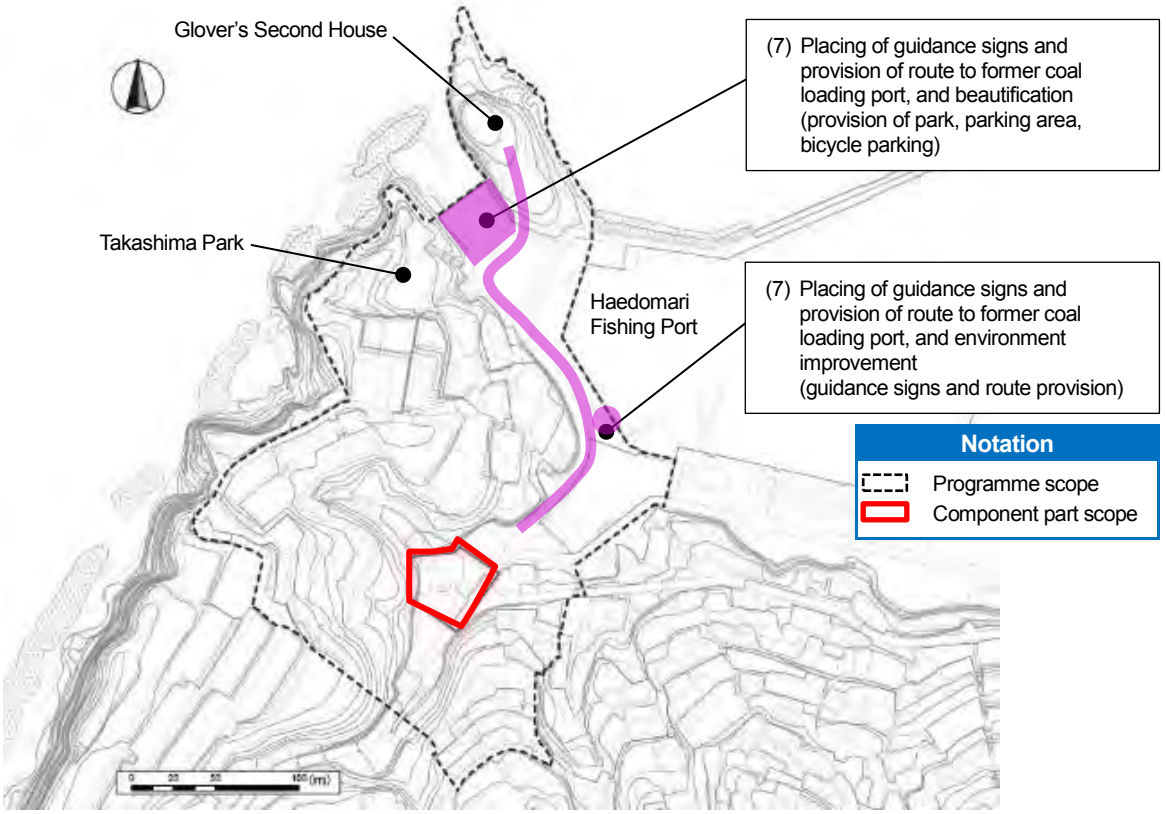


Figure 6 Takashima Coal Mine Periphery Plan (numbers correspond to Table 2)

Conservation work programme and implementation programme for Glover House and Office (Area 6 Nagasaki/ Component Part 6-8)

Nagasaki City drew up a "Conservation Work Programme and Implementation Programme" for Glover House and Office 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. Approach to conservation

Restore the deteriorated sections of the house in which Thomas B. Glover resided and did business to inherit them for future generations his role in the industrial revolution of Japan during the Meiji era and the overall value of Nagasaki's foreign settlement, including this house, as a stage for introducing Western technology to the nation.

Area 6 Nagasaki of the "Sites of Japan's Meiji Industrial Revolution" constitutes eight of the 23 component parts, including Glover House and Office. The Area is unique for encompassing the stages of the direct importation of Western technology and of the full-blown industrialization of Japan, and is uniquely positioned to provide an understanding of the mutual connections between the iron and steel, shipbuilding, and coal industries.

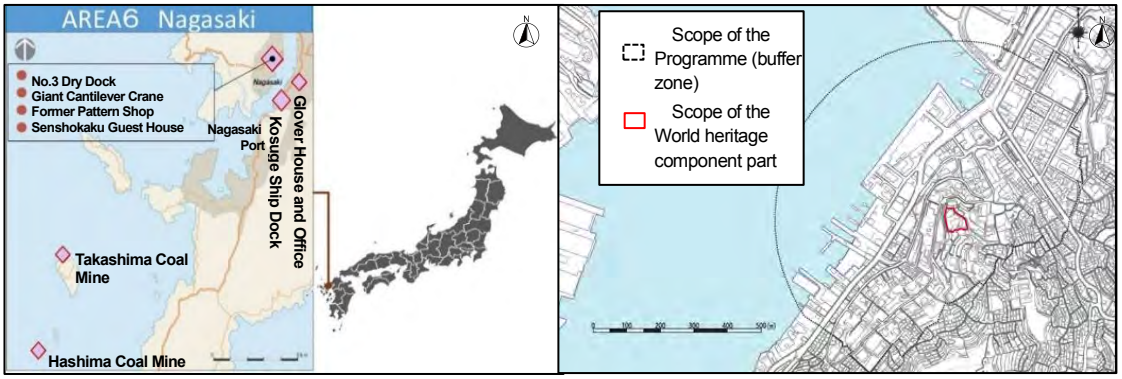


Figure 1. Component part location in Area 6 Nagasaki and scope of the Programme for Glover House and Office

Thomas B. Glover, a Scottish merchant, brought Western technology to Japan and cultivated human resources by helping Japanese nationals to study abroad. He played a pivotal role in Japan's industrial revolution during a short period of about half a century of from the end of the Edo period through the Meiji era. Glover House and Office was his residence and a place of commerce, on a top of hill overlooking Nagasaki shipyard within a foreign settlement created when the port opened to Western trade at the end of the Edo period. It is the oldest surviving Western-style wooden house in Japan.

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

Component element		Details	Values of component element		
			OUV	National	Regional
Glover period	Main building	Drawing room, bedroom, guest room, storeroom (for small tools,etc.), study (room for storing important documents), greenhouse,dining hall, dining room, liquor storage room, pantry, entrance hall, child's room, workshop, toilet, verandah, corridor, corridor connecting with the annex	○	○	○
	Annex	Kitchen, furnace, chimney, coal storage, water storage facility, sink, Konnyaku bricks of the floor, Mrs. Glover's room (North), Mrs.Glover's room (East), servant's room (North), servant's room (West), servant's room (South), corridor, verandah	○	○	○
	Garden	Cliff (to the south of the Glover House), pond, stone masonry (to the northwest and northeast of the Glover House) , Flower beds (to the south and northwest of the Glover House, Stone pavement of the garden path, flowerbeds, monuments, trees	○	○	○
Administration periodother than Glover	Barn	Barn		○	
	Stable	Stable, natural storeroom		○	
	Other elements within the scope of the component part of the Property	Stairs			○

Table 1: The list of elements constituting Glover House and Office and their value categories

Out of these elements in **Table 1**, while the Conservation Work Programme for Glover House and Office 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, Nagasaki City will firmly conduct projects for conservation, restoration and presentation of the component part with a central focus on the following two points.

The townscape and views of Glover House and Office and the Nagasaki foreign settlement that ushered in Western technology are still intact. Nagasaki City will preserve the district for future generations as an important tourist destination in company with residents.

(1) Conservation and restoration of Glover House and Office based on its characteristics and current state

The house served as a residence and base for the trading and cultural activities of Glover, who shaped the development of Japan's coal and shipbuilding industries. Nagasaki City will improve the present state addressing the causes of deterioration, while the city will restore building to its original design during the Meiji era. Another goal is to have the masonry, cliff, and other elements of the landscape look as they would have when Glover lived at the house.

(2) Promotion by diverse methods about Glover House and Office

The city will endeavor to provide a new information delivery measures so people can compare the contemporary landscape with how it looked in old photos. The city will disseminate information focusing on the architectural historical value of Glover House and Office and the relationship between component parts of the Sites of Japan's Meiji Industrial Revolution and Glover himself. In the Glover Garden, as well as this residence, there are National Important Cultural Properties Ringer House and Alt House, and other Meiji era historic buildings relocated to Glover Garden. The city will update information to clearly present differences in the historical backdrops and value of these buildings.

2. Policy

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

(1) Conducting investigative studies

Nagasaki City will explore the historical documents to clarify the original usage of Glover House and Office and assess current rainwater drainage channels around the house. It will investigate visitor numbers and behavior to evaluate the current state of visitors and the impact on the component part. The city will also evaluate the conditions of the constituent elements of the component part and the buffer zone by periodically conducting follow-up observations through monitoring charts, reflecting the findings in the annual report.

(2) Preserving, reinforcing, and stabilizing the buildings and remains in terms of material, substance, and structure

Based on the results of aseismic assessment of Glover House and Office in FY 2016, Nagasaki City will undertake restore and earthquake resistance measures in FY 2018. Degradation of the walls, floors, wallpaper, and other parts of the building has progressed since the building became constantly open to the public as a tourism resource. After restoration, the city will endeavor to stabilize the building's stable condition through appropriate cleaning and other ongoing daily maintenance and mitigating the cause of the deterioration by installing air conditioners to enhance the indoor environment. It will also alleviate the impact of visitors' tread pressure on the facility by managing visitor flows in a given direction.

(3) Indicating contributions of the component part to the industrial revolution

Glover House and Office embodies two eras defined under the concept of the Outstanding Universal Value of the property. The first was that of the direct importation of Western science and technology and the second was that of the full-blown industrialization. To inform visitors properly the fact that Glover has direct ties with the coal and shipbuilding industries, notably through the development of the Takashima Coal Mine and construction of the Kosuge Ship Dock, and that he had great achievement toward Japan's industrialization, Nagasaki City will put up information boards and other installations.

(4) Arranging and improving the buffer zone from the standpoint of scenic view

The city aims to reproduce views of Nagasaki Port and the Nagasaki Shipyard of Mitsubishi Heavy Industries on the opposite site reminiscent of the time between the end of the Edo Period and the Meiji Era, when Glover flourished. It will recreate the garden below the northwest of the house at that time based on the results of studies of historical photos. While the construction dates of the barn and stable adjacent to the house are unknown, the city will repair degraded parts and open the interiors to the public. The city will endeavor to maintain the masonry, cliffs, and other elements of the settlement terrain, logging, removing, and pruning trees, and keeping the views tastefully integrating with buildings in the Glover Garden.

(5) Implementing projects

The city will ensure a carefully phased implementation of this Programme by formulating a projects implementation schedule that encompasses the project term, staged projects implementation method, and annual project agenda. The city will confirm projects progress every year while communicating with relevant managers and stakeholders to the scope of the Programme, review the projects implementation schedule at the appropriate times. In its supervising role for operating the progress of the projects for the component part, including for public relations, events, and stakeholder coordination, the city will liaise with stakeholders and related organizations.

3. Methods

(1) Investigative studies

(a) Document surveys

Surveys comprise the items as follows: comprehending the process of historical changes and developments of the buildings and the compound of Glover House and Office, the determining the scope

of the residential compound owned by Glover and the location of the main gate and approaching route to it at that time, identifying external facilities including the garden at that time based on old photographs, assessing the tree impacts on the masonry and other aspects of the environs for their pruning and cutting, identifying the course of rainwater drainage channels around Glover House and Office and their extents at that time, exploring the history of the furniture currently on display inside the buildings, determining the time when the barn and stable were constructed, and studying the activities in Japan of Glover himself, including in terms of the relationship between him and component parts of the Sites of Japan's Meiji Industrial Revolution.

(b) Surveys of visitor numbers and behavior

As well as assessing the effectiveness of the projects implemented, the city will study visitor numbers and behavior to identify the negative impact made by the visitors on the buildings and compound and reflect the findings in better utilization of this component part of the World Heritage property.

(c) Monitoring

The city will produce monitoring charts that comprehensively and systematically consolidate information on the state of constituent elements within the component part and regularly assess the condition of the component part and the buffer zone. The monitoring results will reflect in an annual report, submitting it to the Nagasaki Conservation Council based on the management structure of this World Heritage property and seek opinions from that body.

(2) Conservation and restoration

(a) Scope

Scope for conservation and restoration work will focus on the constituent elements of the Glover House and Office that contribute to the Outstanding Universal Value of the World Heritage property.

Constituent elements	
Main building	Drawing room, bedroom, guest room, storeroom (for small tools, etc.), study room (for storing important documents), greenhouse, dining hall, dining room, liquor storage room, pantry, entrance hall, child's room, workshop, toilet, verandah, corridor, corridor connecting with the annex
Annex	Kitchen (furnace, chimney, coal storage, water storage facility, sink, Konnyaku bricks of the floor), Mrs. Glover's room (East), Mrs. Glover's room (West), servant's room (North), servant's room (South), corridor, and verandah
Garden	Exterior (south, west, north, and east of building (front of stable), Japanese garden 1, Japanese garden 2, and masonry)

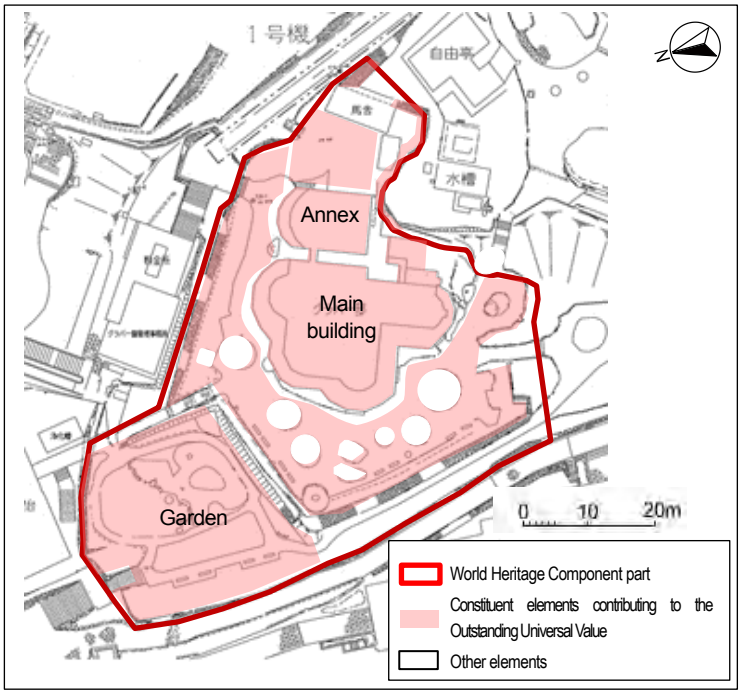


Figure 2 Constituent elements subject to conservation and restoration

(b) Basic concept and methods for conservation and restoration of Glover Garden as a whole

Maintenance and management will entail restoring ceiling paper, exterior wall plaster, and exterior paint, periodically cleaning the gutter and roof, and cutting and pruning trees that are not vital to the landscape. In line with aseismic reinforcement and restoration after FY 2018, the city will review and update the disaster preparedness equipment and revise indoor exhibits. The barn and stable will be opened after restoration. The city will assess and study old photographs of the Japanese garden around Glover House and Office and restore the garden to how it looked in the age set for restoring the main and attached buildings.

(3) Visitor management

(a) Zoning

The city will properly inform visitors of Glover's great contributions to Japan's industrialization as well as use Glover Garden overall to disseminate information about the Sites of Japan's Meiji Industrial Revolution by dividing Glover Garden into A, B, and C zones (see **Figure 3**) and improving the environment and arranging the views for each zone.

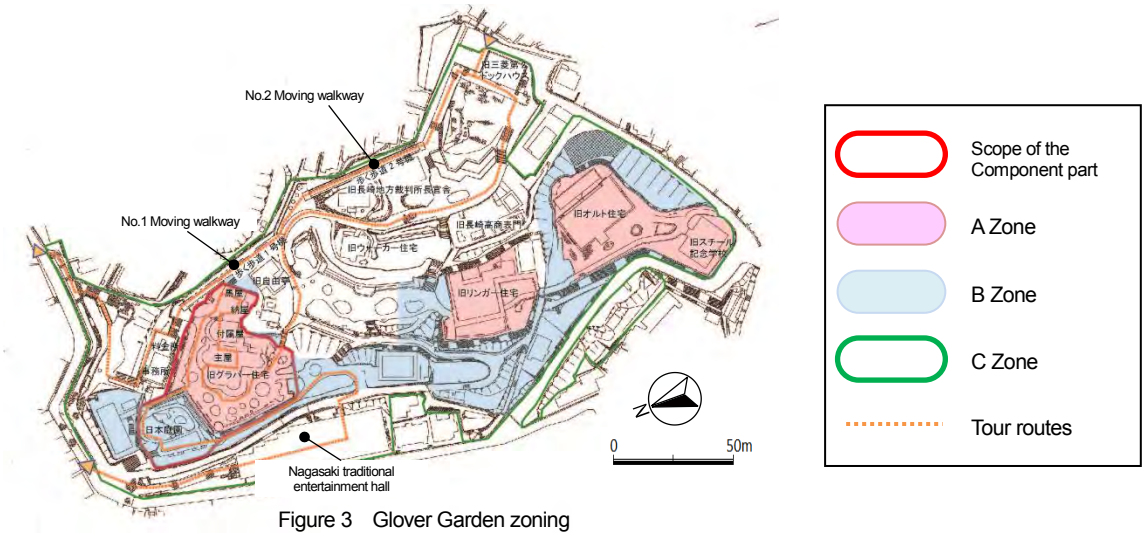


Figure 3 Glover Garden zoning

(b) Tour routes

Once inside Glover Garden, visitors will be guided to the Former Mitsubishi No. 2 Dock House at the top of the park to be informed about the Outstanding Universal Value of the World Heritage property consisting of 23 component parts and the positioning of the Glover House and Office therein. Visitors will thereafter be guided to Glover House and Office through viewpoints overlooking Nagasaki Port and the Nagasaki Shipyard of Mitsubishi Heavy Industries on the opposite side (**Figure 3**). Inside Glover House and Office, there will be a tour route guiding visitors from the entrance to private areas through the public space (**Figure 4**).

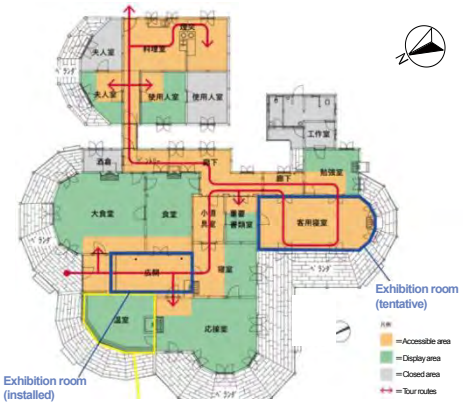


Figure 4 Tour route inside Glover House

Note: Visitor management approach regarding site utilization

Nagasaki city will formulate the following visitor management rules in opening the interior of Glover House and Office to the public while properly preserving structures.

(i) Entry and exit will be through one location each.

(ii) It will set up tour courses and post guidance signage indoors (**Figure 4**).

(iii) It will install air-conditioning facilities in appropriate locations.

(iv) It will regularly close the house or certain rooms to the public in some periods for repairs and

cleaning.

(c) Terrain correction and environmental improvements

It has been confirmed that some of the masonry on the east of Glover House and Office is swollen, and repairs and restoration will be made as determined necessary through ongoing monitoring. No masonry in B or C Zones currently require restoration.

(d) Arranging and improving landscape and planting vegetation

Trees would be cut, replanted, or pruned to return the compound to its condition when Glover resided there where:

(i) Having negative impact upon building maintenance
(ii) Being significantly different from those in the garden when Glover was there
(iii) Detracting from viewing the appearance of Glover House and Office
(iv) Blocking the view of Nagasaki Port from the front garden of Glover House and Office

(e) Guidance and explanatory boards

The Glover House and Office hall will be made the exhibition room, with commentary panels and digital imaging equipment showcasing Glover's activities and lifestyle. Based on future surveys and research findings, furniture that is contemporary with when Glover resided on the premises will be installed to transform the room appearance. The interior of the house and front garden will feature panels and replicas of old pictures and photographs and historical documents on the settlement. A consistent design and presentation approach will ensure that explanatory boards and guidance signs will not mar the landscape.

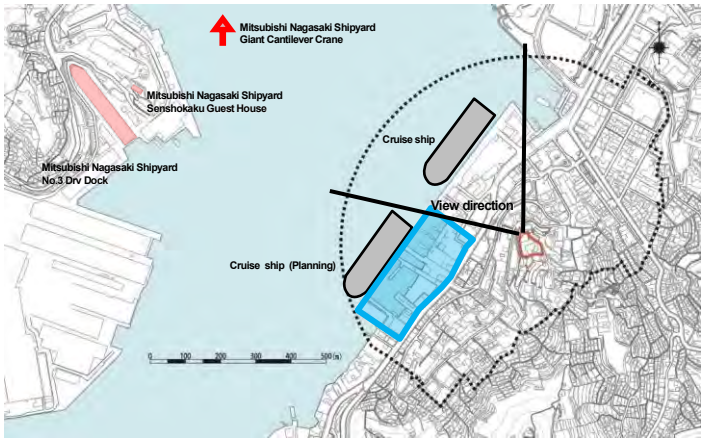
(f) Administrative and convenience facilities

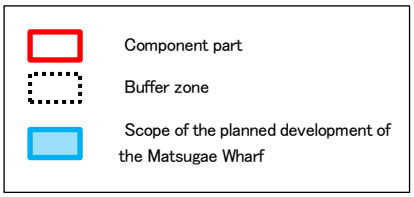
For such structures as the tollgate, toilets, and Nagasaki traditional entertainment hall (**Figure 3**) in Glover Garden (C Zone), and water storage tank, pump rooms, and other facilities, the city will undertake conservation and restoration in forms and colors fitting in the landscape of the former Nagasaki foreign settlement. At the same time, it will maintain and repair No. 1 and 2 moving walkways (**Figure 3**) in their current setup. As well as continuing to use the Former Mitsubishi No. 2 Dock House to provide information to visitors, the city will also employ other buildings designated as Important Cultural Properties and buildings selected as Historic Buildings in Glover Garden (**Figure 3**) as information and rest facilities.

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

To the extent permitted under existing laws and regulations, the city prunes and cuts trees that detract from the landscape of the buffer zone.

Nagasaki Prefecture's Plan for the Development, Utilization, and Preservation of Nagasaki Port (Nagasaki Port Plan) calls for constructing a new quay wall southwest of the existing quay wall of the Matsugae Wharf, located in the northwest of the Glover House and Office, enabling the wharf to accommodate two cruise ships (**Figure 5**). Due consideration will be given to the view of the port and its vicinity as the plan states as follows: "In order to conserve the historical and cultural value of Nagasaki Port so that it deserves its designation as a World Heritage property based on its contribution to the modernization of Japan, consideration shall be given to ensure the appropriate conservation of industrial remains that constitute a component part of the World Heritage property in developing and utilizing the port." The construction of the new quay wall will enhance the view from the Glover House and Office overlooking the Nagasaki Shipyard of Mitsubishi Heavy Industries, Ltd. by allowing a cruise ship to be berthed at the new quay wall (**Figure 6**). The construction of a new passenger terminal or any other facility in the area behind the newly constructed quay wall, whether on existing or reclaimed land, would also enhance the view, because due consideration would be given to the form and design of any such facility pursuant to the criteria for landscape formation under the Landscape Act. Nagasaki Prefecture will proceed with the planned development of the Matsugae Wharf after ensuring, in consultation with the Nagasaki Local Conservation Council and other concerned parties, that the plan will not negatively impact the Glover House and Office.





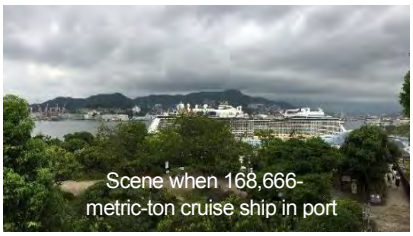


Figure 6　Simulation of view after Matsugae Wharf construction

4. Projects Implementation

(1) Order of priorities

Including for projects that are ongoing, Nagasaki city will determine a projects implementation schedule encompassing three phases over a total of 11 years. Phase I covers FY 2016 to 2020. Phase II will be FY 2021 to 2023, and Phase III will be FY 2024 to 2026 (**Table 2**). In three years from FY 2018, seismic reinforcement implementation design and reinforcement work will be concurrently conducted. Conservation and restoration of Glover House and Office is scheduled for completion during Phase I. Priority work during that phase would be as follows:

- Undertake conservation and restoration (external and interior finishes and exteriors) and aseismic reinforcement work for main building and annex
- Survey and elucidate site boundaries (including through marker installations)
- Repair existing drains and construct new drainage channels
- Take chronological measurements of masonry and install explanatory boards
- Prune trees
- Install explanatory boards and digital video equipment

(2) Revision of implementation schedule

The implementation schedule will be revised in line with projects' progress after 10 years. If new measures are necessary, the city will consider reviews without waiting for that time to elapse.

(3) Others

The city has carried out conservation and restoration work, etc. for the Glover House and Office 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 24 million yen was spent in FY2016 and 13 million yen has been budgeted for FY2017, both including costs incurred or earmarked for the presentation and public utilization of the component part, but excluding the cost for day-to-day maintenance.

Project items				Phase I (2016 to 2020)	Phase II (2021 to 2023)	Phase III (2024 to 2026)
A. Conservation and restoration	Buildings	Constituent elements	**A1. Conservation of degradation**			
			Design of conservation			
			Repair conservation			
			A2. Seismic reinforcement			
			Seismic assessment and seismic reinforcement estimate plan			
			Seismic reinforcement implementation design			
			Seismic reinforcement work			
		Other	**A3. Barn and stable restoration**			
			Seismic assessment of natural store in the stable, and barn and stable restoration design			
			Seismic reinforcement of barn and stable, and repairs to damage			
	Environment		**A4. Clarification of Glover House and Office site**			
			Survey and elucidation of site boundaries	Surve		
			A5. Rainwater drainage upgrades			
			Repair of existing drains and construction of new drainage channels	Surve		
B. Visitor Management	Tour routs		**B1. Establish route inside Glover House and Office**			
			Establish tour route by considering original entrance		Survey and study	
			B2. Establish route in Glover Garden			
			Establish tour route			
			Segment surface finishes of B and C zones			
	Vegetation		**B3. Pruning of trees and arranging of Japanese garden**			
			Prune trees that detract from assets and landscape	Trees detracting from assets		Trees detracting from
			Restoration of a terrace in front of the building and Japanese garden on the lower terrace based on old photos		Survey and study	
	Guidance and explanation		**B4. Exhibits in conservation area**			
			Install furnishings matching to the Meiji era	Survey and study		
			Disseminate information utilizing old photos inside and outside exhibition room		Interior Exterior	
			Reproduce conditions at the time and display cannon models, and other items			
			B5. Install outdoor signs with uniform designs			
			Install information boards and building explanatory boards			
	Facilities		**B6. Set up administrative and convenience facilities**			
			Exhibit interiors of traditional structures and install furniture			
	Public presentat		**B7. Maintaining masonry**			
			Survey masonry period and install explanatory board	Survey		

Table 2 Projects implementation schedule

5. Basic Plan

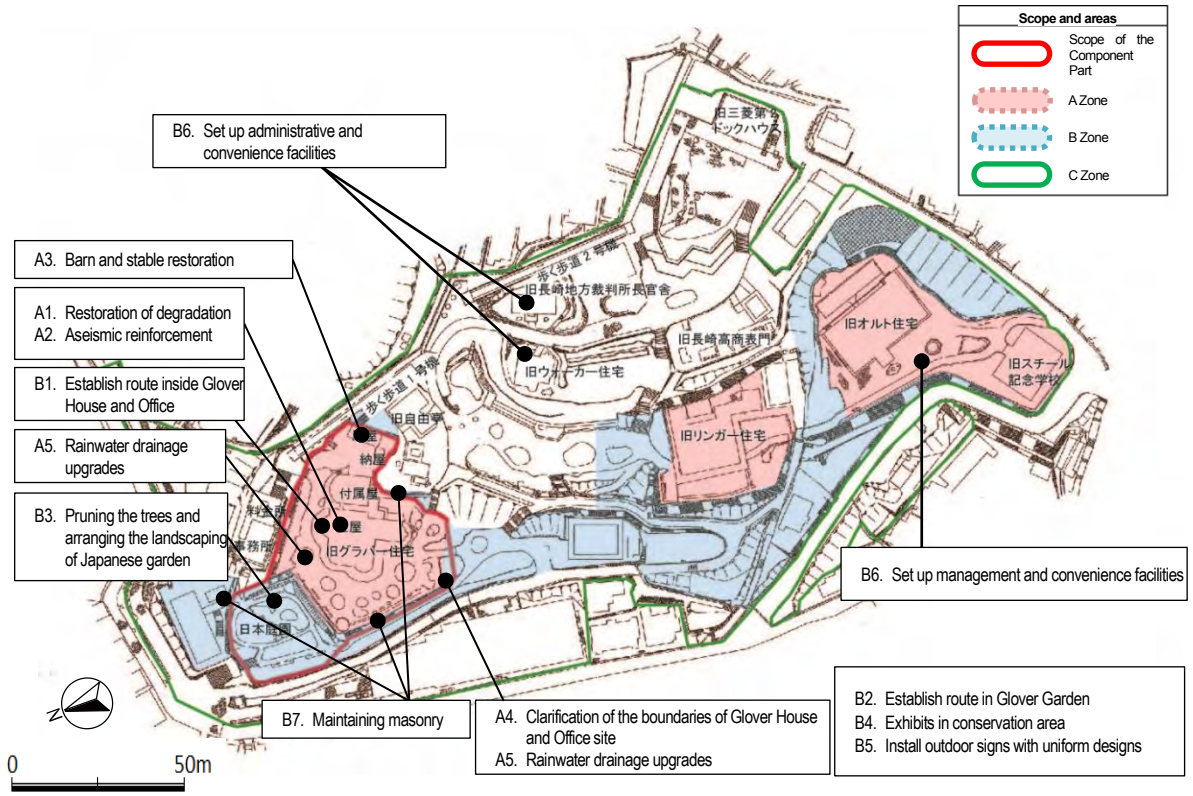


Figure 7 Basic plan for Glover House and Office site

6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Glover House and Office, which became a source of "Conservation Work Programme and Implementation Programme" is available on Nagasaki City's web site. <http://www.city.nagasaki.lg.jp/kanko/840000/843000/index.html>