

State of Conservation Report

Sites of Japan's Meiji Industrial Revolution:

Iron and Steel, Shipbuilding, and Coal Mining (Japan) (ID: 1484)

**CABINET SECRETARIAT
JAPAN**

State of Conservation Report

Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining (Japan) (No. 1484)

1. Executive Summary

The Government of Japan created this State of Conservation Report to provide responses to those requests noted in Decision 44 COM 7B.30 adopted by the World Heritage Committee at its 44th session. Prepared jointly by the Cabinet Secretariat, relevant ministries and agencies, local governments, component part owners, and other parties, this report is based on the “*Sites of Japan's Meiji Industrial Revolution: Kyushu-Yamaguchi and Related Areas, General Principles and Strategic Framework for the Conservation and Management*” (hereinafter referred to as “Strategic Framework”). It also contains reports on progress with those recommendations and requests noted in Decision 39 COM 8B.14 made at the 39th session of the World Heritage Committee.

Our summary of the 44th World Heritage Committee Session Decision (44 COM 7B.30) is as follows:

➤ Paragraph 6

The Government of Japan has responded sincerely to the decisions of the World Heritage Committee and has faithfully addressed these in line with the statement made by the Government of Japan at the time of the inscription on the World Heritage List in 2015. It has endeavoured to base its interpretation on objective facts, such as by properly exhibiting primary sources of clear provenance and testimonies verified to have a degree of credibility.

Regarding dialogue with the concerned parties, discussions are being carried on regularly with those involved in the Sites of Japan's Meiji Industrial Revolution, as efforts are made to engage in a wide range of dialogue. Ongoing dialogue is being carried out also at the Industrial Heritage Information Centre (IHIC) with domestic and international experts and visitors. Furthermore, the Government of Japan will continue the dialogue it has conducted to date with the governments of the concerned state parties, including the Republic of Korea.

➤ Paragraph 7

This report is provided on the state of progress with the conservation of the property since December 2019.

The draft report was discussed in May 2022 with Local Conservation Councils, formed pursuant to the Strategic Framework in each Area in which component parts of the Sites of Japan's Meiji Industrial

Revolution are located and comprising national and local government representatives and component part owners, etc.

The Cabinet Secretariat also heard the opinions from domestic and international members of the Expert Committee on the Industrial Heritage including Operational Sites, established in line with the Strategic Framework, on February 7 and September 14, 2022, and appropriately reflected their feedback in this report. The National Committee of Conservation and Management for the Sites of Japan's Meiji Industrial Revolution, established as a venue for the mutual exchange of views and discussions with relevant government ministries and local governments, met on September 7 and October 31, 2022, and approved this report. In these ways, it was endeavoured to ensure all due communication and solid consensus-building among the various parties involved with working and non-working component parts of the property.

2. Outline of responses to the Decision of the World Heritage Committee

This report consists of 1. Main Document and 2. Appendices.

(1) Main Document

The main text of replies to each matter requested in the Decision

(2) Appendices

Additional materials relating to each of the replies in (1) Main Document.

Outline of responses to the Decision of the 44th Session of the World Heritage Committee

Our replies to each matter requested in the Decision are summarized below. For details, see (1) Main Document and (2) Appendices.

➤ Paragraph 6

The Government of Japan has responded sincerely to the decisions of the World Heritage Committee and has faithfully addressed these in line with the statement made by the Government of Japan at the time of the inscription on the World Heritage List in 2015. It has endeavoured to base its interpretation on objective facts, such as by properly exhibiting primary sources of clear provenance and testimonies verified to have a degree of credibility. In addition to enhancing investigation, research, exhibits and interpretations of the IHIC, ceaseless efforts will continue to be made toward improving the overall interpretation, including initiatives in each Area.

The Government of Japan has been implementing interpretation appropriately based on the Interpretation Strategy. The following text provides a summary response to each of the requests in paragraph 6 of Decision 44 COM 7B.30.

(1) Consistent OUV common presentations across all component parts (paragraph 6 a))

The interpretive strategy has been developed and was submitted to UNESCO in 2017. A key focus of the strategy is the contribution of each site to the Outstanding Universal Value (OUV) of the property, building upon an interpretation audit which examined this issue.

In response, work is underway at the visitor centres in the various Areas which include the component parts to introduce a common exhibition modelled on that of the IHIC as the overarching interpretation of the World Heritage listed Sites of Japan's Meiji Industrial Revolution as one property. This addresses the contribution of each site to the overall OUV.

Collaboration with the IHIC will be enhanced in line with the interpretation plans developed for each Area.

(2) Updating the "full history" of each site (paragraph 6 a))

With regard to the full history of each site, again, this is an issue specifically addressed in the Interpretation Strategy submitted to UNESCO in 2017, including policies regarding the focus of interpretation, the scope of the full history, interpretation of industrial workers' stories, and research on Koreans in Japan before, during and after World War II, including research on the policy of requisition affecting workers from the Korean Peninsula.

The IHIC provides information on the full history of each component part, including changes over time in their industrial activities, making use of immersive multi-displays and other presentation means that are designed to be easily updated at any time as further research yields new information. Exhibits and descriptions in each Area will be enhanced, such as by introducing common exhibits, while coordinating with the IHIC. As appropriate, workers stories are to be updated based on primary historical documents and oral testimonies verified to have a degree of credibility, and such information is already included in the IHIC but will be expanded over time. Research to supplement this understanding continues, and this will in turn be used to update interpretation.

(3) Information gathering related to workers, including workers from the Korean Peninsula (paragraph 6 b))

As noted above, the Interpretation Strategy includes a policy related to research on Koreans in Japan before, during and after World War II, including research on the policy of requisition affecting workers from the Korean Peninsula. This is related to gathering workers' stories based on primary historical documents and oral testimonies, and the presentation of this material.

Ongoing investigations are being conducted of primary sources, oral testimonies, published materials and other materials concerning industrial labour at the places where workers, including those from the Korean Peninsula, were employed during World War II. Information of high

historical value will continue to be archived, and new information introduced into updated interpretation while having the information undergo analysis and verification by experts.

Primary materials of clear provenance and verified testimonies are exhibited at the IHIC. This includes information about the policy of requisition, and about the lives and working conditions of requisitioned workers from the Korean Peninsula working at some of the sites within the World Heritage property, noting that such workers were only present at some sites. It should be noted that, for example, work at Hashima Coal Mine, indeed probably for most mines in the world in the period, was severe for all miners. However, credible evidence to date has not indicated these conditions were any worse for those from the Korean Peninsula. Nonetheless, research continues on working conditions.

(4) Establishment of the IHIC (paragraphs 6 c) and 6 d))

The IHIC was established in March 2020 in accordance with the provisions of the Interpretation Strategy. It has functions for investigation and research, capacity-building, and information dissemination relating to industrial heritages. In addition to information dissemination on the World Heritage value of the Sites of Japan's Meiji Industrial Revolution as the World Heritage Site, various investigations are being carried out regarding industrial labour, including those related to workers from the Korean Peninsula during World War II, while obtaining the views of experts. After expert analysis and verification, primary materials of clear provenance and testimonies verified to have a degree of credibility are presented in exhibits.

As part of its investigation and research activities, the IHIC has been collecting a large number of official documents, newspaper articles, books, and other diverse materials, regardless of whether they are consistent with the views of the Government of Japan or not. The IHIC has also made some of these collected materials available to visitors for use in order to show part of its investigation and research activities.

The lives and working conditions of requisitioned workers from the Korean Peninsula who were at some of the sites during World War II are documented in the information held by the IHIC, and some of this material is also on display or available to visitors. In the context of a broader project to research working conditions for industrial workers, it is expected this information will grow over time and provide the basis for updated displays.

The Government of Japan believes the current Interpretation Strategy provides a sound basis for interpreting the full history of the property. It is recognized that the interpretation of the property at the time of inscription required improvement, as evidenced in the interpretation audit which underpins the Strategy. Following the audit and development of the Strategy, a considerable effort has been made to improve interpretation. There have been many achievements, not least being the establishment of the IHIC. Nonetheless, there is more to do to achieve a consistent and high-

level of interpretation across the whole property, and there is also an ongoing research task to support and update interpretation.

Exhibits and descriptions will continue to be enhanced, while using the most appropriate digital tools, with the aim of realizing interpretation that meets the level of international best practice, so those objective facts can be provided in an engaging way to visitors.

(5) Capacity-building programmes and training manuals

Training continues to be provided to guides and other staffs in each Area through collaboration between the IHIC and the visitor centres in each Area.

(6) World Heritage Route

Because the series as a whole is a technology ensemble demonstrating OUV, the Government of Japan encourages visitors to visit all the sites related to Japan's Meiji Industrial Revolution in order to have an accurate picture of the World Heritage property, in accordance with the Interpretation Strategy. The World Heritage Route is designed as a network linking component parts over a wide area to further understand the World Heritage value. To promote this initiative, the World Heritage Route Promotion Council was established as a forum bringing together those involved in each component part, tourism and transportation-related businesses, and citizens' groups. By means of maps, apps, GPS navigation, and road signs with the standard logo, the Council continues to carry out initiatives for encouraging visitors to visit all component parts.

(7) Onsite and online interpretation generated from Digital 3D resources

Efforts are being undertaken to increase public awareness interest and education through visual presentations including the provision of virtual access through the 3D resources. This includes the use of the 3D resources of Scottish Ten, using laser scanning technology for guide apps, augmented reality Maps in each Area, and immersive multi-display systems in the IHIC and visitor centres in each Area.

(8) Continuing dialogue between the concerned parties (paragraph 6 e))

Regarding dialogue between the concerned parties, regular discussions are held and there is an effort to engage in a wide range of dialogue. In addition, ongoing dialogue is held with domestic and foreign experts and visitors at the IHIC. Furthermore, the Government of Japan will continue the dialogue it has been conducting to date with the governments of the concerned State Parties, including the Republic of Korea.

➤ **Paragraph 7: Matter concerning conservation and management**

Regarding the conservation of the respective component parts, conservation measures have been drawn up based on a prioritized implementation schedule with reference to the “Conservation Work Programmes and Implementation Programmes” for each component part that was submitted to UNESCO on November 30, 2017. The status of progress with these measures since December 2019 is noted below.

Regarding the “anchorage for small vessels” that was planned for Miike Port at the time of inscription, an alternative plan will be implemented, of improving the existing anchorage facility in Miike Port by means of a floating pier, in order not to damage the OUV and allow the concerned parties to continue using the port safely. As for the observation deck and other interpretation facilities to be developed in the Miike Port buffer zone, these will not have adverse impacts on the attributes of Miike Port that contribute to the OUV, and together with the existing observation deck in the buffer zone to the northeast of the harbour, they will help visitors better understand the uniquely designed shape and operation of the port.

In addition to the above, a number of previously reported projects are also included again here, namely, Proposed plan for the Terayama Charcoal Kiln post-disaster recovery and repair project (Area 2, Kagoshima); Repairs of Damage Caused by Heavy Rain at the Miike Coal Railway (Area 7, Miike); Preservation repairs and seismic reinforcement work on the Manda Pit storage & pump house and on the safety lamp house & bathing house (Area 7, Miike); Repairs and Seismic Reinforcement Work on the Miyanohara Pit Number 2 Shaft Winding-Engine House (Area 7, Miike); Route Change of the City Planning Road in Miike Coal Mine and Miike Port and Its Buffer Zone (Area 7, Miike); and Progress status of project proposals concerning the Imperial Steel Works and Onga River Pumping Station (Area 8, Yawata).

In addition, Heritage Impact Assessment screening processes were carried out for a range of proposed works at several component parts. The reports on these processes and related component parts are: “Status of Plans to Construct a New Railway Station in the Buffer Zone of Shuseikan with the Aim of Protecting OUV” (Component Part 2-1) (Kagoshima Area), “Conservation and Management Status of the Kosuge Slip Dock” (Component Part 6-1) (Nagasaki area), “Conservation and Management Status of Hashima Coal Mine” (Component Part 6-7) (Nagasaki area) and “Progress Status of Project Proposal concerning the Imperial Steel Works” (Component Part 8-1) (Yawata area). As a result of the screening processes, it was determined that the proposed works had no impact or only a minor potential to have a negative impact on OUV. The screening reports are attached to this report.

3. Other current conservation issues identified by the State Party which may have an impact on the property's OUV

Same as the answer on development in relation to Paragraph 7 in Decision 44 COM 7B.30.

4. In conformity with paragraph 172 of the Operational Guidelines, describe any major restorations and/or new construction(s) intended within the property, the buffer zone(s) and/or corridors or other areas, where such developments may affect the OUV of the property, including authenticity and integrity

Same as the answer on conservation in relation to Paragraph 7 in Decision 44 COM 7B.30.

5. Public access to State of Conservation Reports

It is available to the public.

6. Signature of the Authority

淡野博久

AWANO Hirohisa

Director-General, Department of Industrial Heritage, Cabinet Secretariat, Government of Japan

I. Main Document

Responses to World Heritage Committee Decision

The following decision was adopted at the 44th session of the World Heritage Committee.

Contents of the 44th World Heritage Committee Session Decision

The World Heritage Committee,

1. Having examined Document WHC/21/44.COM/7B.Add.2,
2. Recalling Decisions 39 COM 8B.14 and 42 COM 7B.10, adopted at its 39th (Bonn, 2015) and 42nd (Manama, 2018) sessions respectively,
3. Welcomes the UNESCO/ICOMOS mission which took place in June 2021 to the Industrial Heritage Information Centre (IHIC) in Tokyo;
4. Takes note with satisfaction that the State Party has met a number of its commitments and complied with a number of aspects of the Committee's relevant decisions;
5. Strongly regrets however that the State Party has not yet fully implemented the relevant decisions;
6. Requests, in this regard, the State Party to fully take into account, in the implementation of the relevant decisions, the conclusions of the mission report, which include the following topics:
 - a) Interpretive strategy showing how each site contributes to Outstanding Universal Value (OUV) and allows an understanding of the full history of each site,
 - b) Measures to allow an understanding of a large number of Koreans and others brought against their will and forced to work under harsh conditions, and the Japanese government's requisition policy,
 - c) Incorporation into the interpretive strategy of appropriate measures to remember the victims such as the establishment of an information centre,
 - d) Best international practice for interpretation strategies on the interpretation of the full history of the property both during and outside the period covered by its OUV and in the digital interpretation materials,
 - e) Continuing dialogue between the concerned parties.
7. Further requests the State Party to submit by 1 December 2022 to the World Heritage Centre an updated state of conservation report of the property and the implementation of the above, for examination by the World Heritage Committee at its 46th session.

Response to the Decision of the 44th World Heritage Committee Meeting

Details of the response to Paragraphs 6 to 7 of the World Heritage Committee decision (44COM 7B.30) are reported here.

Matters Related to Interpretation

1. Background

- The report “ICOMOS Evaluations of Nominations of Cultural and Mixed Properties” (WHC-15/39.COM/INF.8B1) noted the following points regarding interpretation:
 - The presentation of the component parts is mainly place-specific and does not present the OUV or indicate how each component part relates to each other or to the whole property.
 - What is urgently needed is a clear interpretation to show how each site or component part relates to the overall series, particularly in terms of the way they reflect one or more phases of Japan’s industrialization and convey their contribution to OUV.
- The decision adopted by the World Heritage Committee at its 39th session (39 COM 8B.14) notes that the Sites of Japan’s Meiji Industrial Revolution have OUV as a property in its entirety.
Extract from the Decision adopted by the World Heritage Committee at its 39th session (39 COM 8B.14)

The 23 components are in 11 sites within 8 discrete areas. Six of the 8 Areas are in the south-west of the country, with one in the central part and one in the northern part of the central island. Collectively, the sites are an outstanding reflection of the way Japan moved from a clan based society to a major industrial society with innovative approaches to adapting western technology in response to local needs and profoundly influenced the wider development of East Asia.
- Recommendation g) in the decision adopted by the World Heritage Committee at its 39th session (39 COM 8B.14) called for “Preparing an interpretive strategy for the presentation of the property, which gives particular emphasis to the way each of the sites contributes to Outstanding Universal Value and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.” When the Sites of Japan’s Meiji Industrial Revolution were inscribed on the UNESCO World Heritage list, the World Heritage Committee mentioned in the footnote:
 - The World Heritage Committee takes note of the statement made by Japan, as regards the interpretive strategy that allows an understanding of the full history of each site.

- The Government of Japan's statement on interpretation notes that.
 - Especially, in developing the “interpretive strategy,” Japan will sincerely respond to the recommendation that the strategy allows “an understanding of the full history of each site.”
 - More specifically, Japan is prepared to take measures that allow an understanding that there were a large number of Koreans and others who were brought against their will and forced to work under harsh conditions in the 1940s at some of the sites, and that, during World War II, the Government of Japan also implemented its policy of requisition.
 - Japan is prepared to incorporate appropriate measures into the interpretive strategy to remember the victims such as the establishment of an information centre.
- There is an obligation to convey the significance of a World Heritage Site to visitors - and to local communities - in order to increase public awareness, enhance understanding of its OUV, and encourage public support in the activities directed at its management and conservation.
- Domestic and overseas heritage experts have provided advice, on the basis of international best practices, on how the Government of Japan could best respond to the decisions of the World Heritage Committee and how to address these in line with the statement made by the Government of Japan at the time of the inscription on the World Heritage List in 2015.
- The Government of Japan conducted two interpretation audits by independent international experts in 2017 and 2019 to provide a sound foundation for the proper development of an appropriate Interpretation Strategy. This focused on two key levels: the single World Heritage property, and the component part/site-specific level and the contribution each makes to OUV.
- The Government of Japan also invited several heritage experts to receive direct advice on the Interpretation Strategy, including a senior member of the ICOMOS International Scientific Committee on Interpretation and Presentation of Cultural Heritage Sites.
- On this basis, the Interpretation Strategy was inserted as an appendix in the State of Conservation Report submitted on 30 November, 2017.
- In the World Heritage Committee at its 42nd session (42 COM 7B.10), major notes and requests were presented as “Notes furthermore that interpretation is available for all component sites, and that digital communications have been developed, but that further improvements are planned, including the Information Centre to be opened;”, “Further requests the State Party to provide an update on overall interpretation upon completion of the Information Centre;”, “Strongly encourages the State Party to take into account best international practice for interpretation strategies when continuing its work on the interpretation of the full history of the property, both during and outside of the period covered by its OUV, and in the digital interpretation materials;”, and “Requests furthermore the State Party to fully implement Decision 39 COM 8B14.”
- In relation to Decision 42 COM 7B.10, the State of Conservation Report submitted to UNESCO

on 29 November, 2019, reported that interpretation has been implemented properly based on the Interpretation Strategy.

- Pursuant to the Interpretation Strategy, the IHIC was established in Wakamatsu-cho, Shinjuku Ward, Tokyo on 31 March, 2020, as a comprehensive information centre on industrial heritage with a focus on the Sites of Japan's Meiji Industrial Revolution. It was initially planned to open the Centre to the general public on 1 April of the same year following an opening ceremony, but, as with other similar facilities, the Centre was instead closed to help prevent the spread of COVID-19. On 15 June, after the lifting of the state of emergency, the Centre resumed operations and opened its doors to the public.
- Pursuant to the Decision of the 42nd session of the World Heritage Committee, with the establishment of the IHIC, the report submitted on 30 November, 2020, noted the implementation status of the Interpretation Strategy.
- A UNESCO-ICOMOS advisory mission was invited to the IHIC in June 2021, with the mission creating a report in July of that year.
- The Decision adopted by the World Heritage Committee at its 44th session (44 COM 7B.30) made further requests as noted above.

2. Interpretation Strategy Implementation Status

The Government of Japan has responded sincerely to the decisions of the World Heritage Committee and has faithfully addressed these in line with the statement made by the Government of Japan at the time of the inscription on the World Heritage List in 2015. It has endeavoured to base its interpretation on objective facts, such as by properly exhibiting primary sources of clear provenance and testimonies verified to have a degree of credibility. The policy of the Government of Japan regarding the decision by the World Heritage Committee at its 44th session remains unchanged. In addition to enhancing investigation, research, exhibits and interpretations of the IHIC as described below, ceaseless efforts will continue to be made toward improving the overall interpretation, including initiatives in each Area.

【Basic Matters regarding Interpretation】

The hierarchical approach to interpretation

Interpretation and Presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of Values and Themes

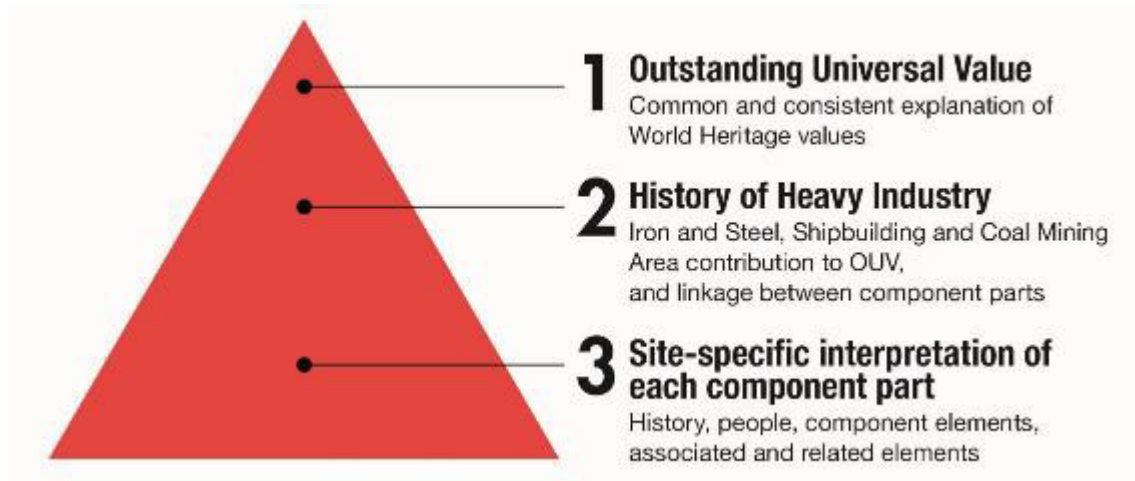


Figure 1. The hierarchical approach to interpretation

At the IHIC, as well as at each local visitor centre, OUV is at the top of the interpretation hierarchy. It is the top theme, taking precedence over regional or industry-specific interpretive presentations such as the separate histories of Areas or component parts. In this way, (1) OUV, (2) History of heavy industry, and (3) Interpretation of each of the component part, shown in the above figure, will be consistently presented across the entire property.

The flow of interpretation at each visitor centre:

Interpretation hierarchy



Figure 2. The flow of interpretation at each local visitor centre

Implementation Status of the Interpretation Strategy

- A State of Conservation Report including the Interpretation Strategy and the Interpretation Plan operationalize this strategy was submitted on 30 November, 2017.

Table 1. Overview of the Interpretation Plan

Task	Description	Responsibility	Time scale
(1)	Consistent OUV common presentations across all component parts	Cabinet Secretariat, local authorities	To be introduced sequentially starting in FY 2020
(2)	Updating the “full history” of each site	Cabinet Secretariat, local authorities	Ongoing
(3)	Information gathering related to workers, including workers from the Korean Peninsula and others	National Congress of Industrial Heritage	Ongoing
(4)	Establishment of the IHIC, Tokyo	Cabinet Secretariat	FY 2019
(5)	Consideration of the certification programme for interpretation of the “Sites of Japan’s Meiji Industrial Revolution”	National Congress of Industrial Heritage, local authorities	Ongoing
(6)	Capacity-building programmes and training manuals	National Congress of Industrial Heritage, World Heritage Council for the Sites of Japan's Meiji Industrial Revolution	Ongoing
(7)	World Heritage Route	World Heritage Route Promotion Council	Ongoing
(8)	On-site and online interpretation generated from Digital 3D resources developed by Scottish Ten for Nagasaki sites with no public access: No.3 Dry Dock, and the Giant Cantilever Crane--especially virtual visits	National Congress of Industrial Heritage	Ongoing

(9)	On-site and online interpretation generated from Digital 3D resources developed by Scottish Ten for Kosuge Slip Dock and Gunkanjima - notably digital reconstruction of the coal mine	National Congress of Industrial Heritage	Ongoing
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The Cabinet Secretariat, relevant ministries and agencies, local authorities, World Heritage Council for the Sites of Japan's Meiji Industrial Revolution (hereinafter referred to as the "World Heritage Council"), National Congress of Industrial Heritage, World Heritage Route Promotion Council for Japan's Meiji Industrial Revolution Heritage (hereinafter, "World Heritage Route Promotion Council"), and others are cooperating and implementing various activities in accordance with the Interpretation Plan for the Interpretation Strategy.

The following is a report on progress since 2020.

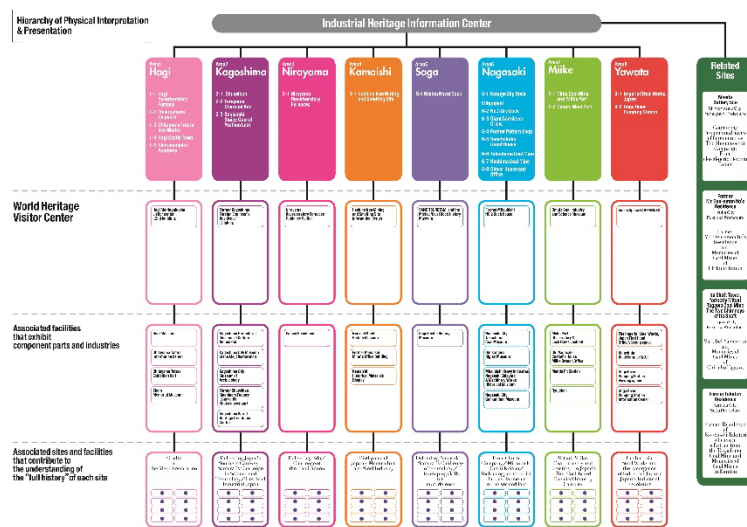
(1) Consistent OUV common presentations across all component parts

- In accordance with the Interpretation Strategy, interpretation audits were undertaken by international experts in 2017 and again in 2019. Audit reports highlighted that there is a need for a more consistent, cohesive, and coordinated approach to connect and present the 23 Component Parts, to communicate the OUV and how they relate to each other in local visitor centres. This is a key task of the Strategy. An overarching interpretation of the singular OUV has been developed for the Sites of Japan's Meiji Industrial Revolution and presented at the IHIC in Tokyo.
- This overarching interpretation clearly articulates the connections between the component parts and their respective contributions to OUV in a balanced way; as there is often a tendency for sites to emphasize their own achievements in a way that neglects the fundamental contributions by others. It also justifies why the three themes were selected.
- The Cabinet Secretariat has provided direction on the development of the "common exhibition" component parts to provide well-defined guidelines to all Areas for the consistent incorporation into their presentation of OUV, based on the Interpretation audits.
- It is important to have consistency in content and design and present OUV in a clear, structured, and succinct manner. It is further essential that sites provide a suitably large enough, dedicated, area that greets the visitor on arrival and helps them to understand that they are in one serial World Heritage Site, and why it is significant.
- Each municipality prepared an action plan to implement the common exhibition consistent with the site's World Heritage value at the various visitor centres in the World Heritage property. This was based on the Conservation Management Programmes (CMP) submitted to UNESCO to date

as well as the Interpretation Strategy so that visitors can understand OUV. Progress on this work has been uneven across the various Areas and there is much still to be done.

- Partnerships will, therefore, be further strengthened between the IHIC and the visitor centres in the various regions, taking as a model for the exhibitions at the IHIC, which plays a central role in interpretation.

(Figure 3. Place of visitor centres in the hierarchy)



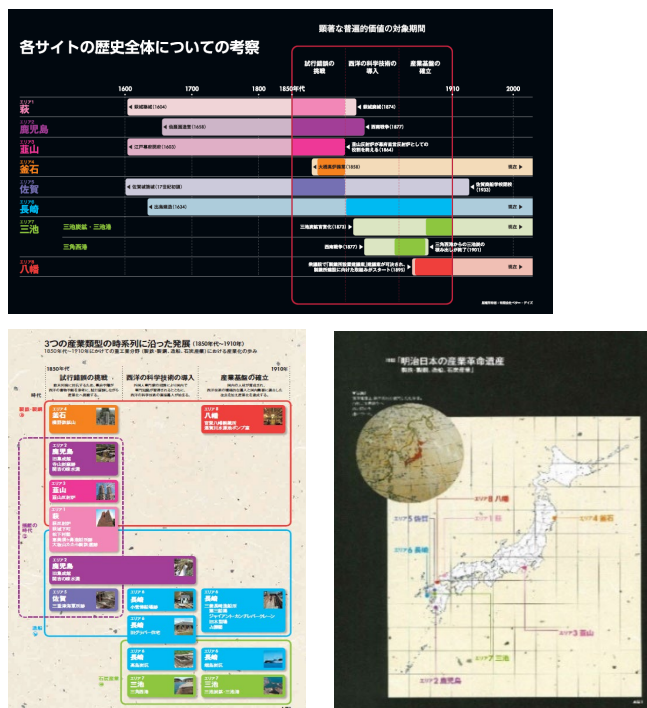
(Elements of unified exhibition content)

- ① Panel display presenting an overview of the Sites of Japan's Meiji Industrial Revolution

(Figure 4)



②Panel display explaining that the Sites of Japan's Meiji Industrial Revolution is a serial property consisting of 23 component parts located in 11 cities across eight prefectures, and that the World Heritage value exists in the whole of its parts (Figure 5)



- ③Video describing the Sites of Japan's Meiji Industrial Revolution in a concise and clear manner
- ④Panel display providing an overview of the history behind the three industrial fields of Iron and Steel, Shipbuilding and Coal Mining
- ⑤Video showing the location of the 23 component parts across 8 Areas in relation to each other and providing overviews in an immersive manner
- ⑥Panel display giving an overview of the component parts in the Area and their relation to the property as a whole, and explaining their contribution to OUV

(Planned timing for introducing the common interpretative presentations in each Area)

Area 1 Hagi FY 2023 or after

Area 2 Kagoshima FY 2023 or after

Area 3 Nirayama To be determined (at the changeover to the next exhibit)

Area 4 Kamaishi To be determined

Area 5 Saga FY 2021 already installed

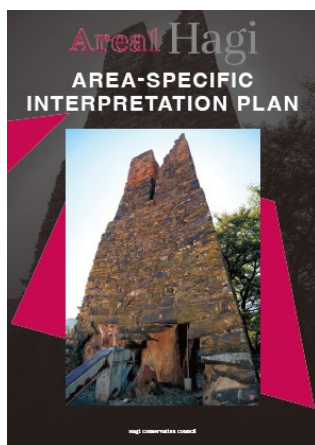
Area 6 Nagasaki FY 2023 or after

Area 7 Miike FY 2020 already installed

Area 8 Yawata FY 2022 already installed

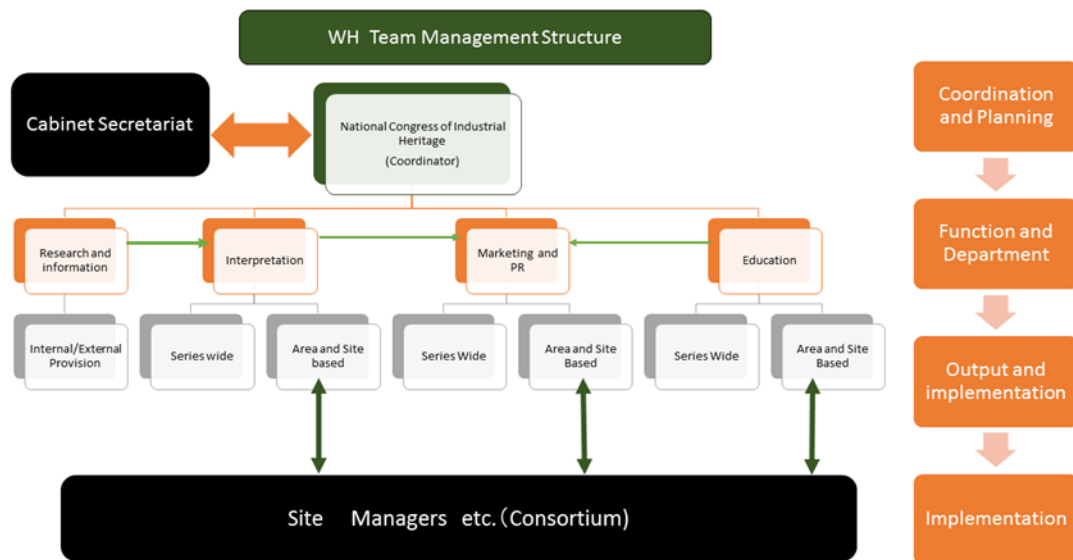
- Local municipalities also drafted Area-specific interpretation plans for each Area in October 2022. These plans include a summary of the issues highlighted by interpretation audits undertaken by international experts to date. Going forward, these issues will be addressed as a priority, with each Area working with the IHIC to use digital technologies, etc., to enhance interpretation so that visitors can gain a deeper understanding of how the various component parts contribute to the World Heritage value of the property.

Figure 6. Cover photo of the Area-Specific Interpretation Plan (Area 1 Hagi)



As shown in the figure below, the Cabinet Secretariat and the National Congress of Industrial Heritage work closely in coordination to ensure that interpretation is implemented properly in the various regions. They provide suitable guidance to and undertake consultation with the visitor centre in each Area so that the interpretation of the World Heritage value of the Sites of Japan's Meiji Industrial Revolution is harmonized with the historical and cultural values of each region.

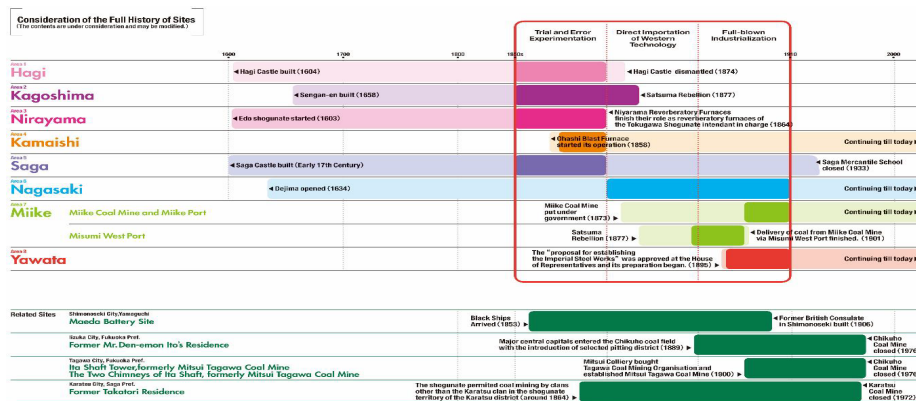
Figure 7. Structure for Management of Interpretation



(2) Updating the “full history” of each site

- Interpretation is being pursued in line with the definition of “full history” as noted in the Interpretation Strategy submitted to UNESCO in 2017. This is based on the interpretation audits and the guidance received from international experts on best international practices in World Heritage interpretation, including the proper balance between the presentation of World Heritage value and the full history of the sites, and the approach to presentation.
- The IHIC opened in March 2020, provides information designed to enable an understanding of the Sites of Japan’s Meiji Industrial Revolution, including the OUV period (1850s to 1910) as well as the full history of each site, using Figure 8 below from the Interpretation Strategy as a reference.
- Specifically, panel displays provide an overview of the full history through a succession of discrete narratives, brought alive by powerful images, tables and figures. In Zone 3, historical documents showing conditions prior to and during wartime are also exhibited. Research continues to provide further information.
 - Zone 1 Introductory exhibition (Invitation to Sites of Japan’s Meiji Industrial Revolution)
 - Zone 2 Main exhibition (Path toward an Industrial State)
 - Zone 3 Reference Room

Figure 8. Panel display introducing the full history of each site as part of the overall property



- Large, wrap-around panoramic screens reveal the history and transition of each component part, as well as many social aspects, in a truly immersive fashion. Explanations use compelling, high-quality, photographs and images, so that visitors can begin to understand not only the World Heritage contribution, but also the broader history of each site. For example, for interpretation of the Takashima Coal Mine, visitors can experience and understand life on a coal mining island from the time of the opening of Japan's first coal mine worked with steam power at the end of the Edo period, right the way through the Meiji period, to the peak of coal output in the Showa period, the major labour strike that took place, and the eventual closing of the mine in 1986.

Figure 9. Zone 1 Example of an exhibit using an immersive multi-display (Takashima Coal Mine)



Figure 10. Changes over time to the Hashima Coal Mine



- It has been noted from international members at the Cabinet Secretariat Expert Committee that the full history of sites is not limited to the WWII issues, but includes the historical process leading up to industrialisation, the whole range of labour issues related to the development of industries, such as domestic migration to industrial areas, the post-industrial histories of sites and the efforts of local communities to conserve them.
- The outline of the proposed Interpretation Principles and Policy provided in the nomination document indicates that the conservation of OUV is not limited to the preservation of the physical, tangible evidence of the past, but also draws on the intangible associations embodied in the skills, knowledge and social life of the people involved in the industry, which are then transmitted to the current generation as family and community history. IHIC aims to capture the full range of records of the tangible and intangible heritage of the Sites of Japan's Meiji Industrial Revolution.
- IHIC will work with the management of the visitor centres in each Area, with the aid of the Interpretation Strategy and the Area-specific interpretation plans, to achieve exhibits that reflect the OUV of the Sites of Japan's Meiji Industrial Revolution and the attributes of each site that contributes to it. This collaboration will also aim to develop presentation approaches that interpret the full histories of each component part, and to share common exhibition elements that allow visitors to view material presented at IHIC and the other component visitor centres.

Figure 11. Exhibit using immersive multi-display at the Omuta Coal Industry and Science Museum



(3) Information gathering related to workers, including workers from the Korean Peninsula and others

- IHIC has been archiving a substantial number of documents, photos, and audiovisual material including oral testimonies from prewar, wartime, and post-war periods and will continue the efforts of archiving in collaboration with previous owners, managers, and local communities.
- High-quality investigations of primary sources, oral testimonies, and published materials, etc., are being conducted on an ongoing basis in relation to industrial labour, including workers from the Korean Peninsula and others, before, during, and after World War II.
 - Among the materials collected regarding industrial labour were academic papers, data on wages, etc., and court documents.
 - Information on international cases related to industrial labour was collected from overseas specialists on industrial heritage and industrial archaeology.
 - The main events at the Hashima Coal Mine were studied using surveys by government agencies, newspaper articles, and other materials.
 - To gain an accurate understanding of the conditions, environment, and atmosphere of industrial labour, experts analysed materials consisting primarily of pre-war to post-war newspaper coverage.
 - To gather information regarding industrial labour at the mine, interviews were conducted with individuals who had worked at the mine and had experienced the working conditions of the time.
- The IHIC will continue to archive information of high historical value and introduce new information through analysis and verification by experts.

(4) Establishment of the Industrial Heritage Information Centre

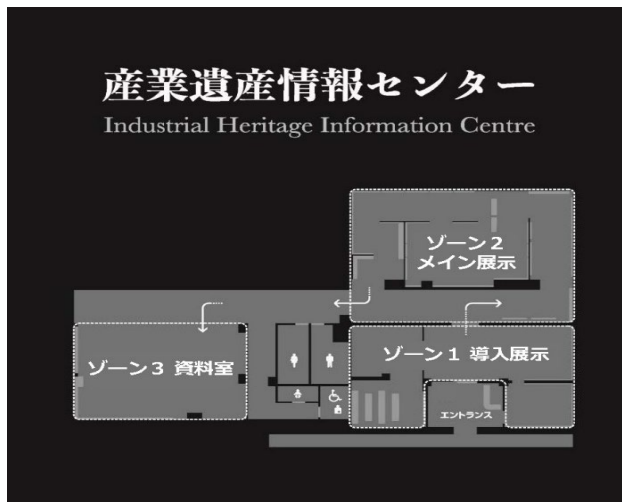
- The IHIC was established in Shinjuku Ward, Tokyo in March 2020 pursuant to the Interpretation Strategy so as to fulfil World Heritage Committee decisions to date. It is designed as a hub for consolidating and communicating information related to the Sites of Japan's Meiji Industrial Revolution, the component parts of which span 11 cities and 8 prefectures from Kyushu to Tohoku. The Centre opened to the public in June 2020.

Figure 12. Entrance to the IHIC



- Purpose, roles, functions, etc.
 - The facility provides functions for investigation and research, capacity-building, and information provision, as a place for communication about industrial heritage centring on the Sites of Japan's Meiji Industrial Revolution.
 - Serving as a comprehensive information centre related to industrial heritage, it is expected that by actively communicating information about industrial heritage properties in Japan and overseas, it can raise awareness and understanding of the topic. Another aim is to contribute to regional revitalization, such as by encouraging visits and relocation to regions away from large metropolitan centres.
- (i) Investigation and research functions
 - Investigation and research on methods for conservation and management of industrial heritage
 - Digital archiving of materials, etc.
- (ii) Capacity-building functions
 - Development and provision of training programmes on the interpretation of World Heritage value
 - Guidance and support for conservation and management of industrial heritage (in coordination with visitor centres in each Area), etc.
- (iii) Information provision functions
 - Providing information related to industrial heritage overall, primarily regarding the Sites of Japan's Meiji Industrial Revolution (coordinating with visitor centres in each Area)
 - Providing information to enable understanding of the full history of each site
 - Explaining World Heritage value by means of digital tools
 - Planning and holding special exhibitions and travelling exhibitions, etc.

Figure 13. Floor plan of the IHIC



➤ Overview of exhibits

The exhibit area on the first floor is divided into three zones- Introductory Exhibition, Main Exhibition, and Reference Room. Zone 1 presents an overview of the Sites of Japan's Meiji Industrial Revolution and the process leading to the inscription of the sites as World Heritage Sites. Zone 2 depicts the phases in which Japan developed into an industrial state in just half a century, from the late Edo period to the Meiji period. The exhibition in each zone makes creative use of photos and other visual materials in interpreting the World Heritage value of the Sites of Japan's Meiji Industrial Revolution and the specific contributions by the 23 component parts, as well as their full history that leads to a broader understanding. Zone 3, a room of reference materials, introduces numerous primary sources of clear provenance concerning industrial labour at sites during World War II, as well as testimonies and secondary sources. The second floor has office space and a resource area for storing collected materials, along with training seminar rooms and other spaces.

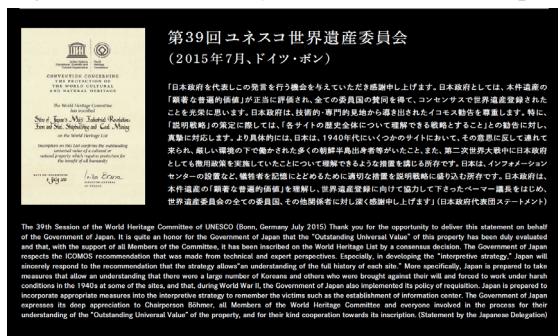
- Zone 1 Introductory Exhibition (Invitation to Sites of Japan's Meiji Industrial Revolution)
 - This exhibit zone, playing an introductory role, has panel displays providing an overview of the Sites of Japan's Meiji Industrial Revolution, the background leading up to the inscription of the sites as a World Heritage, and the statement by the Government of Japan made at the time of inscription. It is intended to enable visitors to begin to understand the full history of the sites.
 - An immersive multi-display depicts the history of the component parts of the Sites of Japan's Meiji Industrial Revolution as a whole, utilizing photos and videos. This will be further enhanced in the future. The industrial heritage sites in various parts of Japan will be indicated on maps based on satellite images, with displays of photo images and explanatory text.

- In the Guidance Theater, additional videos have been added to provide detailed and easy-to-understand explanations of the road to World Heritage inscription, the World Heritage value of the Sites of Japan's Meiji Industrial Revolution, and related assets, allowing visitors to deepen their understanding of the heritage property.

Figure 14. Panel showing the timeline to inscription as a World Heritage property



Figure 15. Statement by the Government of Japan (full statement shown in both Japanese and English)



- Zone 2 Main exhibition (Path toward an Industrial State)
- This zone consists of five areas: ① Early attempts under the Isolation Strategy, ② Shipbuilding, ③ Iron and Steel, ④ Coal Mining, and ⑤ Industrialisation. The phases in which Japan developed into an industrial state in just half a century, from the late Edo period to the Meiji period, are described clearly and concisely. In addition to panel displays, an explanation is offered through videos of interviews with foreign experts in the field of industrial heritage, as well as a video showing the historical value of Miike Port.
- ① Early attempts under the Isolation Policy
 - The samurai are depicted in their trial-and-error attempts to adopt Western science, using available Dutch books, as they raised a sense of crisis regarding national defense.
 - Focusing on events during the start of the industrial revolution in Meiji Japan, the exhibits show

how the clans and the Edo shogunate took up the challenges of manufacturing cannons and building ships.

② Shipbuilding

- Exhibits show the sequence of events leading to the establishment of Japan's first full-scale ship repair facility in Kosuge, and its significance as the first step toward modern shipbuilding in Japan.
- Centring on the Mitsubishi-related component parts, an overview is given of the development of Japan's modern shipbuilding industry, including the purchase of the government-run Nagasaki Shipyard & Machinery Works and the success in building a large-scale modern ship, which had only been previously accomplished by Western industrialised countries.

③ Iron and Steel

- The history depicted here starts with the building of a Western blast furnace, using available Dutch books, followed by successful continuous tapping in iron ore smelting by Oshima Takato. Also shown are the opening and failure of the government-owned Kamaishi Steel Works, the attempts by Tanaka Iron Works and the success of Japan's first coke blast furnace, and the completion of a full-scale integrated ironworks facility at the Yawata Imperial Steel Works.

④ Coal Mining

- Exhibits trace the development from Takashima Coal Mine, Japan's first modern coal mine, to Hashima Coal Mine, which continued expanding with the increase in demand for coal, and Miike Coal Mine, one of the world's leading coal mines at the time.
- Addressing the need of the coal mining industry not only for the extraction of coal but for a comprehensive system including logistics, the exhibits show the challenges across a wide range of fields including the development of Miike Port.

⑤ Industrialisation

- The Japan-British Exhibition in 1910 is introduced as a symbol of Japan becoming acknowledged widely as a world-class industrial nation.

Figure 16. Zone 2 of the IHIC



At the information search table centrally located in the zone, visual images of component parts are projected on a screen and visitors can look up more detailed information regarding the Sites of Japan's Meiji Industrial Revolution on tablets.

① Overview of tablets

- The following content for each of the categories of the Sites of Japan's Meiji Industrial Revolution -late Edo period, shipbuilding, iron and steel, and coal mining- is provided both in Japanese and English. Content is displayed by clicking first on one of the items and then on the photo of one of the experts.
- Late Edo period: Descriptions by Dr. Alan Lemmers of old photos of Akunoura in Nagasaki and Shuseikan in Kagoshima
- Shipbuilding: Explanation of the Giant Cantilever Crane by Dr. Brian Newman and of the Kosuge Ship Repair Dock by Dr. Miles Oglethorpe
- Iron and Steel: Discussion by Dr. Dietrich Soye of the connection between the history of the Imperial Steel Works and Germany
- Coal Mining: Explanation of the Hathorn Davey pumping engine by Dr. Robert Vernon, the Nord-Pas-de-Calais Mining Basin in France by Dr. Marie Patou, and the history of mining and the industry as a whole

② Typical tablet screen (Figure 17)

Example: Screen that appears when coal mining is selected



Example: Screen that appears when the photo of Dr. Robert Vernon is clicked on



Example: Screen that appears when the first item is clicked on



Example: Content shown for the late Edo period (original text in English) Blueprints for Akunoura in Nagasaki and for Shuseikan



- Zone 3 Reference Room

This zone has a reading corner and a reference counter, as well as bookshelves and various types of digital equipment (display monitors, a search device, immersive multi-displays, etc.). It provides visitors with access to a wide variety of primary information, including materials related to industrial labour outside World Heritage Sites' time period, such as industrial labour at work sites during World War II.

- In light of the World Heritage Committee's decisions and the statement made by the Government of Japan at the time of the inscription on the World Heritage List in 2015, primary sources, testimonies, books and other publications on industrial labour, including workers from the Korean Peninsula and others, before, during, and after World War II, are being collected; and after expert analysis and verification, primary sources, testimonies, and other information verified to have a degree of credibility are exhibited and explained.
- A summary of the statement by the Government of Japan is given below. Immediately after the inscription on the World Heritage List in 2015, the Government of Japan explicitly posted a note to this effect on its website, and since then, the Government of Japan has been responding to the decisions in accordance with this note and will exhibit to this effect using primary materials.
 - ◇ “There were a large number of Koreans and others who were brought against their will” and “forced to work” means, with regard to the Korean Peninsula, that people were “requisitioned” under the National Requisition Ordinance following the National Mobilization Law, which was applied to all Japanese nationals at the time.
 - ◇ “Victims” refers to those who suffered or died from accidents or disasters during their work at industrial facilities such as coal mines and factories, regardless of their origin.
- Specifically, based on the Interpretation Strategy submitted to UNESCO in 2017, high-quality investigations are conducted, including collecting a wide range of historical materials and recording testimonies, in relation not only to the OUV period (1850s to 1910) but also subsequent to 1910. The results of the investigations are then analysed and verified, drawing also on the opinions of experts in such fields as economic history, industrial history, and regional studies; and primary materials of clear provenance and testimonies verified to have a degree of credibility are exhibited in the form of panels and archives so that information can be provided to visitors grounded in objective facts.
- Following the UNESCO-ICOMOS mission in June 2021, additional materials such as new testimonies and newspaper articles from the time regarding workers from the Korean Peninsula were released, drawing on the views of experts, as the exhibits and explanations continue to be enhanced.
- ✓ Panels are exhibited illustrating laws and regulations that served as the basis of the policy of

requisition, making clear that the Government of Japan carried out a policy of requisition during World War II following the National Mobilization Law.

- ✓ A series of testimonies show working conditions in the wartime environment in 1940s, as exemplified by food shortages, lack of supplies, damage, and disruption from air raids etc. Such working conditions do not imply that the workplace was intentionally neglected by employers themselves.
 - ✓ Monitors show video testimonies by former residents of Hashima Island about severe working conditions in the coal mine and life on the island so that visitors can understand that workers from the Japanese mainland worked under the same severe conditions as workers from the Korean Peninsula, etc. They include testimony about how the people on the island, regardless of their origin, suffered during the war from shortages of food and other goods, and how the workers combined their efforts to escape from underground when a power outage resulted from a torpedo attack on power generation facilities by US Armed Forces. Testimony and portions of diaries are also shown on panel displays.
 - ✓ A search device enables visitors to view archived primary sources relating to industrial labour (administrative documents, records, newspaper articles, etc. from the time, including public documents relating to the policy of requisition).
 - ✓ The immersive multi-displays make available the industrial heritage database, including the testimonies of numerous former islanders about life on Hashima Island during and after the war, arranged on the screen by location and available for viewing on video.
- Incidentally the mission in June 2021 was provided, prior to their visit, with inaccurate information that could have been easily corrected if the Government of Japan had been informed, and a method used to determine the facts was based on that inaccurate information. As a result, the mission was conducted with an insufficient understanding of the policy of requisition during World War II, which was applied to all nationals, including those from the Korean Peninsula, which was part of Japan at that time. Requisitioned workers from the Korean Peninsula worked in the same environment as those from the Japanese mainland, including receiving salaries, and were not forced to engage in slave-like labour. This incomplete historical understanding was a major challenge. (As a result, for example, the mission report includes the statement, "The information displayed gives the impression that conscripted labourers from other countries were considered to be Japanese nationals at the time and were treated as such", which was based on a clear factual error.) In order to prevent such factual errors and misunderstandings, the Government of Japan will continue to work to enhance the content of the exhibits at the IHIC based on historical investigation and research.

Figure 18. Zone 3 of the IHIC

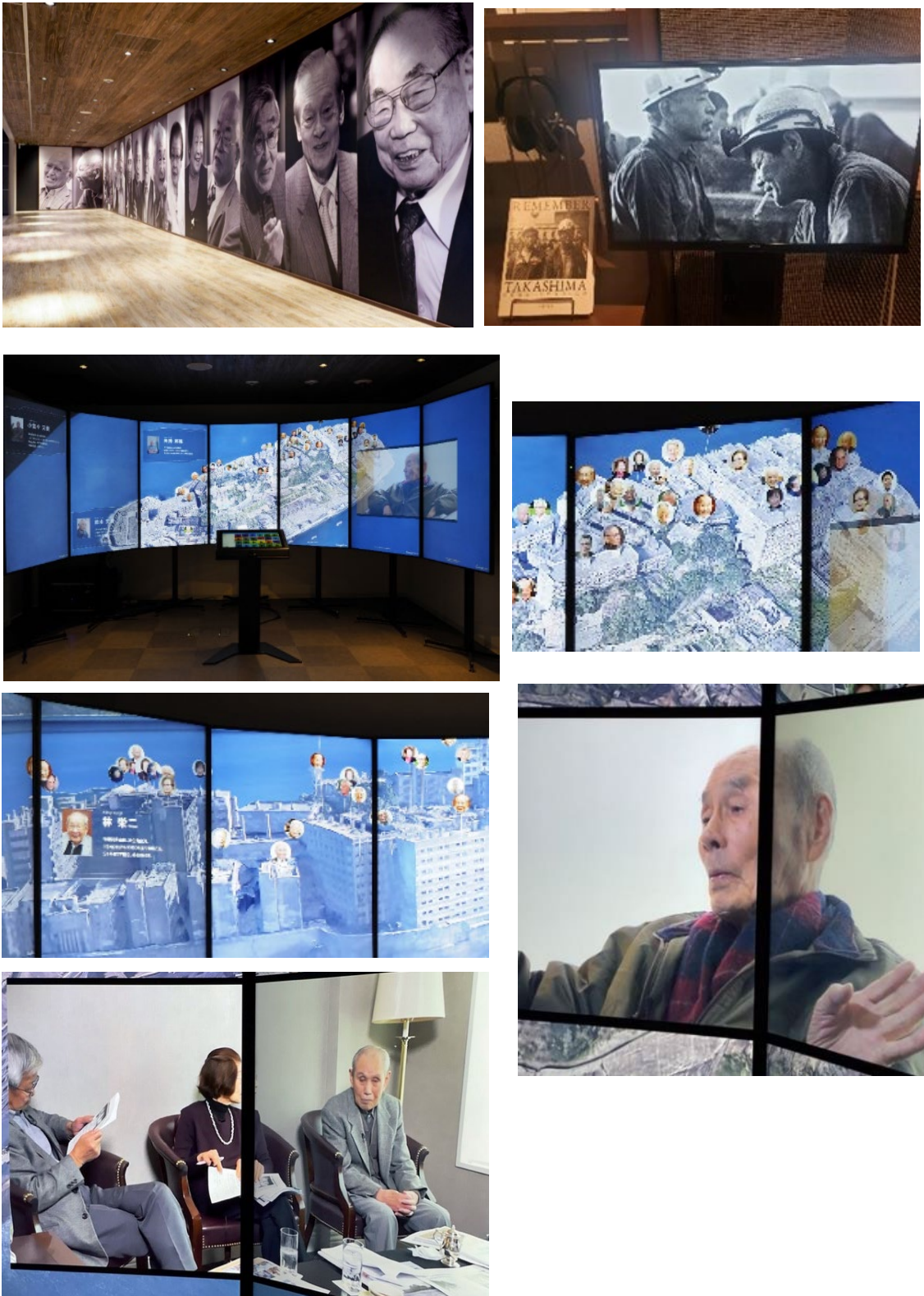


Figure 19. Panel display describing documents related to the policy of requisition

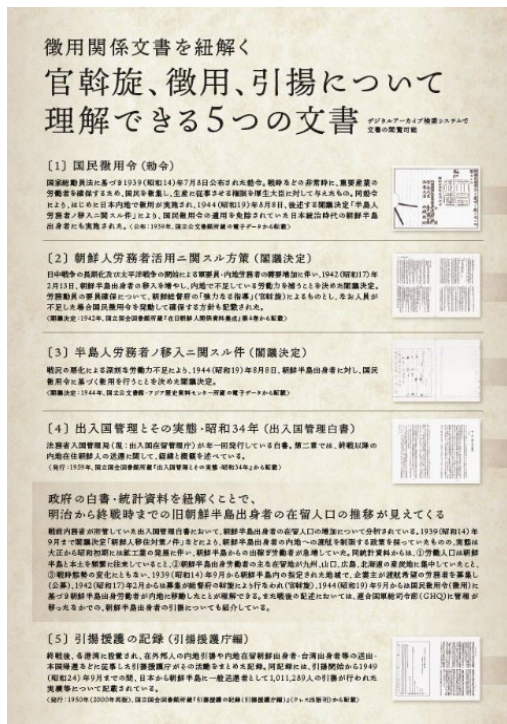


Figure 20. Digital archives enable access to public documents about the policy of requisition, and video testimonies



- A digital archives-searching device is provided for accessing public documents relating to the policy of requisition. Historical materials are classified as follows.

Category A: Legal and administrative documents

Category B: Documents and records of governments, related organizations, and companies

Category C: Publications, etc. by individuals close to related people in government or companies

Category D: Testimonies

Category E: Newspapers and magazines

Category F: Academic papers, books, etc.

Figure 21. Digital archives top page



Figure 22. Library of related materials



Figure 23. Example from digital archives about the National Requisition Ordinance



Figure 24. Busan Ilbo newspaper of August 22, 1941: Volunteer soldier from Goseong wishes to be a miner again



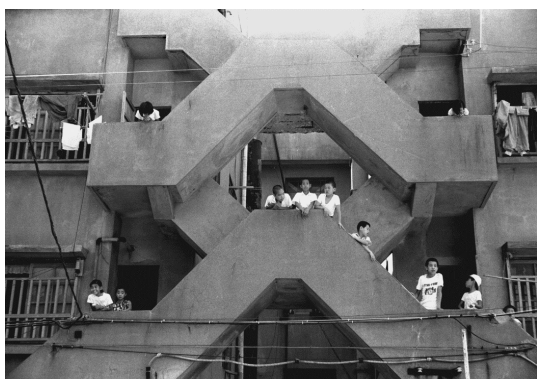
Figure 25. Article on mine accident of March 26, 1935: Nagasaki Nichinichi Shimbun



Figure 26. Record of mine accident:Sumi no Hikari (June 1960)



Figure 27. Daily life of Hashima Island residents (photo)



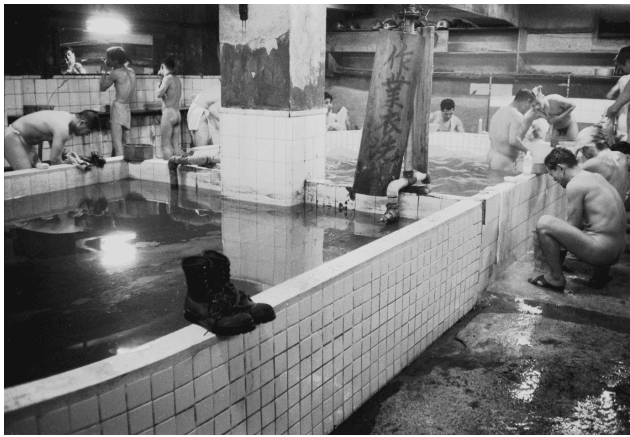
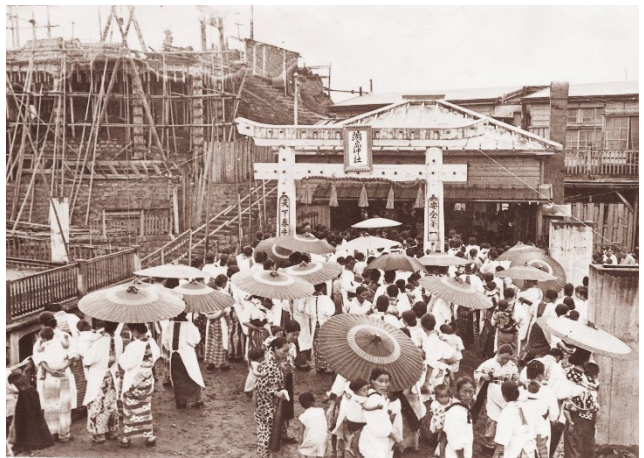




Figure 28. Testimonies are recorded, checked, and then progressively uploaded.

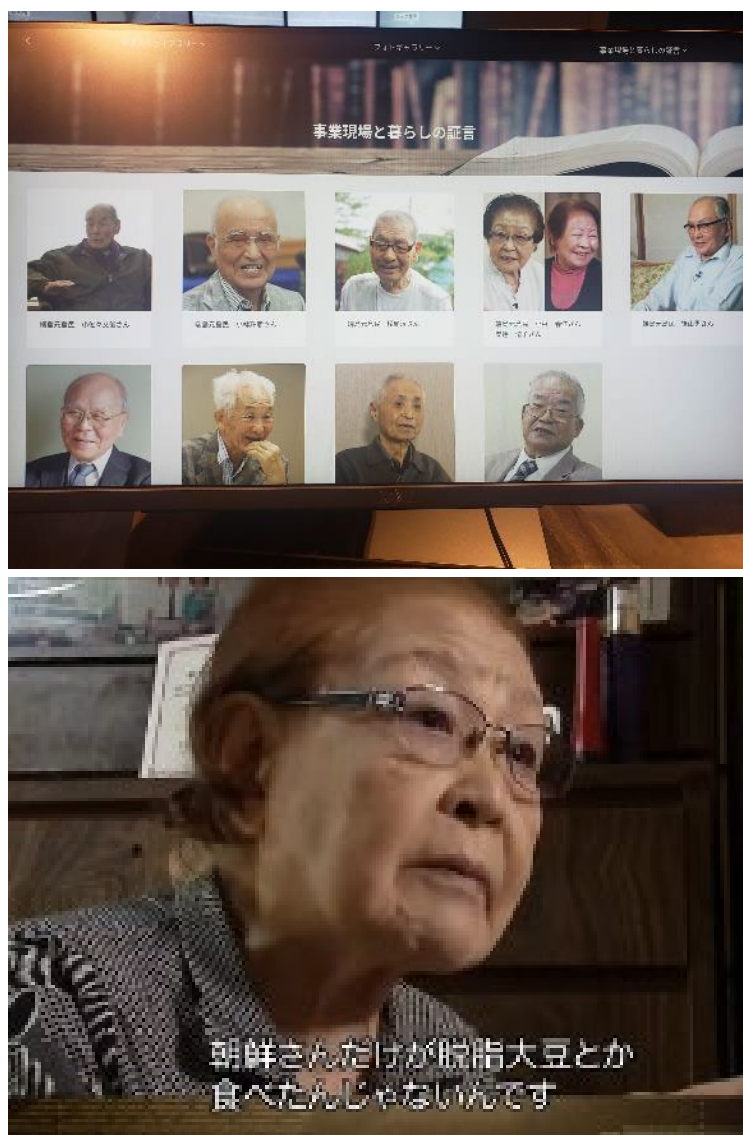


Figure 29. Video testimonies and diaries of former residents of Hashima Island depicting life before, during, and after World War II

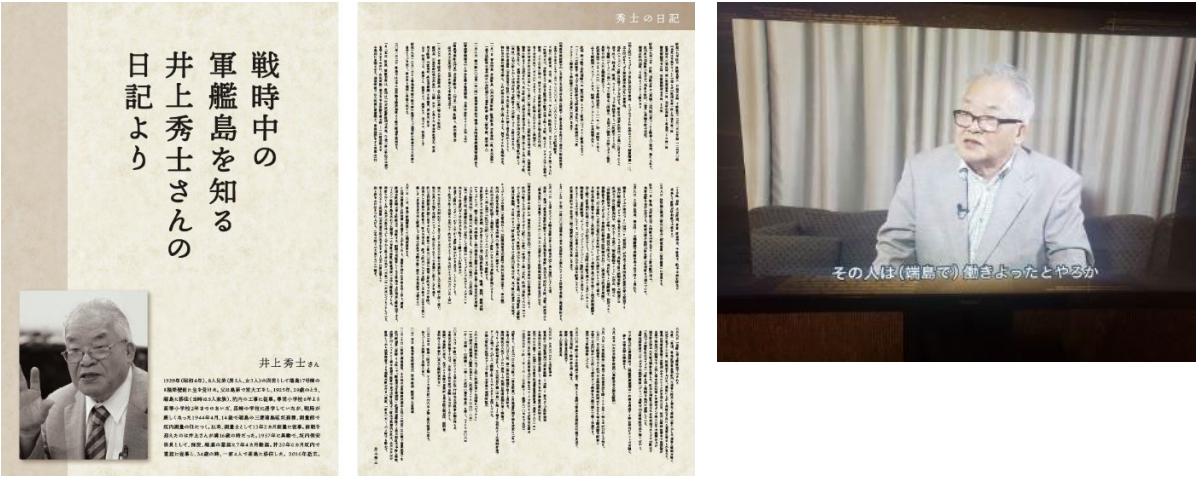


Figure 30. Testimony of a former Hashima Island resident (second-generation Korean in Japan) displayed on the panel

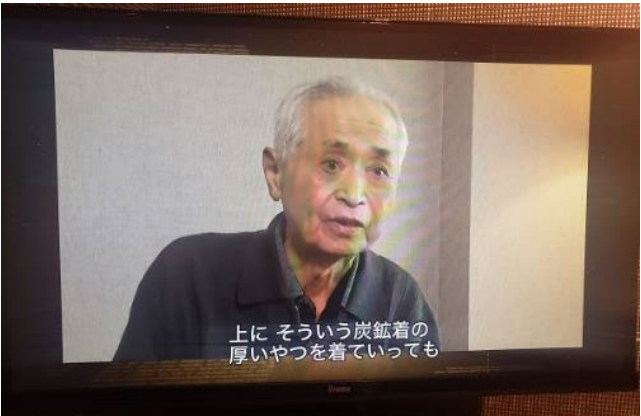
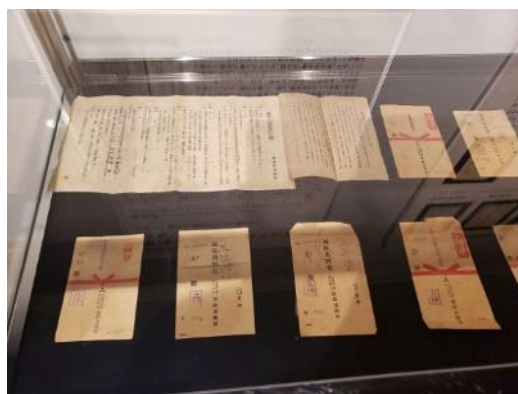


Figure 31. Panel display about the salary for requisitioned workers



- Exhibits and explanations at the IHIC have been enhanced with reference to the views of domestic and international experts, such as by exhibiting primary materials of clear provenance and testimonies verified to have a degree of credibility, so as to faithfully implement World Heritage Committee decisions, in keeping with the statement made by the Government of Japan.

Exhibits and explanations will continue to be enhanced based on further research, expert analysis and verification of the data.

- ✧ The exhibition will help visitors to understand that during the war, the requisition of Japanese nationals was conducted under Japanese sovereignty and in accordance with the laws and regulations in the Korean Peninsula for seven months. This was in effect from September 1944 onward, not long before the war ended.
- ✧ Detailed exhibits related to the policy of requisition will be provided, including the payment of wages to requisitioned workers
- ✧ Exhibits will be developed facilitating an understanding of the situation at the time the policy

of requisition was carried out

- ◇ A new section will be created with exhibits giving a clearer understanding of newspaper articles and other materials about people who met with accidents or calamities at the Hashima Coal Mine (“victims” as referred to in the statement made by the Government of Japan in 2015, including those from the Korean Peninsula)
- ◇ Further efforts will be made to provide multilingual descriptions and explanations of the exhibits

As part of its investigation and research activities, the IHIC has continued to collect, analyse, and verify a wide variety of public documents, newspaper articles, testimonies, books, and other materials on industrial heritage in general, industrial labour, and the policies of requisition in Japan and abroad, regardless of whether it is consistent with the views of the Government of Japan. The results are appropriately reflected in exhibits and explanations, such as by exhibiting content verified to have a degree of credibility. In addition, to demonstrate the investigation and research activities, some of these materials collected for analysis and verification are opened and made available to visitors. Among these are memos and notes by a worker who was requisitioned from the Korean Peninsula, diaries of Japanese from the mainland who worked alongside citizens from the Korean Peninsula, books of Chinese captives at the work sites during wartime, and other materials including those not necessarily consistent with the views of the Government of Japan.

(Classification of Books)

Sites of Japan’s Meiji Industrial Revolution (Overall/Component Parts), Ships/Shipbuilding, Iron/Ironmaking/Steelmaking, Coal Industry, Textile Industry, People Active during Late Edo Period (Bakumatsu), Meiji Restoration, World Heritage Overall, Heritage of Industrial Modernization Overall, Requisition, etc.

- In addition, the museum has a space that can be used for small-scale exhibitions as a place to disseminate a variety of information related to each component part and concerning general industrial heritage. In August 2022, an exhibition of Sakubei Yamamoto's coal mine paintings, which are registered as Memory of the World Heritage and related assets, was held. We will continue to work with each Area to disseminate information.

Figure 32. Some of the bookshelves in zone3 of the IHIC

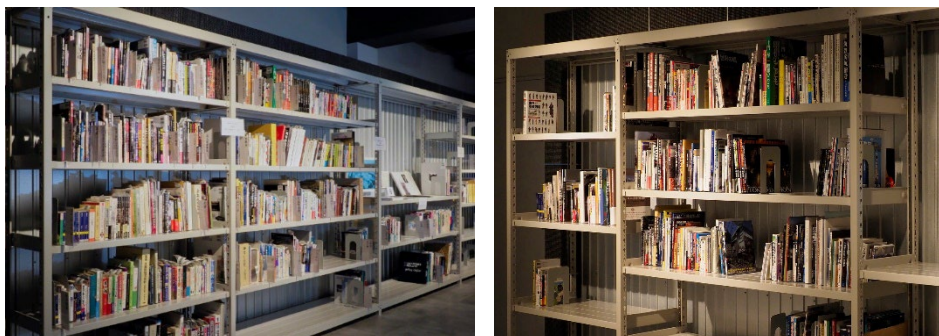


Figure 33. Excerpts from Open Shelf Books and Former Hashima Islanders' Perceptions of Them

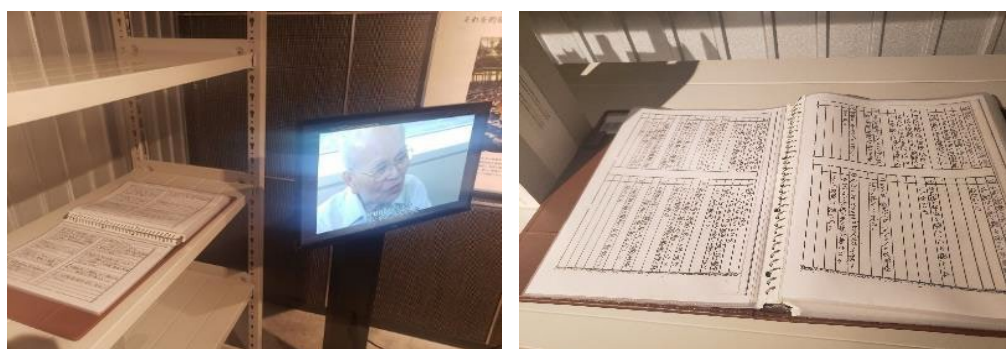


Figure 34. Reminiscences of the Yotsuyama Pit of Miike Coal Mine during World War II



Figure 35. Notes (in Hangul) by a requisitioned worker from the Korean Peninsula who worked for Toyo Kogyo

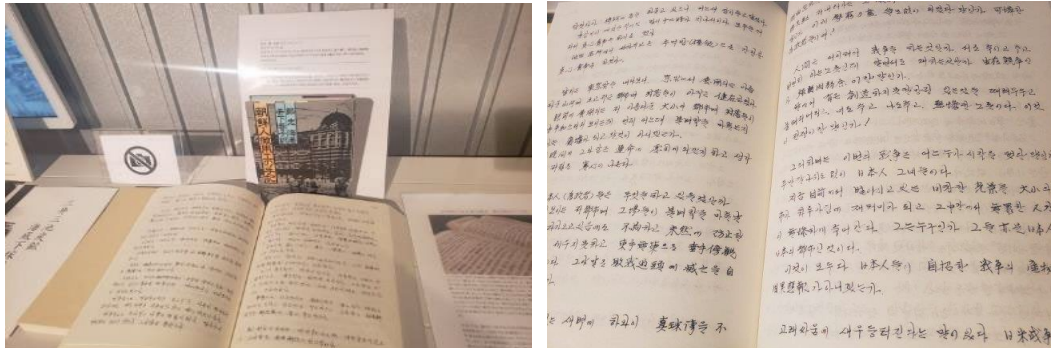
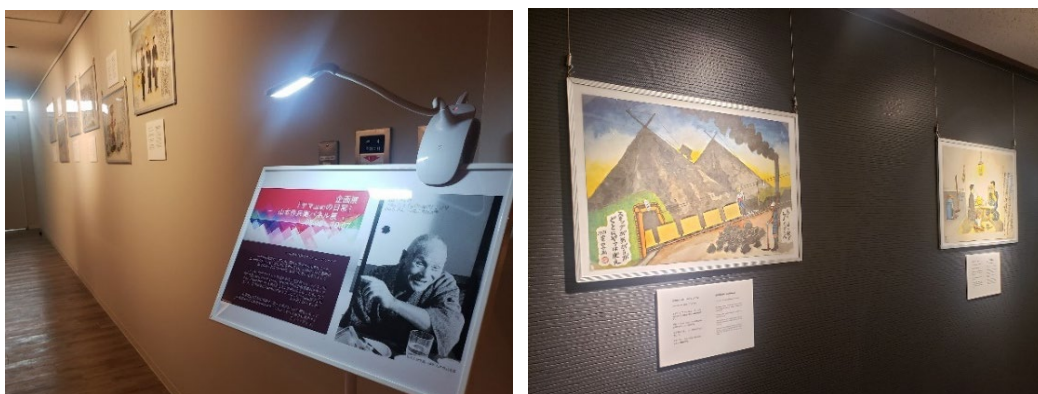


Figure 36. Images of Chikuho Coalfield



Figure 37. Sakubei Yamamoto Exhibition



○ Promotion of digital archive installation

In order to enable visitors to understand how each component part contributes to OUV and reflects various stages of industrialization at visitor centres in each Area, etc., the IHIC is taking the lead in developing the construction of an information network that links each function and interpreting

through the use of the latest digital technologies such as digital signage, smartphone applications, guide maps, LINE/AI chatbots, etc.

In cooperation with the visitor centres in each Area, the IHIC will continue to collect primary historical documents with clear provenance, digitize them, and improve exhibitions using digital tools that utilize the data.

○ Enhancing information dissemination through an exchange in and beyond Japan

The IHIC promotes archived valuable memories of the people working in the industries and promotes an understanding of the tangible and intangible values of industrial heritage by holding international conferences, lectures, and special exhibitions, as well as disseminating an understanding of the contribution to World Heritage value and the full history of each component part.

- An international conference was held online in February 2022. Following keynote speeches, presentations were made by the 8 Areas with component parts on the implementation status of their conservation and interpretation plans, and a Q&A session was held with international experts. The conference enabled participants to share information on issues and responses to these in the various Areas, serving as a valuable opportunity to review the future initiatives of those involved in the property's conservation.
- In September 2022, international experts with extensive knowledge of industrial heritage were invited to Japan to inspect the IHIC and exchange views. Further improvements in the exhibits and explanations are planned, taking into consideration the advice of these experts.
- In addition, the digital data obtained by high-precision laser scanning of some of the component parts, such as the giant cantilever cranes, are being used for interpretation and other purposes, together with related content supervised by overseas experts. The data will be used for conservation and management in the future. In addition, as a result of comparative research with other countries using Sakubei Yamamoto's coal mine paintings, related to another mining site not part of the World Heritage property, an exhibition will be held to better understand the reality of coal mine labour common to the world.
- In such ways, a network has been built with international experts and researchers and has been maintained and developed even under the impact of the COVID-19 pandemic, making use of online meetings and other means. By making greater use of this network, the exhibits and explanations will be enhanced, with the aim of realizing an interpretation that meets the level of best international practices.

(5) Capacity-building programme and training manuals

The IHIC and the visitor centres in each Area are working together to implement an ongoing training programme to build the capacity of guides and other personnel, ensure a consistent approach to the day-to-day management and conservation of the property, and increase understanding. Specifically, workshops for local guides and other personnel at the various component parts are being conducted using teaching materials created for human resource training.

These supplementary materials for human resource training have already been distributed to guides and site managers through the relevant institutions and are available for viewing online as a digital book (URL: www.japansmeijiindustrialrevolution.com).

Figure 38. Interpretation manual and other teaching materials



Workshops were held as follows in FY 2021 for staff performing guide activities at component parts or related facilities in 8 Areas containing component parts. These workshops are focused on interpretation (exhibits and explanations) and World Heritage value, etc., for local guides and other staff so as to enable consistent explanations to be provided to visitors in these Areas.

Table 2. Implementation of Capacity-Building Training (for Guides) in FY 2021

	Date	Area	Venue		Participants
1	Nov. 19	Kagoshima	Kagoshima City	Kagoshima City Hall East Annex	45
2	Nov. 30	Kamaishi	Kamaishi City	Kamaishi Information Exchange Center	27
3	Dec. 17	Nirayama	Izunokuni City	Nagaoka Chuo Community Center (Ayame Bldg), Izunokuni City	30
4	Jan. 18	Saga	Saga City	Online (Zoom)	9
5	Jan. 20	Nagasaki	Nagasaki City	Online (Zoom)	23
6	Jan. 31	Yawata	Kitakyushu City	Online (Zoom)	17
7	Feb. 2	Miike	Omuta City	Online (Zoom)	30
8	Feb. 17	Hagi	Hagi City	Online (Zoom)	4

In addition to the above workshops, guide workshops are also held by the World Heritage Council for the Sites of Japan's Meiji Industrial Revolution. These differ in emphasizing greater understanding of the value of the Sites of Japan's Meiji Industrial Revolution as World Heritage and their proper conservation and management, and in aiming for information exchange and collaboration with related communities regarding guide activities. In recent years, the workshops have been held online due to COVID-19 pandemic, but this year it is scheduled to be held on-site.

(6) World Heritage Route

Based on the Interpretation Strategy appended to the State of Conservation Report submitted in 2017, the World Heritage Route Promotion Council, comprising persons associated with World Heritage sites, tourism and travel agents, and transportation providers including railway companies, airlines, and bus and taxi companies, was established for the purpose of understanding World Heritage value as a whole and to promote the World Heritage Route as indicated on pages 395 to 396 of the Nomination document.

Visiting a single component part of the Sites of Japan's Meiji Industrial Revolution is not enough to understand the property's value as World Heritage. The World Heritage Route Promotion Council is engaged on an ongoing basis in promoting the World Heritage Route by providing World Heritage guidance and tourism infrastructure so as to lead visitors effectively to all component parts and related sites. These promotion efforts include maps and apps, GPS navigation, and the installation of road signs using the common logo to promote awareness of the Sites of Japan's Meiji Industrial Revolution. As of the end of July 2020, road signs using the common logo have been installed in 303 places.

The World Heritage Route Promotion Council will continue working in close partnership so as to enable the greatest possible number of visitors to deepen their understanding of World Heritage value in an enjoyable manner.

Figure 39. World Heritage Route

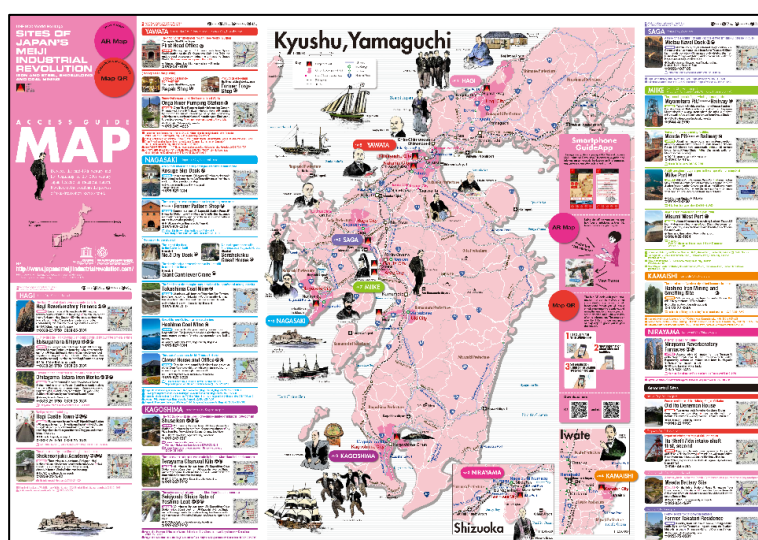


Figure 40. Plenary Meeting of the World Heritage Route Promotion Council (Oct. 2021)



Table 3. Installation of road signs using the standard logo (As of July 2020)

Prefecture	City	Number Installed
Fukuoka Prefecture	Kitakyushu City	53
	Omuta City	20
	Nakama City	14
Saga Prefecture	Saga City	25
Nagasaki Prefecture	Nagasaki City	20
Kumamoto Prefecture	Arao City	41
	Uki City	18

Prefecture	City	Number installed
Kagoshima Prefecture	Kagoshima City	37
Yamaguchi Prefecture	Hagi City	47
Iwate Prefecture	Kamaishi City	20
	Otsuchi Town	1
Shizuoka Prefecture	Izunokuni City	6
	Kannami Town	1
Total		303

Figure 41. Examples of road signs using the standard logo



Figure 42. Promotion activities being conducted



- Area guide maps, etc.

National Congress of Industrial Heritage organized a team of experts to create the AR Map (Augmented Reality Map) for 8 Areas with the support of the Government of Japan and Local municipalities. Maps have been created in Japanese and English for all 8 Areas. Maps in Chinese (simplified Chinese) have also been created for the Kagoshima, Nirayama, Saga, and Miike Areas, to be followed by the Hagi and Nagasaki Areas. The Kagoshima Area has a Vietnamese version, as well.

These guide maps include comprehensive information about the Area not only illustrating the component parts of the Sites of Japan's Meiji Industrial Revolution and its related local interpretation facilities but also cultural heritages, and other World Heritage sites and tourism information in the area as well. National Congress of Industrial Heritage has distributed 420,000 AR Maps through visitor centres, airports, stations, road stations, service areas, parking areas and arcades for free, which helps understand the full picture of the various sites. By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.

Figure 43. Display of 3D images making use of the Kagoshima Area guide map and AR function



Figure 44. Example of smartphone app linkage enabling a destination to be sent to a car navigation system



(7) On-site and online interpretation: Virtual visits and digital reconstruction (including digital 3D resources developed by Scottish Ten)

- Introduction of facilities using digital 3D resources
 - In the Scottish Ten 3D digital documentation project, laser scans were made of Nagasaki's Giant Cantilever Crane, No. 3 Dry Dock, Kosuge Ship Repair Dock, and Gunkanjima. This content is incorporated into the World Heritage official app and is used to offer virtual visits to the sites.

Figure 45. Virtual access to the No. 3 Dry Dock and Giant Cantilever Crane, facilities which are otherwise not publicly accessible



Figure 46. Kosuge Ship Repair Dock and Gunkanjima (3D resources)

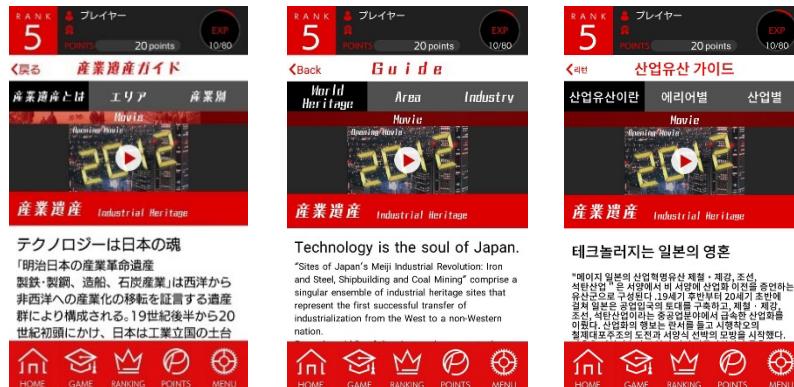


➤ Guide app for Sites of Japan's Meiji Industrial Revolution

App use began on 20 March, 2017, for the purpose of explaining and promoting learning on the Sites of Japan's Meiji Industrial Revolution. The application has multilingual support (Japanese, English, Korean, simplified and traditional Chinese, and Vietnamese).

Figure 47. Guide application

From left: Japanese, English and Korean)



From left: Simplified Chinese, Traditional Chinese and Vietnamese)



- Promotion of tours around the Sites of Japan's Meiji Industrial Revolution using digital signage and apps

Figure 48. Example of digital signage and app: overall image



- ・ Installation of digital signage in the IHIC
A system has been developed that promotes tours around the sites by displaying Area guide maps and information on industrial heritage tour routes. AI chatbots have also been installed that respond in real time to a wide range of questions about tour routes and sightseeing.
- ・ Introduction of IHIC official LINE account
The LINE messaging service has been used as a gateway to realising interactive communication which is geared to the user's situation based on their location information, linking to existing guide apps and providing services such as information about discount coupons that can be redeemed at local shops. Multilingual support will be provided for visitors from overseas.

Figure 49. Examples of digital signage and app



➤ Immersive multi-displays at the IHIC

Immersive multi-displays provide explanations regarding the component parts of the Sites of Japan's Meiji Industrial Revolution utilizing photos and videos. Over time, industrial heritage sites around Japan will be indicated on maps based on satellite images, along with photo images and explanatory text.

Figure 50. Immersive multi-displays



➤ Initiatives at visitor centres, etc.

Figure 51. Gunkanjima Digital Museum VR app

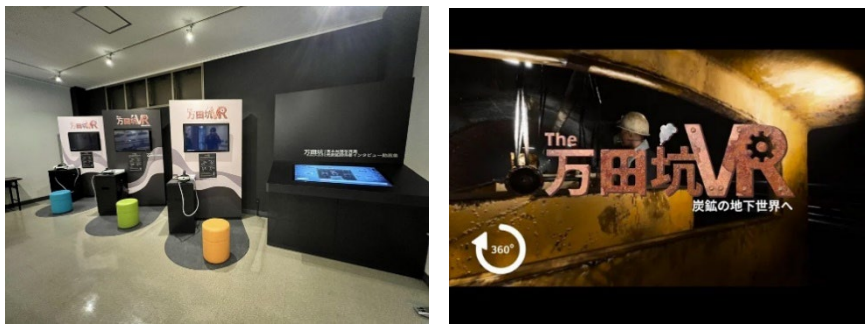


Figure 52.

SANO TSUNETAMI and the Mietsu Naval Dock History Museum AR image



Figure 53. Miike Manda Pit VR contents



(8) Other

- Based on the Interpretation Strategy, the Government of Japan has been sincerely responding to the decisions and other actions of the World Heritage Committee in accordance with the statement and intends to continue to make improvements in the future. The Government of Japan will continue the dialogue it has conducted to date with the governments of the concerned state parties, including the Republic of Korea.
- In addition, regular interpretation audits will be conducted by international experts to confirm progress, and interpretation plans, etc. will be reviewed as necessary.

Matters relating to dialogue between the concerned parties

1. Background and directionality

- The Sites of Japan's Meiji Industrial Revolution comprise 23 component parts divided among 11 cities in 8 prefectures. Each component part is quite diverse in terms of geographic location, operational status, owners, managers, etc.
- A wide spectrum of stakeholders, therefore, needs to form close partnerships to develop an effective and efficient environment for the conservation and management of the component parts.
- Given the above situation, active efforts have been made to provide opportunities for dialogue among relevant stakeholders, including the Government of Japan, local authorities, owners, and experts, and this dialogue will be continued so as to foster a common understanding among this broad spectrum of stakeholders.
- In addition, the Government of Japan will continue the dialogue it has conducted to date with the governments of the concerned State Parties, including the Republic of Korea.

2. Outputs, etc.

- Since the Report on the Implementation Status of the Interpretation Strategy (November 30, 2020), the Government of Japan has continued to engage proactively with a wide spectrum of stakeholders through the National Committee of Conservation and Management for the Sites of Japan's Meiji Industrial Revolution, the Expert Committee on the Industrial Heritage including Operational Sites, Local Conservation Councils, and the World Heritage Route Promotion Council, as well as through implementation training, and will continue to conduct such dialogue in future.

FY 2021

Local Conservation Councils: Held in writing in May in all Areas

National Committee of Conservation and Management for Sites of Japan's Meiji Industrial Revolution: Held in writing in August 2021 and March 2022

Expert Committee on the Industrial Heritage including Operational Sites: Held in person in February 2022 along with online participation

World Heritage Route Promotion Council: Held in person in October 2021

FY2022

Local Conservation Councils: Held in May in all Areas (at venues in Hagi, Nirayama, Saga, and Yawata and in writing at Kagoshima, Kamaishi, Nagasaki, and Miike)

National Committee of Conservation and Management for Sites of Japan's Meiji Industrial Revolution: Held in writing in August 2022; Held in person in October.

Expert Committee on the Industrial Heritage including Operational Sites: Held in person in September 2022 along with online participation

Figure 54. Consultation with related organizations



Expert Committee



Saga Local Conservation Council

- In addition to expositions of the component parts via websites, World Heritage panel exhibitions and other promotional activities are conducted in each Area to disseminate the contribution to World Heritage value and appeal of the component parts, helping to boost tourist understanding of the component parts. Education activities are also held for students and other local residents to deepen their understanding of the component parts.
- The Government of Japan is engaged in ongoing intergovernmental dialogue with the Government of the Republic of Korea and that dialogue will continue, including explaining Japan's interpretation policy as noted in this report.
- Since the IHIC was established, various stakeholders from Japan and overseas, including the Korean community, have been welcomed and provided with careful explanations, deepening understanding of the World Heritage value and full history. In the future, the Centre plans to further enhance its exhibits and explanations, improve accessibility to the Centre, and create more opportunities for dialogue with stakeholders.

Figure 55. Example of promotion activities for the property



Table 4 Number of visitors to the IHIC

year	number	remarks
2020	2,460	Number of visitors after June when the Centre opened, noting the impact of the pandemic.
2021	1,237	Visitor numbers impacted by the pandemic.
2023	701	As of October 2022. Visitor numbers impacted by the pandemic.

Figure 56. Diverse visitors to the Centre



High school students



Visitors from abroad

Matters related to conservation and management

1. Background

(1) Hashima Coal Mine

- The report “ICOMOS Evaluations of Nominations of Cultural and Mixed Properties” (WHC-15/39.COM/INF.8B1) noted the following points:
 - ICOMOS considers that the plan for the Hashima Coal Mine needs to be more detailed. The

state of conservation of this site is poor and requires urgent conservation work on a large scale.

- The conservation management plan provides general policies to prevent further deterioration of the attributes related to the Meiji era.
- There is currently no prioritised program of works based on its overall state of conservation, nor a time frame for works to commence.
- Immediate action is required particularly for the revetment to retain not only the wall but also the whole island. It was confirmed to ICOMOS that ¥200M/year will be made available over the next five financial years to undertake works.
- Based on the above ICOMOS report, Decision 39 COM 8B.14 recommended “a) Developing as a priority a detailed conservation work programme for Hashima Island.”
- The Cabinet Secretariat worked with Nagasaki City to create a Conservation Work Programme which was submitted to the UNESCO World Heritage Centre as part of the State of Conservation Report on November 30, 2017.
- The Decision adopted by the World Heritage Committee at its 42nd session (42 COM 7B.10) requested the submission of the following information: (a) One or more study(ies) on those buildings made of wood, steel, and reinforced concrete which has collapsed or irreversibly decayed since 1974, and whether they can be conserved; (b) Further archaeological studies; (c) More research on historical documents, structural materials and visitor movements; and (d) An Action Plan, developed by Nagasaki City, covering project deadlines, implementation techniques for phased work, and setting annual goals.
- The Cabinet Secretariat worked with Nagasaki City to create a Conservation Work Programme which was submitted to the UNESCO World Heritage Centre as part of the State of Conservation Report on November 29, 2019.
- The "Hashima Island Revetment Working Group" was established for the purpose of studying the future conservation and restoration of the revetment while making comprehensive adjustments to the restoration method and other issues. All stakeholders from the national government, Nagasaki Prefecture, and Nagasaki City have gathered at the subcommittee five times since FY 2008 to discuss the issue, and in FY 2021, the committee started the research and design of the revetment works for Hashima Island.

(2) Other Component parts

- The report “ICOMOS Evaluations of Nominations of Cultural and Mixed Properties” (WHC-15/39.COM/INF.8B1) noted the following points:
 - The condition of some of the components may need to be reassessed, including Glover House and Office, Miyanohara Pit, Manda Pit, and the Imperial Steel Works Repair Shop.
 - It is unclear how major conservation works are to be prioritised across the nominated

property and when they will be undertaken.

- Based on the above points, the decision adopted by the World Heritage Committee at its 39th session (39 COM 8B.14) recommended: “(b) Developing a prioritised conservation work programme for the property and its component sites and an implementation programme.”
- The owners of the component parts or the relevant municipal authorities created a “Conservation, Restoration, Presentation and Public Utilization Plan” for each of the component parts, from which primarily the sections on conservation work were extracted and submitted to the UNESCO World Heritage Centre on 30 November, 2017, as an appendix to a State of Conservation report.

(3) Visitor management strategy

- The report “ICOMOS Evaluations of Nominations of Cultural and Mixed Properties” (WHC-15/39.COM/INF.8B1) noted as follows:
 - The number of visitors at component sites is likely to increase based on the trend for previously inscribed properties in Japan. The level of increase will vary at each component due to their geographical location, ease of access and the number of hours they are open for public access. Monitoring measures will be put in place to record the number of visitors if the nominated property is inscribed.
 - ICOMOS considers that a strategy needs to be developed to assess and determine the acceptable capacity at each component site to ensure that there are no adverse impacts on their structures particularly at such sites as the Shokasonjuku Academy (Area 1/Component Part 1-1) and Glover House and Office (Area 6/Component Part 6-8).
- The Decision adopted by the World Heritage Committee at its 39th session (39 COM 8B.14) recommended: “(c) Defining acceptable visitor threshold levels at each component site to mitigate any potential adverse impacts, commencing with those most likely to be at risk.”
- Surveys of visitor numbers were undertaken over the FY 2016-2018 period.
- Progress with the creation of a visitor management strategy was reported in the State of Conservation report submitted on November 30, 2017.
- Based on the results of the surveys, capacity was considered and used as the basis for the visitor management strategy created in November 2019.
- The visitor management strategy was reported in the State of Conservation report submitted on November 29, 2019.

(4) Human resource capacity-building

- The report “ICOMOS Evaluations of Nominations of Cultural and Mixed Properties” (WHC-15/39.COM/INF.8B1) noted that: ongoing regular training and capacity-building is needed on the appropriate conservation and management methods; capacity-building through training needs to be better articulated, particularly to ensure a consistent conservation and management approach across all components of the nominated property; and managers and staff related to component parts need to undergo training.
 - The State of Conservation report submitted on 30 November, 2017, divided personnel into four types and defined the necessary capacities for each personnel type, as well as indicating human resource capacity-building policies that are common to the property as a whole, including the training for each personnel type and project items which should be implemented for human resource capacity-building. The current status and issues in relation to human resource capacity-building in individual Areas and component parts were identified and policies clarified, while the report also noted the current state, issues, and way forward for each Area.
- Reference: The four personnel types are
- a) Owners and managers of the component part
 - b) Personnel engaged in actual conservation and management work on-site at the component part (designated administrators, etc.)
 - c) Personnel engaged in routine maintenance and management work on-site at the component part (including cleaning and repairs)
 - d) Personnel engaged in permanent interpretation work on-site at the component part, including volunteer guides.

2. State of conservation and management

Conservation and management are carried out based on Conservation Work Programmes and Implementation Schedules drawn up for each component part (submitted to UNESCO 30 November, 2017), according to a schedule that assigns priorities to each project item. Even though international travel has been difficult during the COVID-19 pandemic, maximum efforts have been devoted to ensuring that conservation and management are carried out properly, including obtaining the advice of international experts through online meetings.

The following is the progress on conservation and management issues since December 2019.

- Plans for the Development of an Anchorage for Small Vessels at Miike Port
- The plans for developing an anchorage for small vessels that were part of the port plan for Miike Port at the time of inscription was, as requested by the decision of the 39th Session of the World Heritage Committee, summarized in a State of Conservation Report in March 2021 pursuant to Paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage

Convention. The plans were submitted to the Cabinet Secretariat by the Local Conservation Council consisting of the Ports and Harbours Bureau (Ministry of Land, Infrastructure, Transport and Tourism (MLIT)), which manages the World Heritage value of Miike Port, the port authority, and local municipalities. In the report, the progress concerning the anchorage plan was described as follows: in accordance with the strategic framework of the Cabinet Secretariat, the Local Conservation Council sought the advice of Japanese and international heritage advisors and responded in good faith to the results of the HIA by the advisors, an alternative proposal was studied that would not impact the OUV, leading to the decision to abandon the initial plan of building an anchorage for small vessels in the buffer zone on the south side of the Port of Miike shipping channel. The revised plan to improve the existing anchorage facility inside the port was supported in the ICOMOS technical review (November 2021).

Under the current plan, the revised proposal will be implemented, improving the existing anchorage facility by means of a floating pier, in order not to damage the OUV and allow the concerned parties to continue using the port safely.

To renovate the deteriorated parts of the anchorage facility, this construction work will include the two docks, four mooring piers, two landings, and two connecting bridges. The floating pier design will avoid landfilling, so as not to damage the distinctive shape (an OUV attribute) of the harbour and harbour walls. The construction work is planned to start in 2023.

➤ Development of an Observation Deck and Other Interpretation Facilities in the Buffer Zone of Miike Port

This is a progress report on a project for which a report was first submitted in March 2021.

An observation deck and other interpretation facilities are planned for development in the buffer zone of Miike Port. This area is vacant land in the buffer zone, and the proposal will have no adverse impacts on the attributes of Miike Port that contribute to the OUV. The mound to be built for the observation deck is designed and located so as not to interfere with the important views and landscape and will enable views extending for 3 kilometres along the port. This observation deck, as part of the interpretation plan for the Miike area, together with the existing observation deck to the northeast side of the harbour, and also in the buffer zone, will help visitors to better understand the unique design and operation of the port necessary for berthing large vessels in the shallow tidal flat water characteristic of the Ariake Sea. IT will deepen appreciation of the contribution to the World Heritage value by Miike Port. The work on land this facility is planned to start in 2023.

(1) Matters for which State of Conservation Reports have already been issued from 2020 to 2021

1) Proposed plan for the Terayama Charcoal Kiln post-disaster recovery and repair project (Area 2, Kagoshima)

This was reported in December 2020 in accordance with paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention.

The Terayama Charcoal Kiln suffered two partial collapses due to heavy rainfall in June and July of 2019.

The stone materials making up the masonry of the kiln that collapsed are all preserved inside the site, and detailed positional information of the individual stones had been recorded before the disaster, making it possible to rebuild the stone masonry on this basis. In the rebuilding necessary to fix bulging and in adding new materials to fill in missing portions, intervention by more contemporary construction methods will be kept to a minimum, so the authenticity in terms of form/design and materials/substance of the remains will not be compromised.

The recovery and repair work will be carried out from the standpoints both of preserving evidence from the end of the Edo period (first half of the 19th century) and evidence of changes over time in the Terayama Charcoal Kiln, and of securing the stability of the kiln as a structure. Accordingly, while the key focus will be on restoring the areas damaged in the disaster, to stabilize the kiln structure, part of the underground masonry revealed through survey work will be uncovered and restored, while the masonry that had collapsed prior to the World Heritage inscription will be restored to the minimum necessary level and new stone will be used to fill missing portions.

The collapsed slope in the buffer zone is on a precarious angle and is in an unstable state, so to prevent further slips, it will be cut back to a stable grade. Measures will also be taken to address the subterranean water seepage that caused the slippage, drain away the rainwater that collects on the slope, and implement slope protection. To green the slope, efforts will be made to promote natural growth laying down vegetation mats so that vegetation will be restored through airborne seeds from natural vegetation, etc., from the surrounding area.

2) Repairs of Damage Caused by Heavy Rain at the Miike Coal Railway (Area 7, Miike)

This was reported in March 2021 in accordance with paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention.

In July 2020, heavy rain including a period of around two hours during which the rain fell at a rate of nearly 100mm per hour, caused widespread damage in Omuta City. The Miike Coal Railway too was affected, with damage confirmed in approximately nine spots. The railway was built in the Meiji era by digging out some of the bedrock and banking up other areas, and the damage was primarily limited to topsoil runoff from the slope, with no impact on essential

characteristics such as the Meiji-era slope.

After the site was damaged, in addition to taking emergency measures, work began on preparing a restoration project and creating an engineering design. The full-scale restoration was tackled in May 2021 and completed in March 2022. While there was no impact on the essential value of the component part, the collapse of the slope changed its appearance and also damaged drainage functions. Steps to address the collapse of the slope were tailored to the scale of the collapse at the particular point, including (1) simply shaping the slope, (2) clearing the topsoil runoff and then regreening the slope by laying vegetation mat, and (3) clearing the topsoil runoff, shaping and protecting the slope by adding lightweight fill and continuous fibre reinforced soil, then regreening the slope by laying vegetation map. Water drainage within the railway site was addressed by dredging water channels and securing the width of the channels to safeguard to some extent against further heavy rain.

- 3) Preservation repairs and seismic reinforcement work on the Manda Pit storage & pump house and on the safety lamp house & bathing house (Area 7, Miike)

This was reported in December 2020 in accordance with paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention.

Conservation repair and seismic reinforcement work will be carried out on the Miike Coal Mine Manda Pit storage and pump house and the safety lamp house and bathing house to continue maintaining the buildings in good condition, as they have suffered notable deterioration and Japan is subject to frequent earthquakes. Conservation repair of the buildings will be limited to the minimum necessary replacement of materials, retaining the original materials to the maximum extent possible. Even when using reinforcement materials, they will be mounted internally, such as along columns and beams, so that they are barely noticeable, and to the maximum extent possible, without altering the exterior appearance. Consequently, rather than lessening the component part's contribution to OUV, the conservation repair and seismic reinforcement work will contribute to the preservation of OUV and help to promote visitor understanding of that value.

- 4) Repairs and Seismic Reinforcement Work on the Miyanohara Pit Number 2 Shaft Winding-Engine House (Area 7, Miike)

This was reported in December 2020 in accordance with paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention.

Work for conservation repair and seismic reinforcement will be carried out on the Miike Coal Mine Miyanohara Pit Number 2 Shaft winding-engine house to continue maintaining the building in good condition, as it has suffered notable deterioration and Japan is subject to frequent

earthquakes. Conservation repair of the building will be limited to partial repair of materials in the windows, doors, and other fittings, retaining the original materials to the maximum extent possible. The seismic reinforcement will be performed without altering the outside appearance. Even when using reinforcement materials, they will be mounted internally, such as along columns and beams, so that they are barely noticeable, keeping changes to the appearance to a minimum. In these and other ways, care will be taken not to cause adverse impacts on the OUV of the property.

5) Route Change of the City Planning Road in Miike Coal Mine and Miike Port and Its Buffer Zone (Area 7, Miike)

The city planning road Manda-Shimoide Line, in addition to its function as an access road to the Manda Pit is one of the component parts of the World Heritage property, is a road of the highest importance as part of the loop trunk road connecting the outskirts of Arao City. While the road is to be extended aiming for its early full completion, the route for the uncompleted sections decided in the city plan of 1944, which remains unchanged from that plan, cross through the buffer zone of the Manda Pit component part. Accordingly, the route of the city planning road is to be changed, informed by a HIA, to avoid crossing the buffer zone, as well as to minimize as far as possible any impact on the historical and archaeological remains and artefacts and landscape of the Manda Pit and the coal railway.

The route chosen as the optimal proposal after comparing multiple proposed routes avoids the World Heritage component part and diverts the road all the way to the southern edge of the buffer zone, so that there will be no direct adverse impacts on the attributes conveying the OUV inside the component part. Moreover, while the route avoids passing through the historical and archaeological remains and artefacts as a World Heritage component part and the scope within which the coal mining and transport system are complete, it is also well able to achieve the functions for vehicle and pedestrian traffic.

6) Progress status of project proposals concerning the Imperial Steel Works and Onga River Pumping Station (Area 8, Yawata)

This was reported in December 2020 in accordance with paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention.

Interior improvement work on the First Head Office was completed in September 2020. The general approach was to maintain in their present state the exterior (roof, walls) and existing seismic reinforcement members; and then following the basic policy of (1) basing restoration work on the evidence of remaining parts and materials, old photos, old drawings, and the initial First Head Office study report; (2) in the case of portions for which such evidence is unclear,

carrying out recovery, repair, and improvement with reference to examples of buildings from the same era; and (3) reflecting certain functional measures for the sake of facility maintenance and public utilization.

The basic policy in the seismic reinforcement design for the Onga River Pumping Station is to reinforce it without harming the value of the historic building while also recognising the pumping station's importance as an operational facility. It supplies around 70 per cent of the industrial water to the Yawata and Tobata premises of the steelworks, which is why it must achieve a level of safety so as not to collapse in a major earthquake.

(2) Decision on whether these projects require heritage impact assessment: Impact on the OUV

Each of the projects described in this report has been the subject of a number of year's development, during which the potential impacts on OUV have been identified, and the proposals have been modified to avoid or reduce to a very minor extent any impact. This process in effect fulfils the 'Screening' process as outlined in the new *Guidance and Toolkit for Impact Assessment in a World Heritage Context*, (2022) for deciding whether a heritage impact assessment is necessary for a project. In each case it was determined that there was no or unavoidably minimal adverse impacts on the OUV, and accordingly, the Cabinet Secretariat decided that further heritage impact assessment did not need to be conducted. Details of the HIA screening process leading to the decisions are summarized in a report in each case.

1) Status of Plans to Construct a New Railway Station in the Buffer Zone of Shuseikan with the Aim of Protecting OUV(Area 2 Kagoshima)

This is a progress report for the project previously reported in December 2020.

The conservation plan for this component part considers the dispersal and improvement of visitor access in the Iso district where the component part is located, and which is subject to high volumes of visitor traffic and parking at peak periods, while ensuring the conservation of attributes conveying OUV (structures and buildings), and minimizing potential negative impacts on the remains. The construction of a railway station in the buffer zone opposite the main entrance to the property is seen as providing major improvement to visitor access pressures, while avoiding impacts on attributes of OUV.

Screening as part of a Heritage Impact Assessment process, with advice from national and international experts and redesign of the proposal, has resulted in the design of a proposed railway station that is assessed as avoiding negative impact on the OUV, so negating the need for more detailed HIA stages.

2) Conservation and management status of the Kosuge Slip Dock (Area 6, Nagasaki)

Mitsubishi Heavy Industries, Ltd., owner of the Kosuge Slip Dock, prepared a Conservation Work Plan for the hauling hut which is an attribute within the component part of the World Heritage property, followed by Conservation Management Policy in the Conservation Management Plan, in close consultation with Cultural Agency and heritage advisors. The Conservation Work Plan is carefully designed to protect attributes that convey the OUV. The plan was approved by the Nagasaki Local Conservation Council.

The Kosuge Slip Dock project has been the subject of a process over a number of years that has looked at the need for seismic reinforcement, the potential impacts of works options on OUV, and how to avoid or minimise them.

As a result of a seismic diagnosis conducted in 2018, it was found that a major earthquake might cause the hauling hut to collapse and, in the process, damage the boiler and hauling machinery inside the building.

It was therefore decided to improve the earthquake resistance of the building while paying special attention to its heritage value. In the context of the Conservation Work Plan, it was decided to reinforce the interior with a steel frame and repair cracks in the brick walls, after obtaining advice from Japanese and international experts.

There are also places inside and outside the hauling hut where rainwater and groundwater tends to accumulate, which might lead to deterioration of the brick walls, gears inside a machinery pit, the boiler and other attributes of OUV. Drainage measures for preventing water infiltration in the building were therefore studied. After considering multiple proposals for minimizing impact on the OUV, it was decided first of all to install a drainage system outside the building, to prevent water infiltration into the building. The effectiveness of this solution will be monitored, and if necessary, additional methods of direct drainage from inside the building will be considered.

The work on these measures will be started in fiscal year 2022.

3) Conservation and management status of Hashima Coal Mine (Area 6, Nagasaki)

Nagasaki City is engaged in conservation and management of the Hashima Coal Mine, for which conservation measures were drawn up in a 10-year schedule as the first phase of the 30-year Conservation Work Plan, based on the Conservation Management Plan.

Since Hashima is always exposed to very high and damaging waves during typhoons, special attention has to be given to the revetment in order to protect the island as a whole, as it is largely made up of loose mine waste. Already several areas of sea wall have been damaged by waves and there is a critical need to fill large cavities created under and behind the revetment, and a

certain degree of reinforcement is required in order to prevent catastrophic failure of the whole island.

Hashima Island Revetment Working Group was established under the strategic framework by the relevant ministries and agencies (Cabinet Secretariat, Cabinet Office, Agency for Cultural Affairs, Tourism Agency, Ports and Harbours Bureau (MLIT), Water and Disaster Management Bureau (MLIT), Nagasaki Prefecture and Nagasaki City) to discuss the maintenance of the revetment necessary to maintain the entire island, as well as to preserve the original revetment remains that contribute to its OUV. Following these discussions, the next step will be for Nagasaki City to take the necessary budgetary measures, with support from the national government, and then to move to the maintenance work phases.

A full survey to investigate current revetment conditions was conducted by the fiscal year 2021, and the survey indicated that there are two places of the revetment which show serious deterioration that requires emergency repairs. Responding to this survey, priority reinforcement work is planned, based on detailed design work in fiscal year 2022, and construction will begin by the end of fiscal year 2023.

4) Progress Status of Project Proposal concerning the Imperial Steel Works (Area 8, Yawata)

This is an update of the project proposal reported in 2021 for the Imperial Steel Works. That report dealt with three buildings, however planning for the use of the First Head Office Building as a visitor facility, and the final planning for the seismic strengthening and conservation works at the Repair Workshop are as yet not finalised, and will be reported on in subsequent years as final works are proposed. The seismic strengthening of the Former Forge Shop and related conservation works are proposed to commence in 2023, and this project is the subject of this report. The attached report on the project indicates the relationship between the proposed seismic strengthening and conservation works as requested by ICOMOS.

The Former Forge Shop project has been the subject of a process over a number of years that has looked at the need for seismic reinforcement, potential impacts of works options on OUV, and how to avoid or minimise impacts. It was, in effect, a tailored HIA process that equates to the Screening process as outlined in the new *Guidance and Toolkit for Impact Assessment in a World Heritage Context (2022)*, that worked to refine the proposal to the point where a more detailed HIA was not required. The process, which avoids or mitigates any adverse impact on the OUV of the property, is summarised here and is submitted to the World Heritage Committee in response to the ICOMOS technical review provided by the World Heritage Centre in October 2021, in accordance with the Operational Guidelines, Paragraph 172.

(3) Other

Going forward, it will be important to clarify standard responses and order of procedures in relation to the relevant institutions, local governments, and other stakeholders when development projects arise in the future. To this end, development projects to date and their handling will be compiled with advice from domestic and international experts and this information shared with the relevant institutions.

3. Reference materials

- Appendix 1-1 Area-Specific Interpretation Plan (Area 1 Hagi)
- Appendix 1-2 Area-Specific Interpretation Plan (Area 2 Kagoshima)
- Appendix 1-3 Area-Specific Interpretation Plan (Area 3 Nirayama)
- Appendix 1-4 Area-Specific Interpretation Plan (Area 4 Kamaishi)
- Appendix 1-5 Area-Specific Interpretation Plan (Area 5 Saga)
- Appendix 1-6 Area-Specific Interpretation Plan (Area 6 Nagasaki)
- Appendix 1-7 Area-Specific Interpretation Plan (Area 7 Miike)
- Appendix 1-8 Area-Specific Interpretation Plan (Area 8 Yawata)
- Appendix 2-1 Heritage Impact Assessment Report for the Post-Disaster Recovery and Repair Project at the Terayama Charcoal Kiln in Area 2 Kagoshima (Component Part 2-2)
- Appendix 2-2 Status of Heavy Rain Damage to the Coal Railway of the Miike Coal Mine and Miike Port (Area 7/Component Part 7-1), and Measures to Be Taken
- Appendix 2-3 Heritage impact assessment report of the Manda Pit (Component Part 7-1) Storage and Pumping Station as well as Safety Lamp Room and Bathroom Conservation / earthquake-proofing works
- Appendix 2-4 Heritage impact assessment report of Miyanohara Pit (Component Part 7-1) Shaft No. 2 Winding Engine House conservation/earthquake-proofing works
- Appendix 2-5 Summary of the Heritage Impact Assessment for a Route Change of the City Planning Road in Miike Coal Mine and Miike Port(Area 7/Component Part 7-1) and Its Buffer Zone
- Appendix 2-6 PROGRESS STATUS OF PROJECT PROPOSALS CONCERNING THE IMPERIAL STEEL WORKS (COMPONENT PART 8-1) AND ONGA RIVER PUMPING STATION (COMPONENT PART 8-2)
- Appendix 3-1 Screening report as part of a Heritage Impact Assessment process for a new train station in the Buffer Zone of the Shuseikan component part (Area 2 / Component 2-1)
- Appendix 3-2 Report on the Kosuge Slip Dock Preservation and Maintenance Work
- Appendix 3-3 Revetment construction work at Hashima Coal Mine (Area 6/Component Part 6-7)
- Appendix 3-4 PROGRESS STATUS OF PROJECT PROPOSAL CONCERNING THE IMPERIAL STEEL WORKS

II. Appendices

- Appendices 1 1—330

Area-specific Interpretation Plan

- Appendices 2 331—412

State of Conservation Reports which have already been issued from 2020 to 2021

- Appendices 3 413—498

Decision on whether these projects require heritage impact assessment: Impact on the OUV

Area1 Hagi

Appendix 1-1

AREA-SPECIFIC INTERPRETATION PLAN



【Area List】

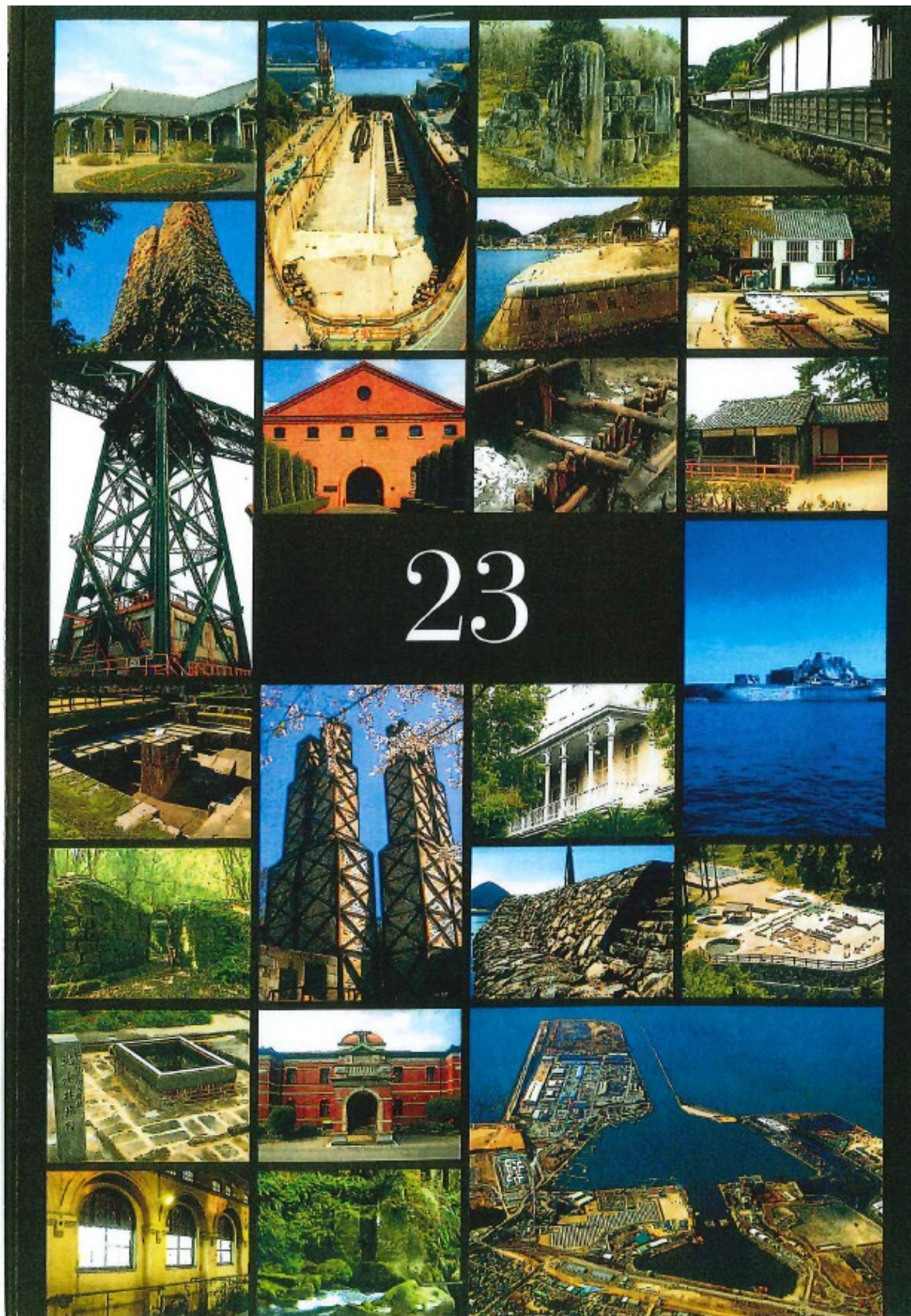


【Component Name】

List of the Component Parts

Area	Site	ID	Component Part
A1 Hagi	1 Hagi Proto-industrial Heritage	1-1	Hagi Reverberatory Furnace
		1-2	Ebisugahana Shipyard
		1-3	Ohitayama Tataru Iron Works
		1-4	Hagi Castle Town
		1-5	Shokasonjuku Academy
A2 Kagoshima	2 Shuseikan	2-1	Shuseikan
		2-2	Terayama Charcoal Kiln
		2-3	Sekiyoshi Sluice Gate of Yoshino Leat
A3 Nirayama	3 Nirayama Reverberatory Furnaces	3-1	Nirayama Reverberatory Furnaces
A4 Kamaishi	4 Hashino Iron Mining and Smelting Site	4-1	Hashino Iron Mining and Smelting Site
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		6-2	Mitsubishi No.3 Dry Dock
		6-3	Mitsubishi Giant Cantilever Crane
		6-4	Mitsubishi Former Pattern Shop
		6-5	Mitsubishi Senshokaku Guest House
	7 Takashima Coal Mine	6-6	Takashima Coal Mine
		6-7	Hashima Coal Mine
	8 Glover House and Office	6-8	Glover House and Office
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		8-2	Onga River Pumping Station

Table1



SITES OF
JAPAN'S
MEIJI INDUSTRIAL
REVOLUTION
IRON & STEEL, SHIPBUILDING
AND COAL MINING

Executive Summary

Brief Synthesis

“Sites of Japan’s Meiji Industrial Revolution: : Iron and Steel, Shipbuilding and Coal Mining” comprise a singular ensemble of industrial heritage sites that represent the first successful transfer of industrialization from the West to a non-Western nation.

From the middle of the 19th century to the early 20th century, Japan achieved rapid industrialization that was founded on the key industrial sectors of shipbuilding, iron and steel, and coal mining. The initial phase was one of trial and error experimentation in iron making and shipbuilding, based mostly on Western textbooks, and by copying examples of Western ships. This was followed by the more successful importation of Western technology and the expertise to operate it and, by the late Meiji period, full-blown industrialization through newly acquired domestic expertise and the active adaptation of Western technology to best suit Japanese needs and social traditions. This successful industrialization was achieved in just a little over 50 years without colonization, and on Japan’s own terms. The property is testimony to this unique phase in world history.

Justification for Criteria

Criterion (ii)

The property is a series of heritage sites that, together, uniquely illustrate the process by which feudal Japan sought technology transfer from Western Europe and America from the middle of the 19th century. This technology was adopted and progressively adapted to satisfy specific domestic needs and social traditions, thus enabling Japan to become a world-ranking industrial nation by the early 20th century.

Criterion (iv)

The technological ensemble of key industrial sites of shipbuilding, iron and steel, and coal mining is testimony to Japan's unique achievement in world history as the first non-Western country to successfully industrialize. Viewed as an Asian cultural response to Western industrial values, the ensemble had no counterpart elsewhere in the world.

Statement of Integrity

The 23 component parts are the best, and often the only, surviving examples of the key attributes that represent shipbuilding, the iron and steel, and coal mining industries and that are necessary to express Outstanding Universal Value. In each case, the boundary of the component part has been drawn to include the essential features that, overall, contribute to Outstanding Universal Value.

Component parts are in good condition and have mechanisms in place to control deterioration and keep sites free from the adverse effects of development. They have been variously affected by continued use, re-use or lengthy periods of abandonment, and their physical integrity varies between well preserved and fragmentary, the latter being sufficiently intact to be able to represent the former whole. In some cases, where the evidence is primarily archaeological, sufficient investigation has been carried out to verify that a substantial archaeological site survives in good condition for further study and presentation. In other cases, in particular those that remain in operational industrial use, ongoing use and maintenance have resulted in an extraordinarily high level of integrity of working industrial elements.

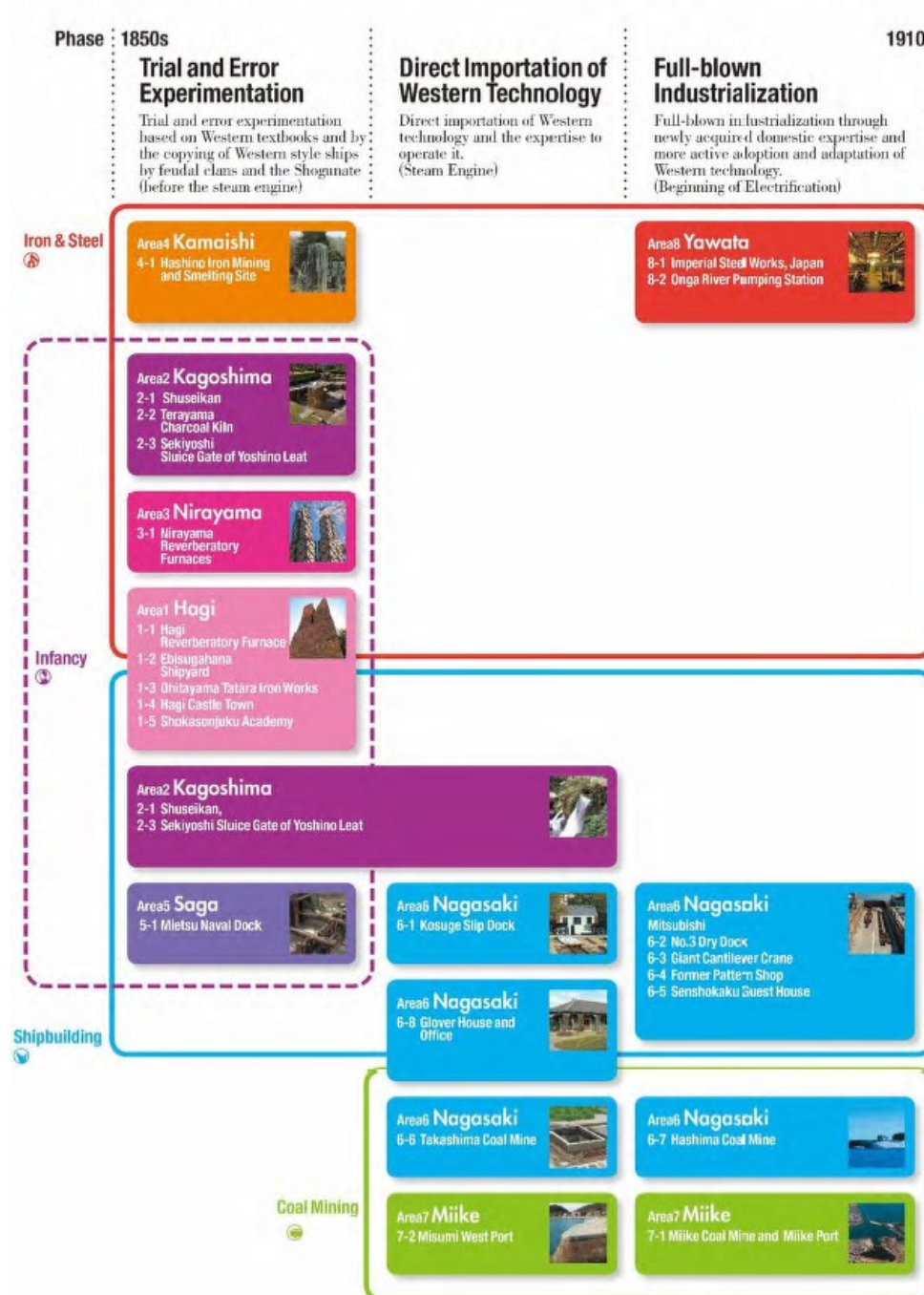
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The property as a whole as well as at the level of each component part meets the conditions of authenticity in relation to Outstanding Universal Value. It has a high degree of authenticity as the best surviving group of industrial remains that represent, and demonstrate, the first, and rapid, transfer of industrialization from the West to a non-Western nation.

With regard to 'form and design' and 'materials and substance', the component parts constitute the original forms and materials of the range of industrial components necessary to represent the transfer of heavy industry from the West to Japan. Some contain sites that range from fragmentary or archaeological, that are nonetheless authentic relics of important industrial components of the series, to those that comprise substantially intact authentic physical remains that have been managed for many years as historic sites which display these characteristics. Others possess an extremely complete survival not only of form, design and materials but also of continuing use and function.

Industrial History Related to the Hagi Area

The Hagi Area encompasses component parts that retain records related to iron & steel and shipbuilding in the first phase, Trial and Error Experimentation, of the World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”



The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO on November 30, 2017, as an appendix to the State of Conservation Report noted the following:

11. Interpretation Plan (extract)**(1) Consistent OUV rollout across all component parts**

Based on the Interpretation Strategy, the consistent interpretation of OUV should be presented across all component parts. This will be agreed by all stakeholders, and coordinated and implemented commonly in a branded World Heritage style.

(2) and (3) Progress in dealing with the “full history” of each site, including information gathering related to workers

Advice from international experts who are members of the Expert Committee on the Industrial Heritage including Operational Properties (Cabinet Secretariat of Japan), from the international heritage expert who was the ICOMOS technical evaluation field assessor of the World Heritage nomination of the “Sites of Japan’s Meiji Industrial Revolution”, and from the President of the ICOMOS International Scientific Committee on Interpretation and Presentation, comprises the following four key policies:

1) Focus on the interpretation of Outstanding Universal Value; in conformity with the primary purpose of the World Heritage, OUV of the inscribed property should be presented clearly at each site, not confusing with other, albeit related, issues. Based on this, Recommendation g)* should be implemented.

2) The scope of the “full history” of each site, except for the OUV period (from 1850s to 1910) as described on page 78, falls into two parts: prior to 1850s, and from 1910 to the present. The target of the full history should be narrowed down, considering the local values that supplement the understanding of the background of each component part. Where relevant, with regard to the interpretation of the full history on the location of each component part, high quality research such as collecting primary historical documents and recording oral testimonies should be carried out, and the result of this research should, at some stage, be made publicly available through appropriate media.

* Recommendation g)

“Preparing an interpretive strategy for the presentation of the nominated property, which gives particular emphasis to the way each of the sites contributes to OUV and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.”

Based on the Interpretation Strategy, we have had multiple audits of the current status of interpretation at the component parts and visitor centres, etc., in the various areas undertaken by international experts familiar with industrial assets and the interpretation thereof in countries around the world.

As a result, auditor Barry Gamble identified the following issues in relation to the Hagi area.

- Provides an exemplar on the interpretation of the overall OUV at the visitor centre (300,000 visitors in 2018), then more specific information at the associated facilities. The presentation of the overall OUV provides a model for other Areas to adopt and modify (although in terms of visitor experience, OUV should be presented first, before the Component Part's specific contribution, and national and/or local stories).
- Current detailed design development for the new exhibition in the Hagi Museum provides the opportunity to incorporate an object-rich display (in contrast to the interpretation-only visitor centre) that is relevant to each of Hagi's Component Parts and elements. This can be backed by succinct WHS interpretive context and labels; the exhibit fitting seamlessly into the rest of the museum and its current exhibition style.
- Ohitayama Tatara Exhibition Hall provides sufficient interpretation for an introduction to the adjacent site. The archaeological site is supplemented with interpretation boards and a virtual reality facility.

Discussions have been held regarding this interpretation plan for the Hagi Area thus far by the Local Conservation Council.

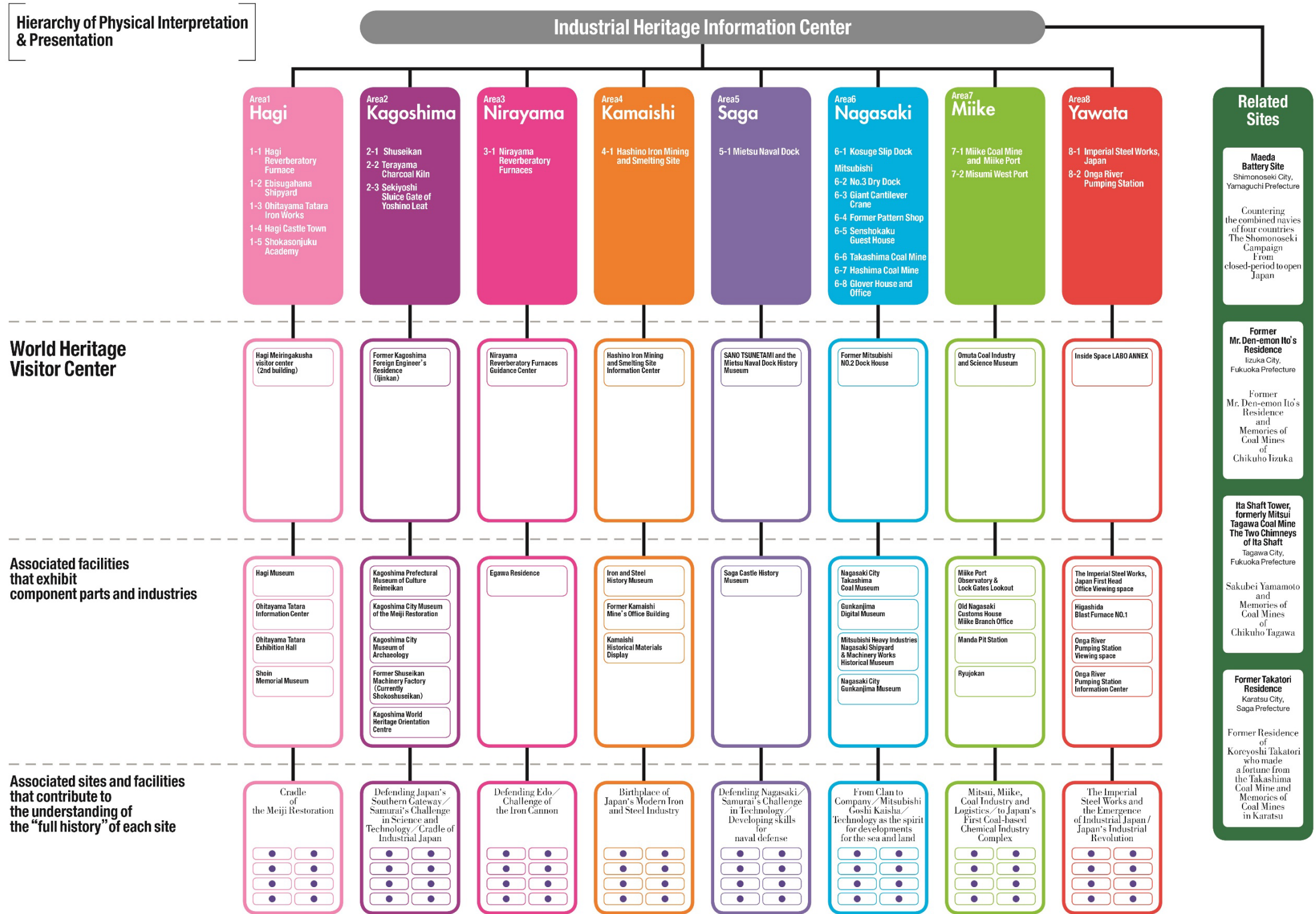
Going forward, in consideration of the above points, the focus will be placed on steadily installing exhibits that better reflect the World Heritage values in harmony with the historical and cultural values of the region through the installation of the common exhibition in cooperation with the Industrial Heritage Information Centre. The local conservation council will then review the implementation progress of this plan and consider ways to make improvements as appropriate.



Local Conservation Council meeting

Hierarchy of Physical Interpretation and Presentation

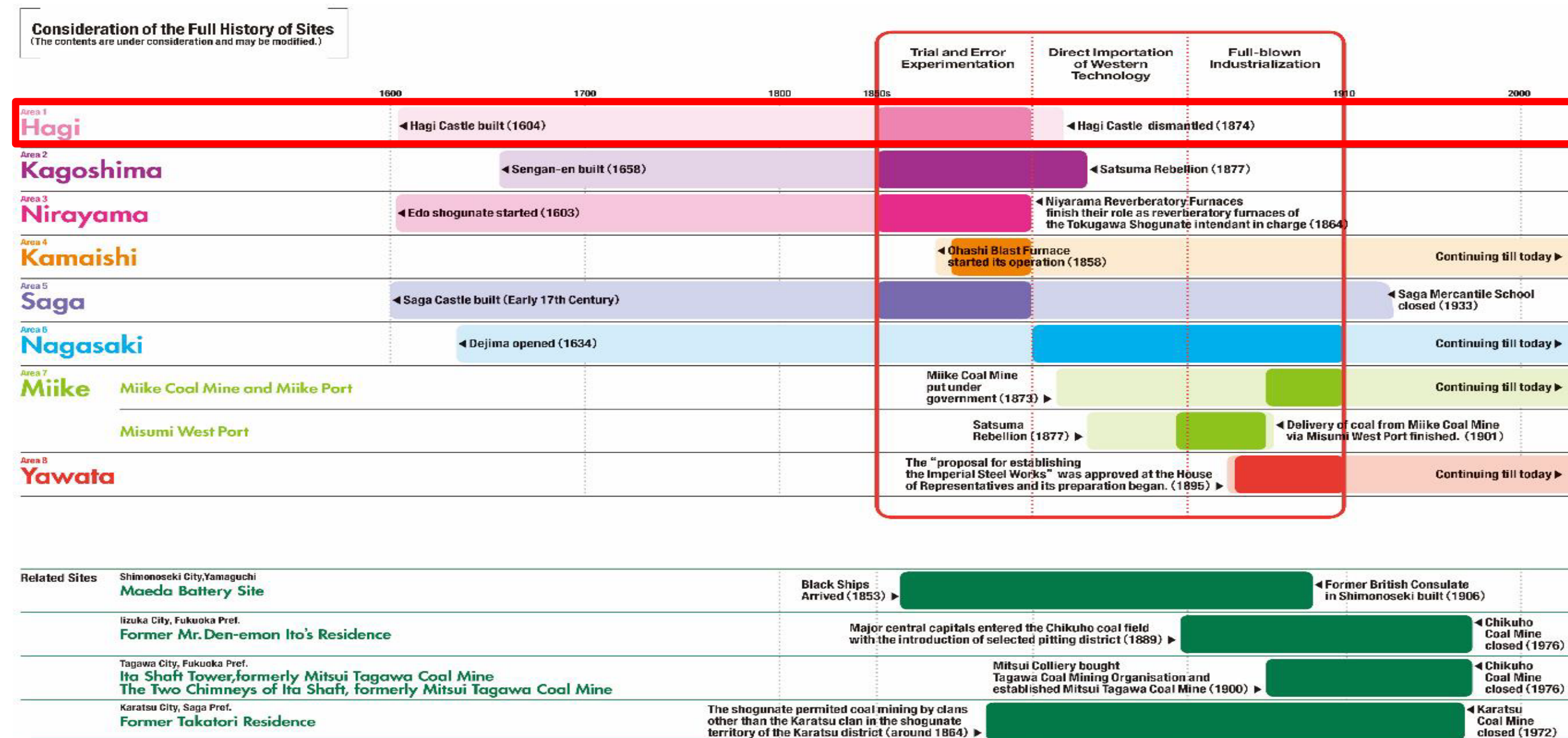
The Industrial Heritage Information Centre and the various local visitor centres will work together to build a system enabling the effective communication of the OUV of the Sites of Japan’s Meiji Industrial Revolution.



Related sites: Sites that were component part candidates in the provisional UNESCO World Heritage listing on the January 5, 2009, and that comprise industrial heritage (valuable assets that provide insight into the historical background and social situation of the time) that will be utilized in an integrated manner with the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution.”

Consideration of the Full History of Sites

The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO in 2017, addressed consideration of the full history of sites as shown in the figure below.



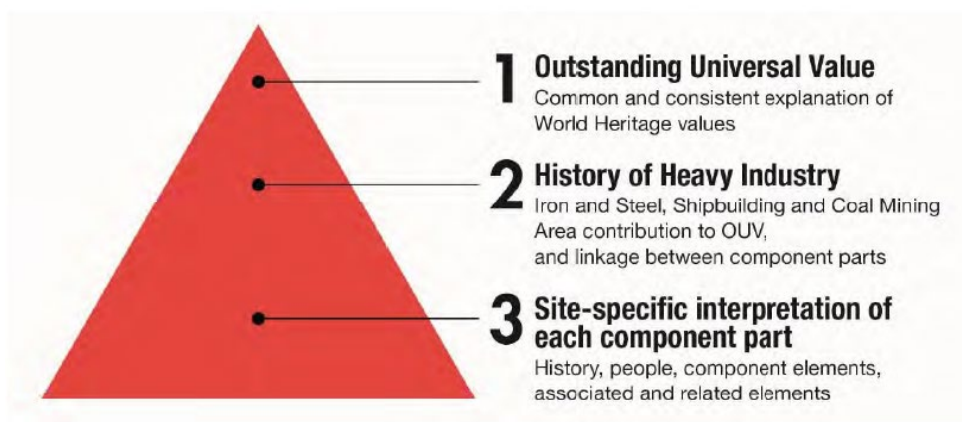
Interpretation in the Hagi Area

Approach of the Interpretation Strategy

The Interpretation Strategy provides the following schematic in relation to concepts for interpretation and presentation.

Interpretation for the Hagi area too will be approached in line with this in order to resolve the issues identified in interpretation audits.

Interpretation and presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of value and themes



OUV stands at the top of the interpretation pyramid at the Industrial Heritage Information Centre and the various regions' visitor centres and is therefore the top-priority theme over the interpretation and presentation of individual regions and industries, such as history specific to an area or component part. Addressing interpretation in the order of (1) OUV, (2) the history of heavy industry, and (3) site-specific interpretation of each component part, as shown above, will ensure consistent presentation across the property

Interpretation flow at each local visitor centre

Hierarchy of Interpretation



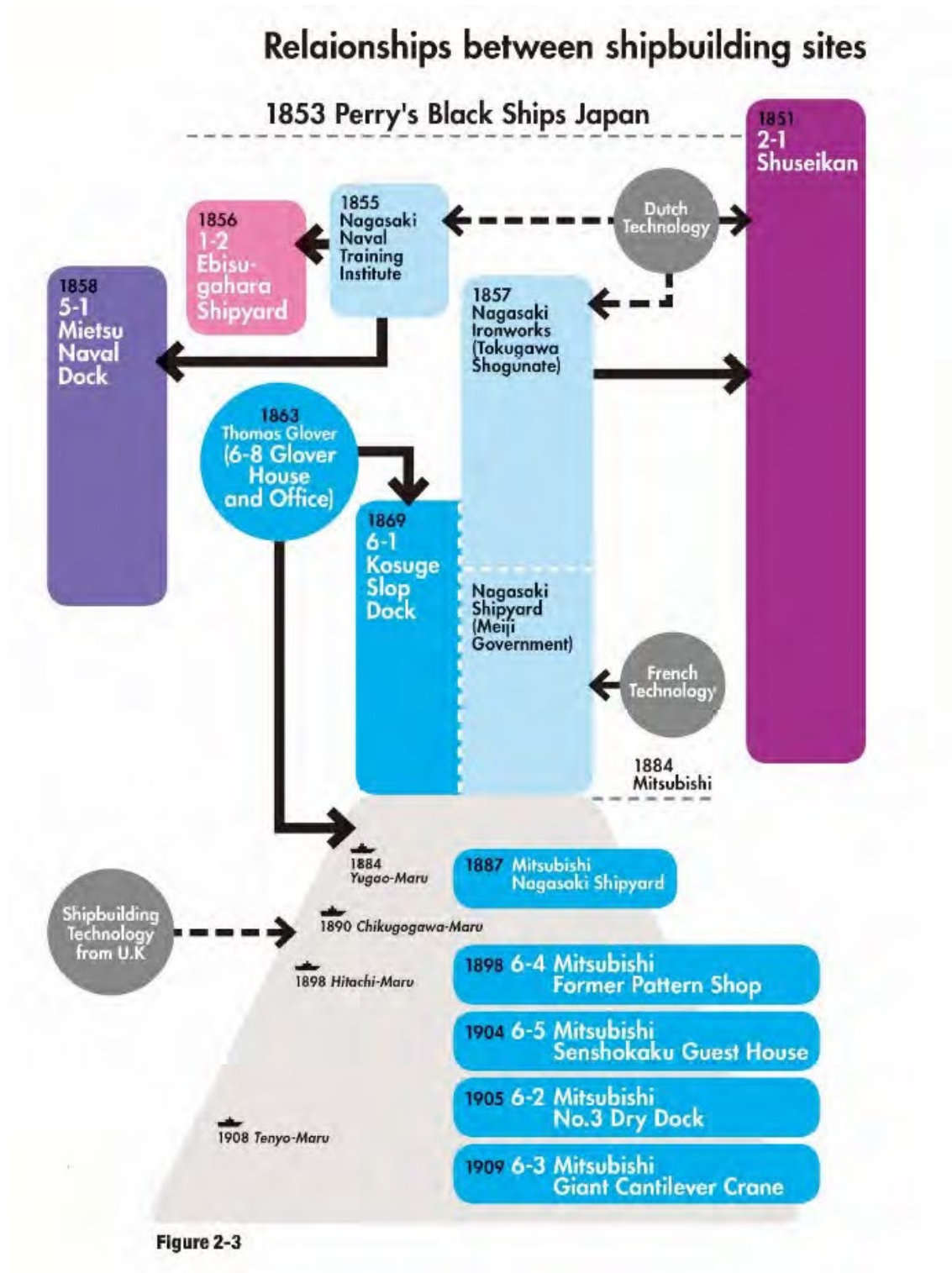


Figure 2-3

Relationship between Iron and Steel Sites

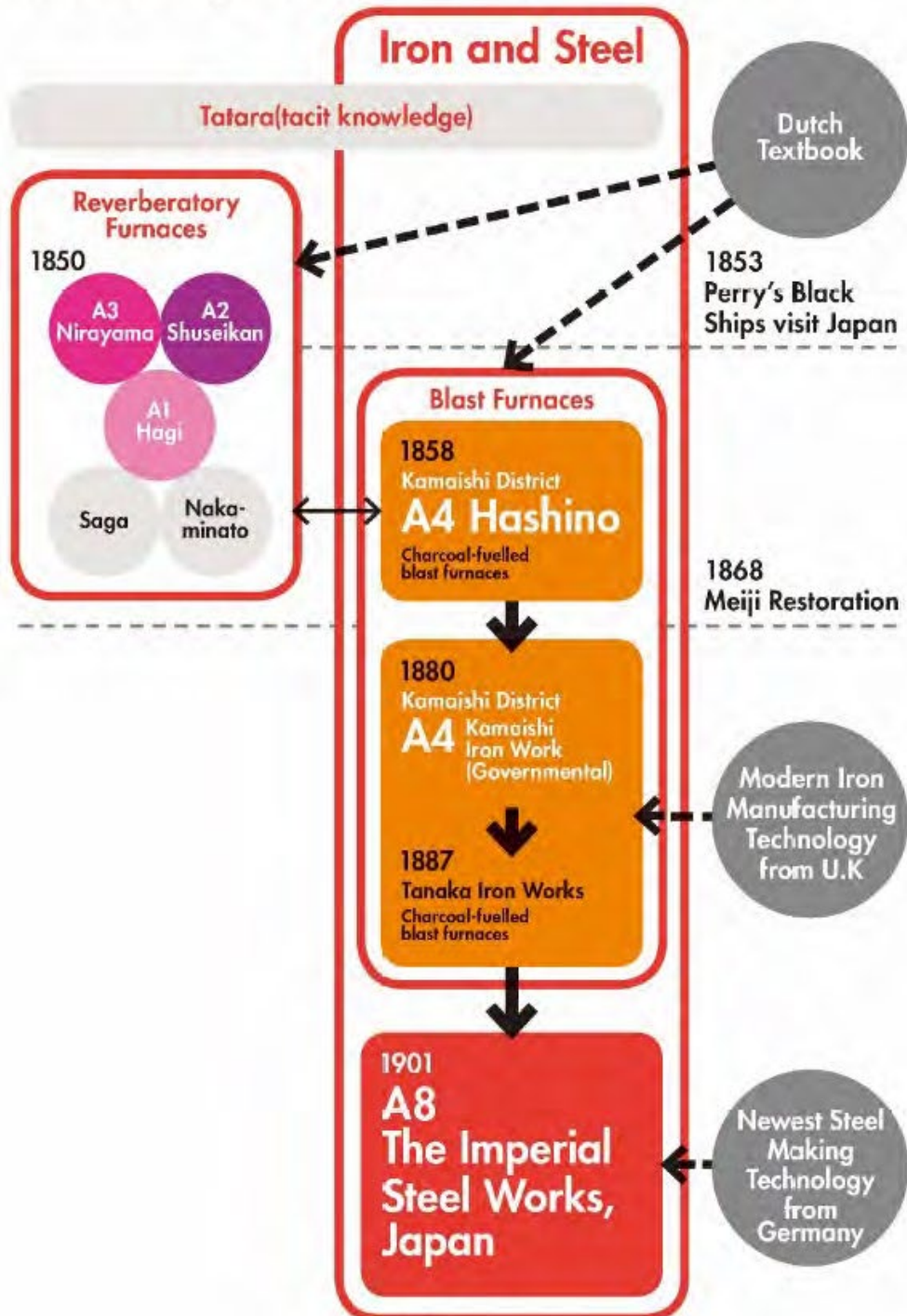





Figure 3-2

Presentation Using “Liquid Galaxy,” Etc.

The Industrial Heritage Information Centre, which was established in March 2020 pursuant to the Interpretation Strategy, uses an immersive video multi-display that draws on the World Heritage OUV period (1850s-1910), as well as the Consideration of the Full History of Sites schematic. It explains through images the history and transformation of component parts in the various areas, as well as the way that people lived, etc., presenting these in a way that enables visitors to experience in a very real way the evolution of the property, the contribution to OUV, and the full history. This area will also establish a digital archive of documents gathered by the Industrial Heritage Information Centre and the visitor centres in the area, which will be gradually reflected in the interpretation tools.



Hagi Area Component Parts

Relevant industries: Iron and steel	
Name of component part: Hagi Reverberatory Furnace	
(Overview of component part) One of three reverberatory furnaces still remaining today out of eleven that were made for constructing cannons to address the sense of crisis looming regarding coastal defense at the end of the Edo era. The Hagi (Choshu) domain, which commanded the coastal defense area, attempted to reproduce the reverberatory furnace of the Saga domain in 1856 on its own. The remains symbolize the trial and error experimentation of Western science that took place.	
Relevant industries: Shipbuilding	
Name of component part: Ebisugahana Shipyard	
(Overview of component part) Constructed by the Hagi (Choshu) domain for the purpose of Western-style shipbuilding. At the end of the Edo era, ships were built with Japanese techniques based on Kimizawagata schooners that were built as replacement ships for disabled Russian schooners. Although only two ships were constructed, it is significant as trial and error experimentation in the challenge to build Western ships with Japanese techniques.	
Relevant industries: Iron and steel	
Name of component part: Ohitayama Tataru Iron Works	
(Overview of component part) An archaeological ironworks site for manufacturing fittings such as nails to supply for Kimizawagata schooners that were being built at Ebisugahana Shipyard. It is the remains showing the Tataru process, a traditional technique in Japan before Western iron manufacturing was introduced.	

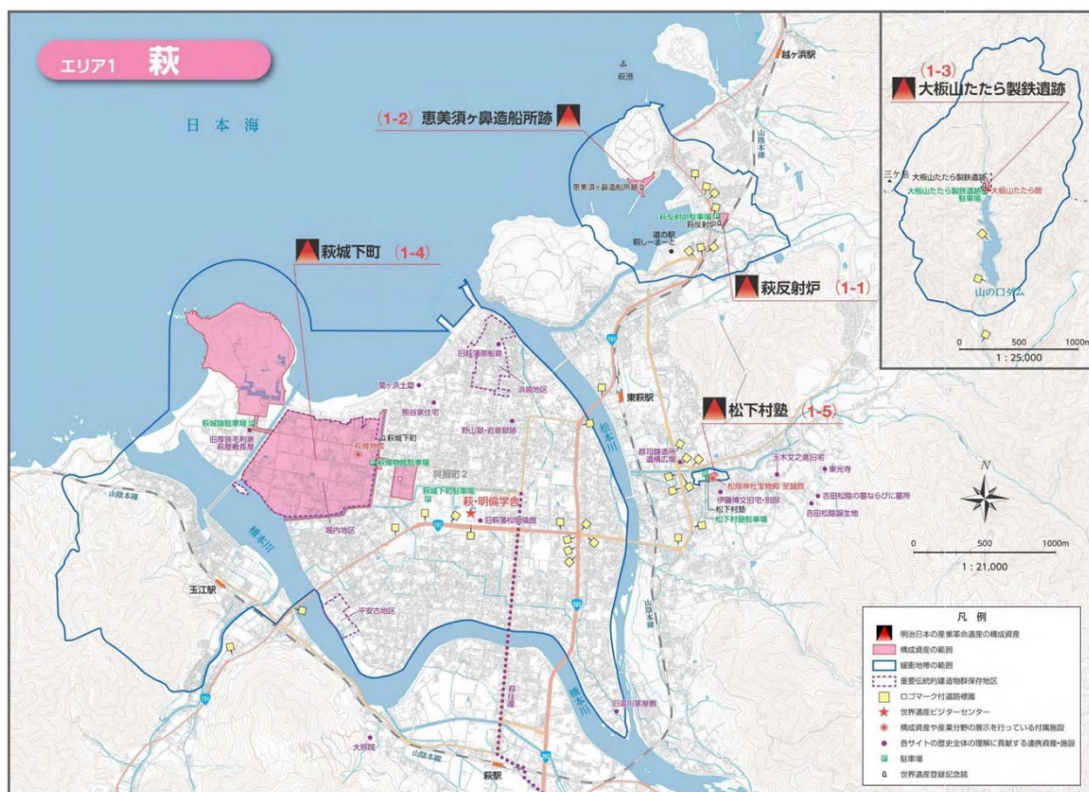
<p>Relevant industries: Iron and steel, shipbuilding</p>	
<p>Name of component part: Hagi Castle Town</p>	
<p>(Overview of component part)</p> <p>The ruins of Hagi Castle and the layout of the castle town display the social structure within feudal society that symbolizes the historical context at the end of the Edo era in the challenge for Western science by the Choshu (Hagi) domain and amurai, who trained leaders in the Industrial Revolution.</p>	
<p>Relevant industries: Iron and steel, shipbuilding</p>	
<p>Name of component part: Shokasonjuku Academy</p>	
<p>(Overview of component part)</p> <p>The private academy of Yoshida Shoin who contributed to the training of revolutionaries that would become leaders of the Industrial Revolution. He taught the importance of coastal defense and of thought which emphasized acquiring Western industrial technology. Many of Shoin's students went on to establish the Meiji government and contributed to Japan's rapid industrialization.</p>	

World Heritage Plaques

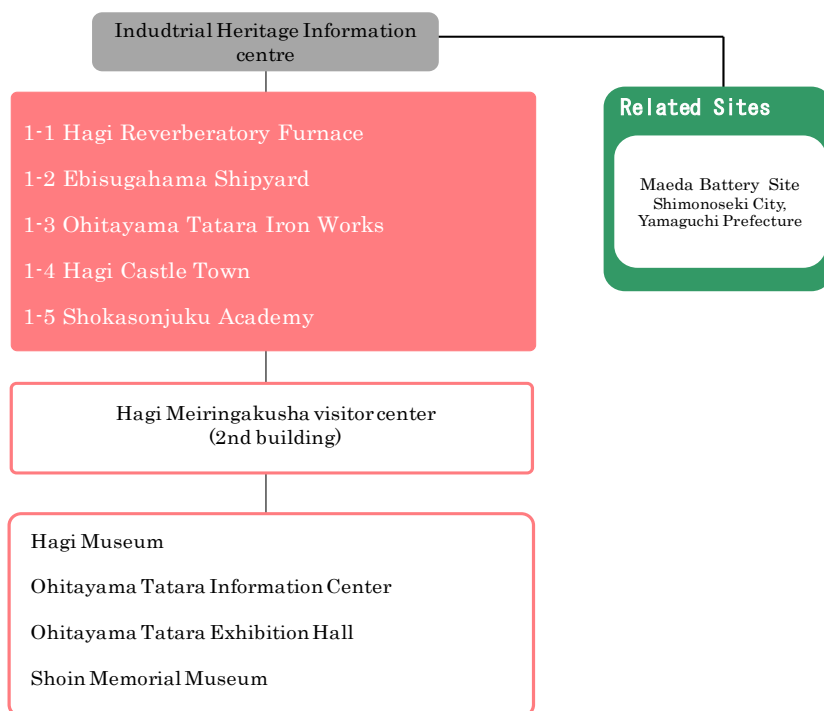
In line with the UNESCO Guidelines, World Heritage plaques have been installed at the various component parts to inform visitors properly about the OUV of the property.



Hagi Area: Distribution of Interpretation Facilities



Hagi Area: Hierarchy of Physical Interpretation and Presentation



Access Guide Maps

Access guide maps for the component parts in each area have been produced in both Japanese and English and are distributed free to visitors. The access maps are designed to help tourists orient themselves in relation to the component parts of the various areas and enable them to visit as many component parts as possible within each area.

By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites.



Information Counters

These are set up in administrative institutions and airports to distribute access guide maps and other information.

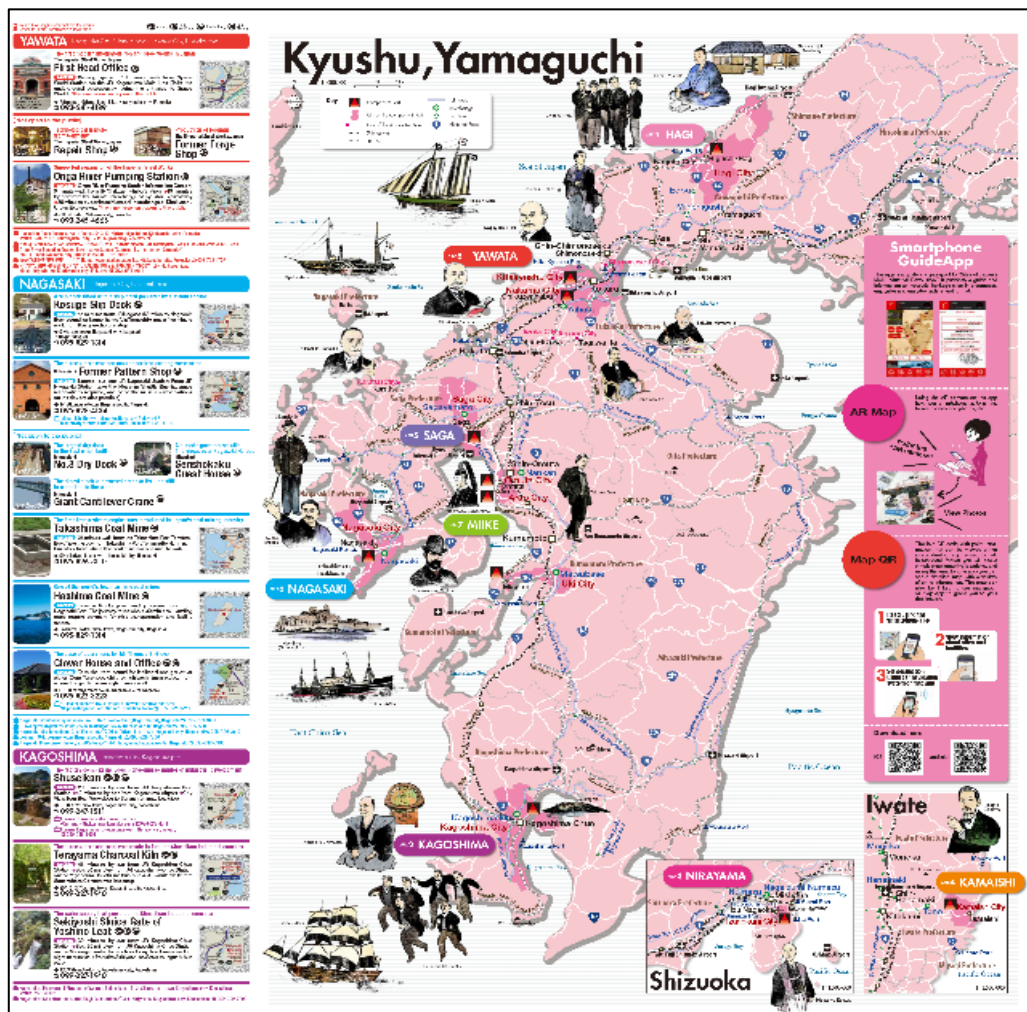


Hagi City Hall

World Heritage Route

In accordance with the Interpretation Strategy, and also as noted in pages 395–396 of the Nomination Document, the World Heritage Route Promotion Council was founded to provide guidance and tourism infrastructure for understanding World Heritage as a whole. The Council attracts visitors to all component parts and related sites by producing maps, apps, and GPS navigation and by installing road signs and other signage using the common logo to promote the Sites of Japan's Meiji Industrial Revolution so that visitors are able to understand the World Heritage value constituted by the 23 component parts.

Work will continue to be undertaken steadily pursuant to the Nomination Document and the Interpretation Plan.





Map on p. 396 of the Nomination Document



World Heritage Route Promotion Council meeting

Installation of Road Signage, Etc., Using the Common Logo

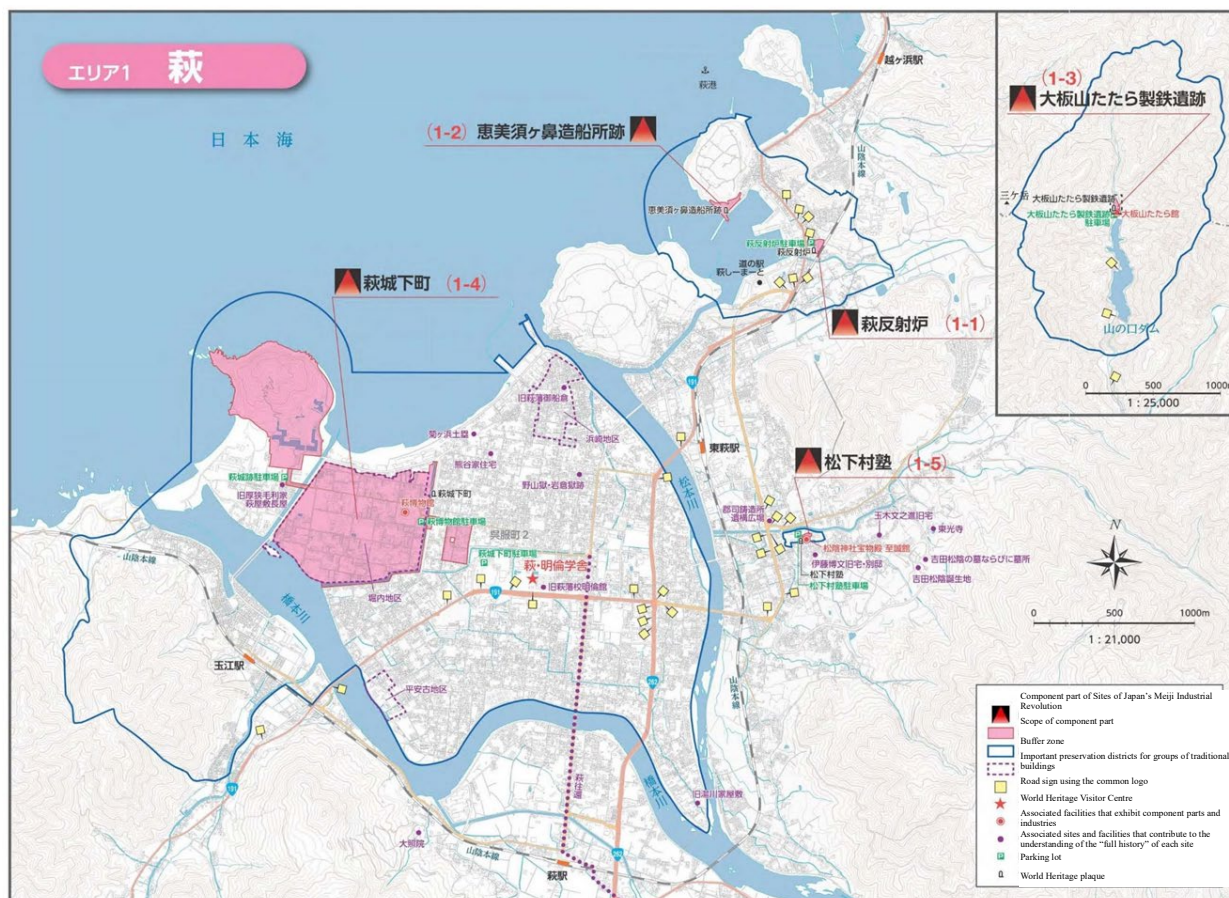
Status of installation of road signage

Place	No. of signs installed
Hagi City	47

Photos of road signage



Locations of Road Signs Using the Common Logo

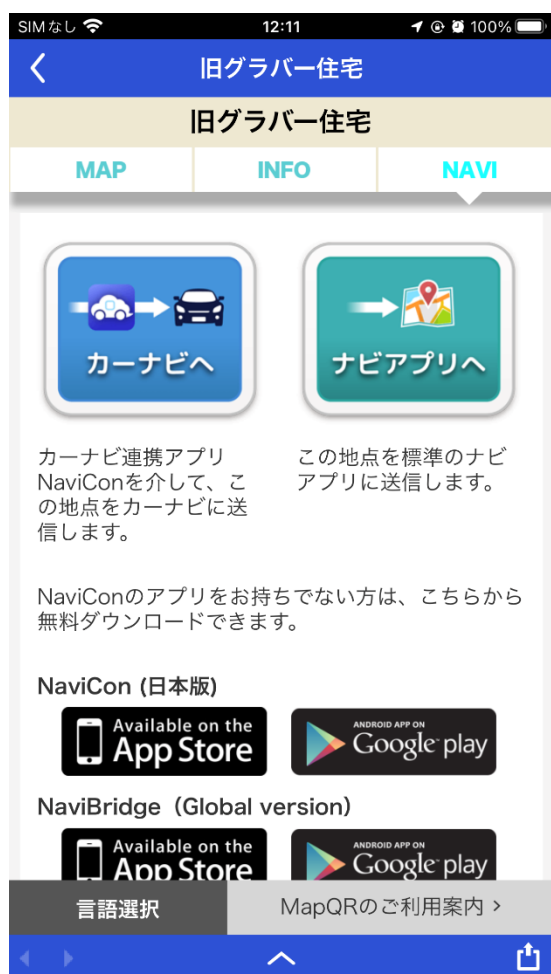


Linkage with Car Navigation (Denso Car Navigation)

Example of linkage with smartphone app so that the target destination can be sent to a car navigation system



The destination can be sent directly from a smartphone to the car navigation system.



A video on how to use the application has been put up on YouTube.



App Utilization

The app introduces the Sites of Japan's Meiji Industrial Revolution, including detailed stories and explanations, as well as the historical background, using video and computer graphics, etc. Users can earn points by playing games and using the AR camera on the app and use them as coupons for souvenirs and other prizes. As such, it serves as a mechanism for both deepening understanding of World Heritage value and feeding back into World Heritage Route tours. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.



Use of Line App

Points acquired on the app can be exchanged for coupons.



Point-of-purchase advertising has been created and placed in stations and information centres, etc., to encourage people to sign up to the LINE app.



Appendix 1-1

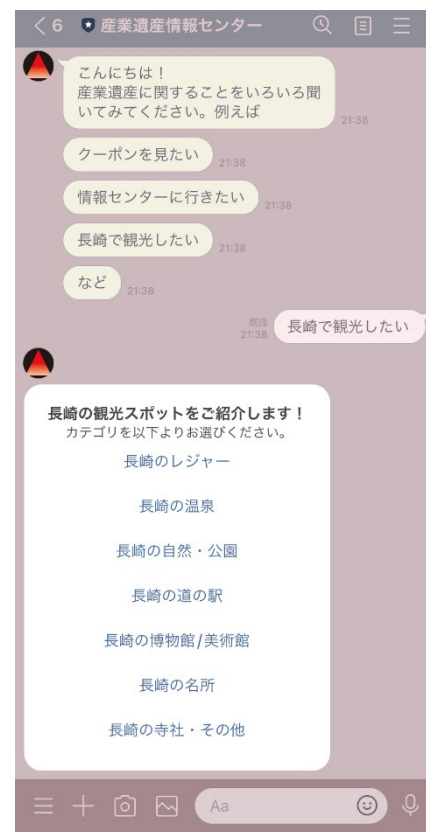
LINE is used as a runway for achieving two-way communication geared to the circumstances of the user based on locational information, such as the use of existing guide apps and communication about coupons that can be used in shops at the area visited. The service is provided in multiple languages so as to support international visitors.



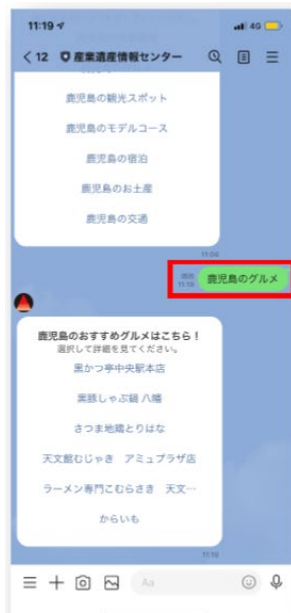
LINE functions (examples)



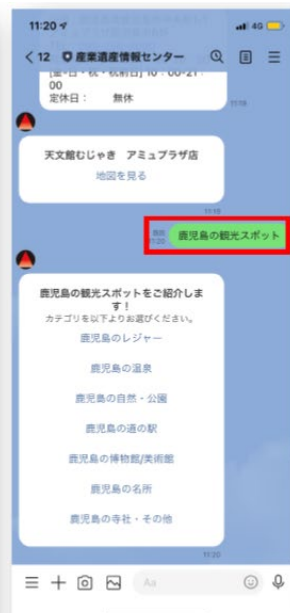
Introduction to model courses



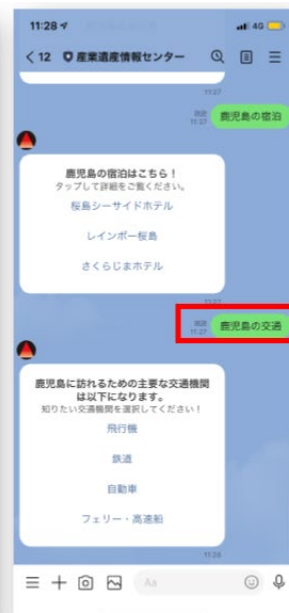
AI chatbot function



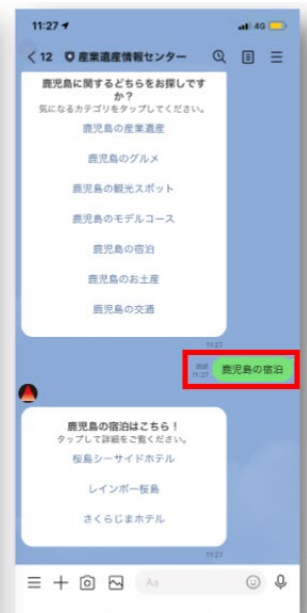
Gourmet information



Tourist spots



Traffic information



Accommodation information

Digital Signage Functions

Digital signage has been installed in the Industrial Heritage Information Centre as a mechanism for encouraging multi-destination tourism by displaying local guide maps and information on multi-destination industrial heritage routes. AI chatbots have also been installed to respond to a wide range of multi-destination routes and tourism questions in real time.



Enhancement of digital content

A smartphone application, “Hagi’s World Heritage Sites: Let’s go around with the Choshu Five!” and Hagi World Heritage Virtual Adventure (VR content), have also been developed and released for this area. A regional guide map integrated with AR functions and the provision of information on components through MapQR functions are the initiatives also being planned.

○Hagi’s World Heritage Sites: Let’s go around with the Choshu Five!

An app that introduces the component parts of Hagi in a fun style, with the Choshu Five leading the way. Users can enjoy a guidance video, virtual reality that recreates scenes from Ohitayama Tataru Iron Works as it was back in the day, and a CG video describing the inner structure of the furnace. Visitors can borrow a tablet installed with the app at the Hagi Reverberatory Furnace, Ebisugahana Shipyard, Ohitayama Tataru Iron Works, and at the ruins of Hagi Castle.



○Hagi World Heritage Virtual Adventure

VR technology enables users to experience the no-longer existing Ebisugahana Shipyard and Western vessels built there as well as the Hagi Castle Tower, through a smartphone, tablet, or PC. A video that explains Ohitayama Tataru Iron Works in an easy-to-understand manner with illustrations to describe the facility is also available.



Monitor tour



Visitor Centres

The Hagi Area is equipped with one visitor centre and four auxiliary facilities with exhibits of component parts and the industrial sector in line with the interpretation strategy. Each facility cooperates with the local community to prepare exhibits that best bring out the true World Heritage values in harmony with the historical and cultural values of the region. They aim to create exhibits that allow visitors to understand the value of the components easily.

Based on points raised in interpretation audits, local visitor centres will work with the Industrial Heritage Information Centre to digitize a huge volume of primary historic materials and use digital tools to enhance exhibits.

[Hagi Meiringakusha (2nd Building)]

Positioning of components in Hagi and the role of Yoshida Shoin as a pioneer of engineering education in Japan are introduced at this facility with films, panels and replicas on display.





[Hagi Museum]

The history and nature of Hagi are comprehensively on display at this museum facility. In addition to permanent exhibits, study and research results from the end of the Edo era are on display as special exhibits, enabling visitors to gain a deeper understanding of components in Hagi.



[Ohitayama Tataru Information Center]

Located inside Michi-no-eki Happiness Fukue, this facility provides interpretation for Tataru Iron Works through panels showing the positioning of components and exhibits using illustrations.



[Shoin Shrine Treasure House Shiseikan]

Located inside the grounds of Shoin Shrine. Visitors can learn about the positioning of the components and the life of Yoshida Shoin through panels and historical materials on display.



Area2 Kagoshima

Appendix 1-2

AREA-SPECIFIC INTERPRETATION PLAN



【Area List】

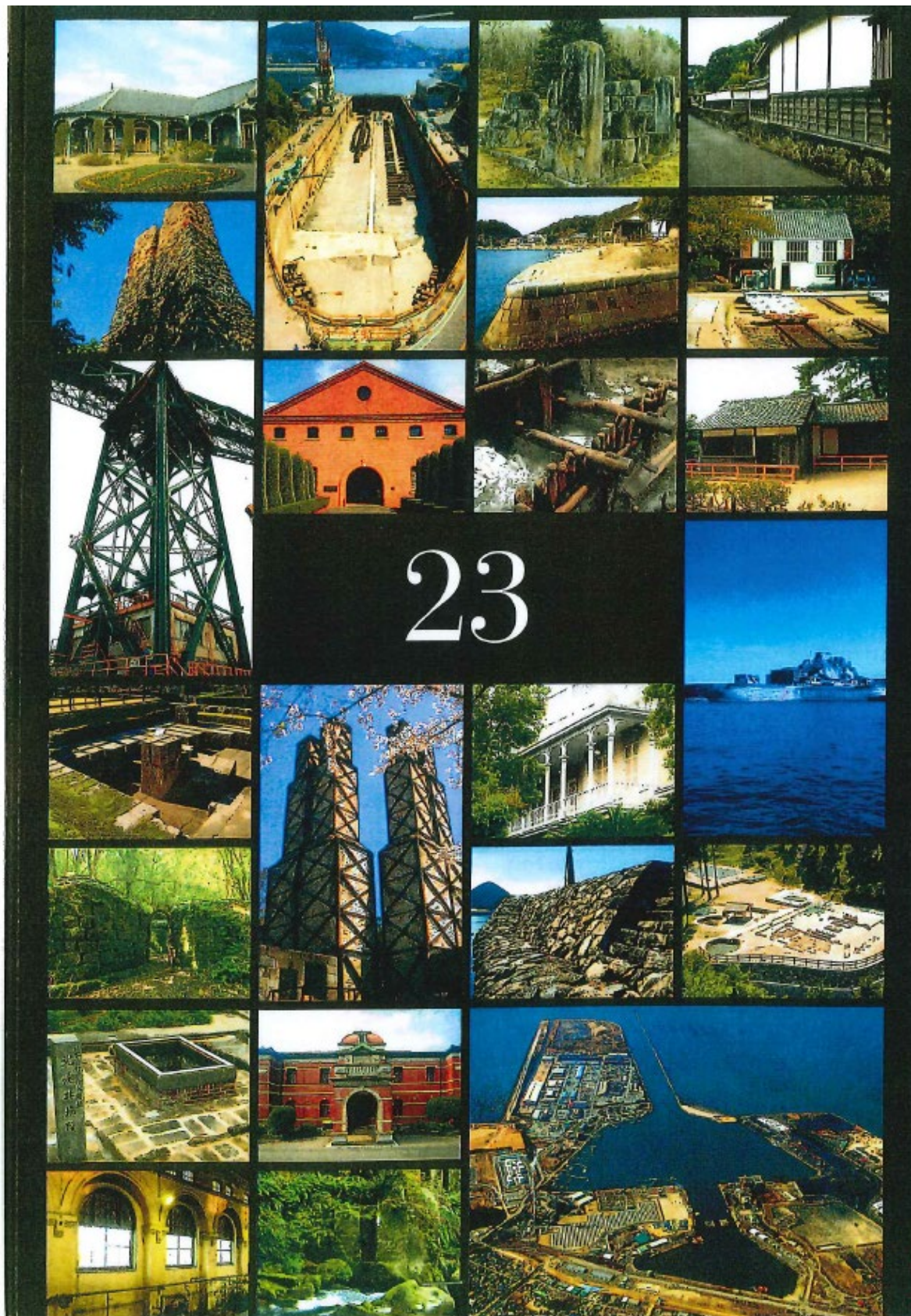


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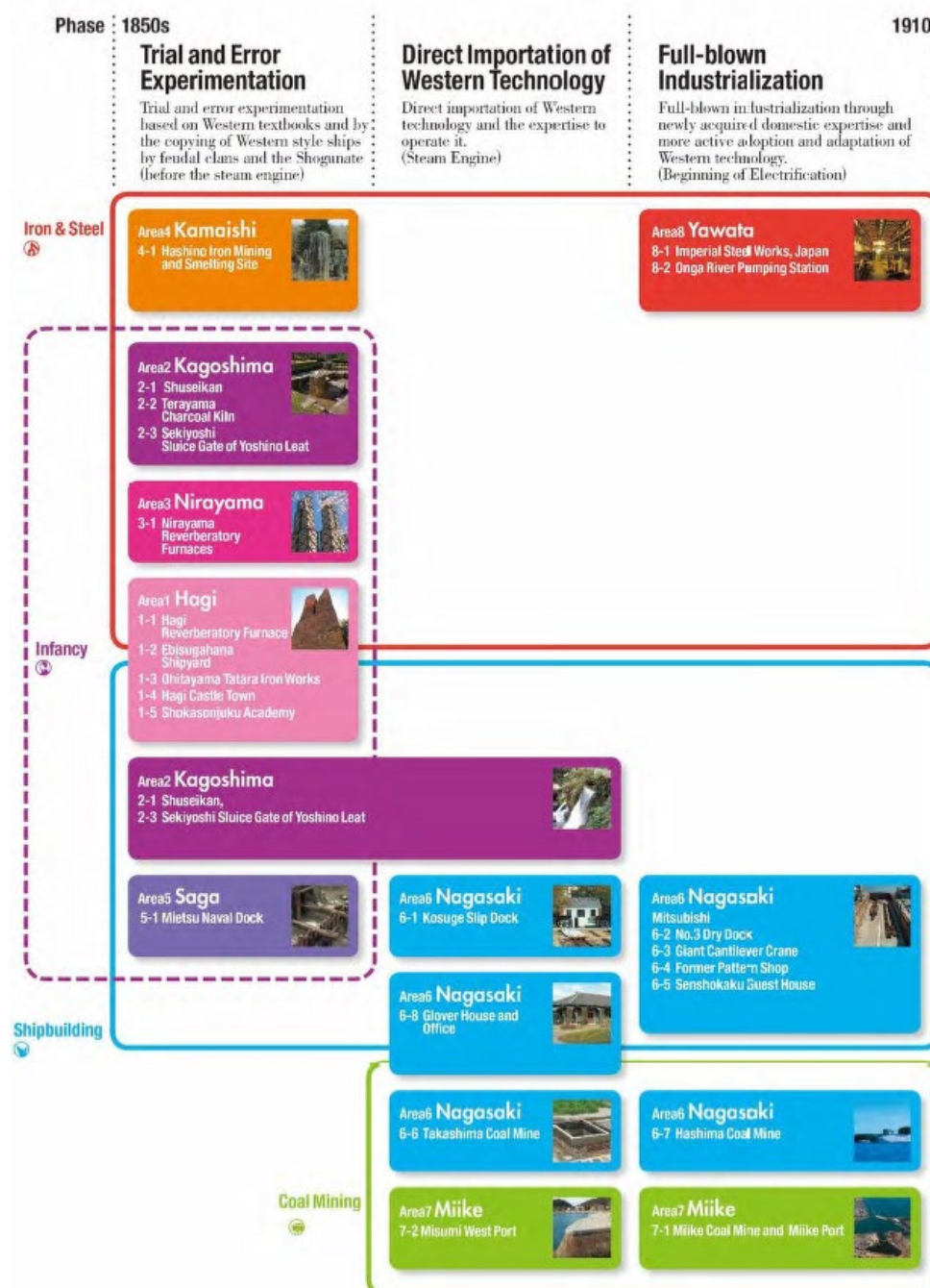
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Industrial History Related to the Kagoshima Area

The Kagoshima Area encompasses component parts that retain records related to iron and steel in the first phase, Trial and Error Experimentation, as well as to shipbuilding in the first phase, Trial and Error Experimentation, and the second phase, Direct Importation of Western Technology, in the World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”



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(2) and (3) Progress in dealing with the “full history” of each site, including information gathering related to workers

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1) Focus on the interpretation of Outstanding Universal Value; in conformity with the primary purpose of the World Heritage, OUV of the inscribed property should be presented clearly at each site, not confusing with other, albeit related, issues. Based on this, Recommendation g)* should be implemented.

2) The scope of the “full history” of each site, except for the OUV period (from 1850s to 1910) as described on page 78, falls into two parts: prior to 1850s, and from 1910 to the present. The target of the full history should be narrowed down, considering the local values that supplement the understanding of the background of each component part. Where relevant, with regard to the interpretation of the full history on the location of each component part, high quality research such as collecting primary historical documents and recording oral testimonies should be carried out, and the result of this research should, at some stage, be made publicly available through appropriate media.

* Recommendation g)

“Preparing an interpretive strategy for the presentation of the nominated property, which gives particular emphasis to the way each of the sites contributes to OUV and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.”

Based on the Interpretation Strategy, we have had multiple audits of the current status of interpretation at the component parts and visitor centres, etc., in the various areas undertaken by international experts familiar with industrial assets and the interpretation thereof in countries around the world.

As a result, auditor Barry Gamble identified the following issues in relation to the Kagoshima area.

- It is important to intercept and capitalise on the 600,000 visitors to Sengan-en and the 300,000 to the Shoko-Shuseikan museum (Former Shuseikan Machinery Factory) to present and communicate the WHS OUV and how this area contributes to it. Content should draw from the widely-consulted and approved texts in the Nomination Document.
- Projected earthquake-strengthening of the structure of the Former Shuseikan Machinery Factory presents (as current exhibits will be temporarily removed) an opportunity to refresh, in particular, the introductory interpretive exhibition at the beginning of the visitor experience. This can assist with the above task.
- In developing the visitor experience in this area, it is important to understand and manage the limitations, and conservation vulnerability, of the Foreign Engineers' Residence. In terms of visitor carrying capacity, only 50 people may be accommodated in the house at any one time. The addition of a new interpretation facility in the vicinity of the site of the demolished apartment block, together with enhancements of the immediate seaward setting of the Foreign Engineers' Residence, will enable a greater capacity for visitors and their management at the site. The ongoing conservation and enhancement work at the Foreign Engineers' Residence are to be commended. It demonstrates the local government's ongoing commitment to the WHS, its obligations and opportunities.
- Based on advice provided at the site visit and subsequent meetings between Kagoshima City and Shimadzu, the new Sengan-en guidance facility is to be called the 'Kagoshima World Cultural Heritage Orientation Centre' which is to be open in October 2019. This Centre will ideally provide the first point of contact to succinctly inform the 600,000 visitors that they are in a WHS and why it is important. It should also "signpost" visitors to the Garden, the Reverberatory Furnace, Former Shuseikan Machinery Factory and the Foreign Engineers' Residence.

Discussions have been held regarding this interpretation plan for the Kagoshima Area thus far by the local conservation council.

With regard to the earthquake-strengthening of the Former Shuseikan Machinery Factory structure pointed out in the evaluation above, work is progressing according to schedule, and the interpretive enhancement will be carried out after completion. Also, for the Former Kagoshima Foreign Engineers' Residence, a new management office has been built to heighten management capabilities, and structural ruins and other remains, as well as interpretive boards, have been installed to convey the historical value in an easy-to-understand manner. The new reception facility for Sengan-en presents World Heritage values and other information in a readily understandable way as a guiding facility to the overall component parts of this area. Going forward, in consideration of the issues pointed out, we will steadily install exhibits that better reflect the World Heritage values in harmony with the historical and cultural values of the region in cooperation with the Industrial Heritage Information Centre.

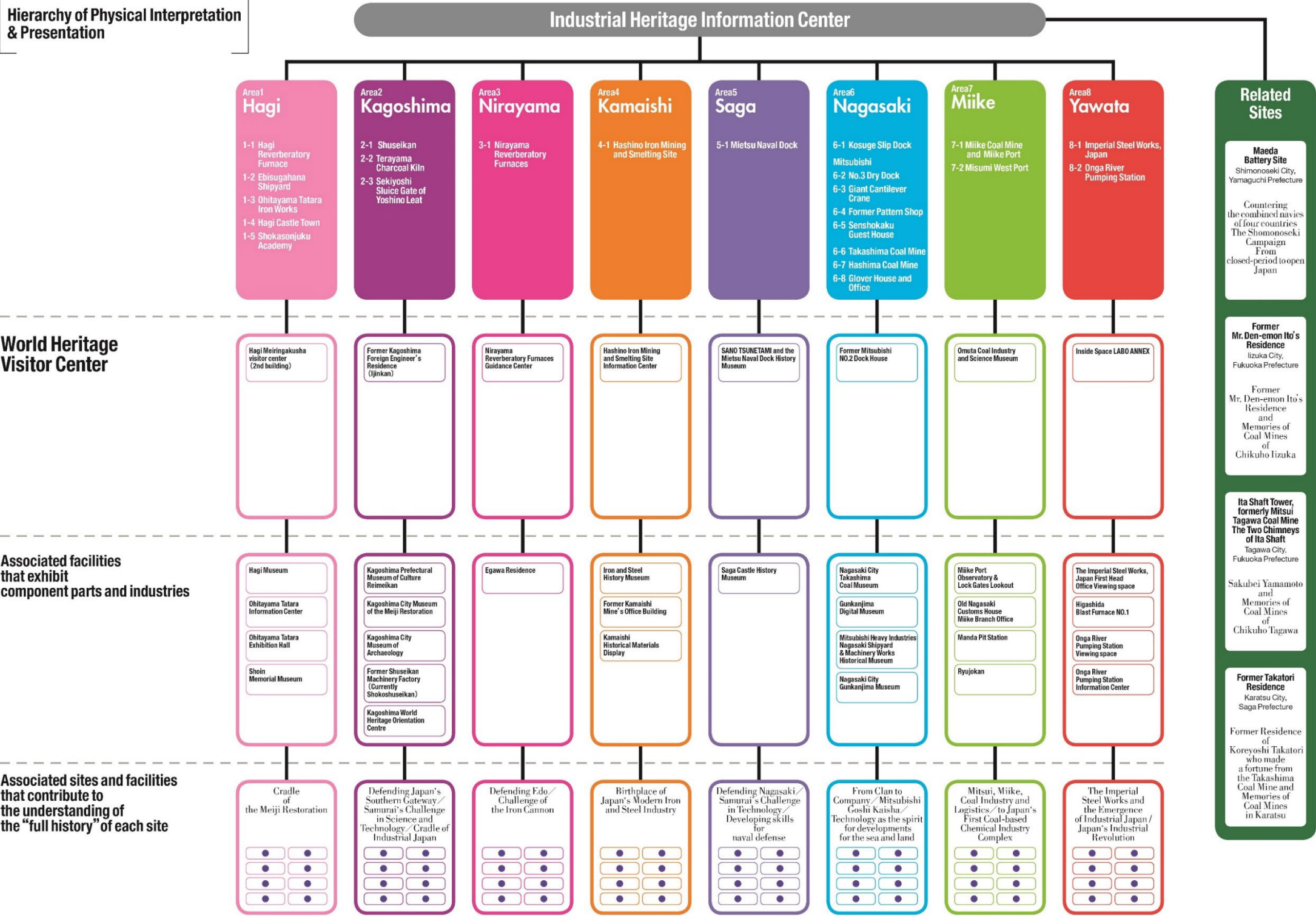
The local conservation council will review the implementation progress of this plan and consider ways to make improvements as appropriate.



Local Conservation Council meeting

Hierarchy of Physical Interpretation and Presentation

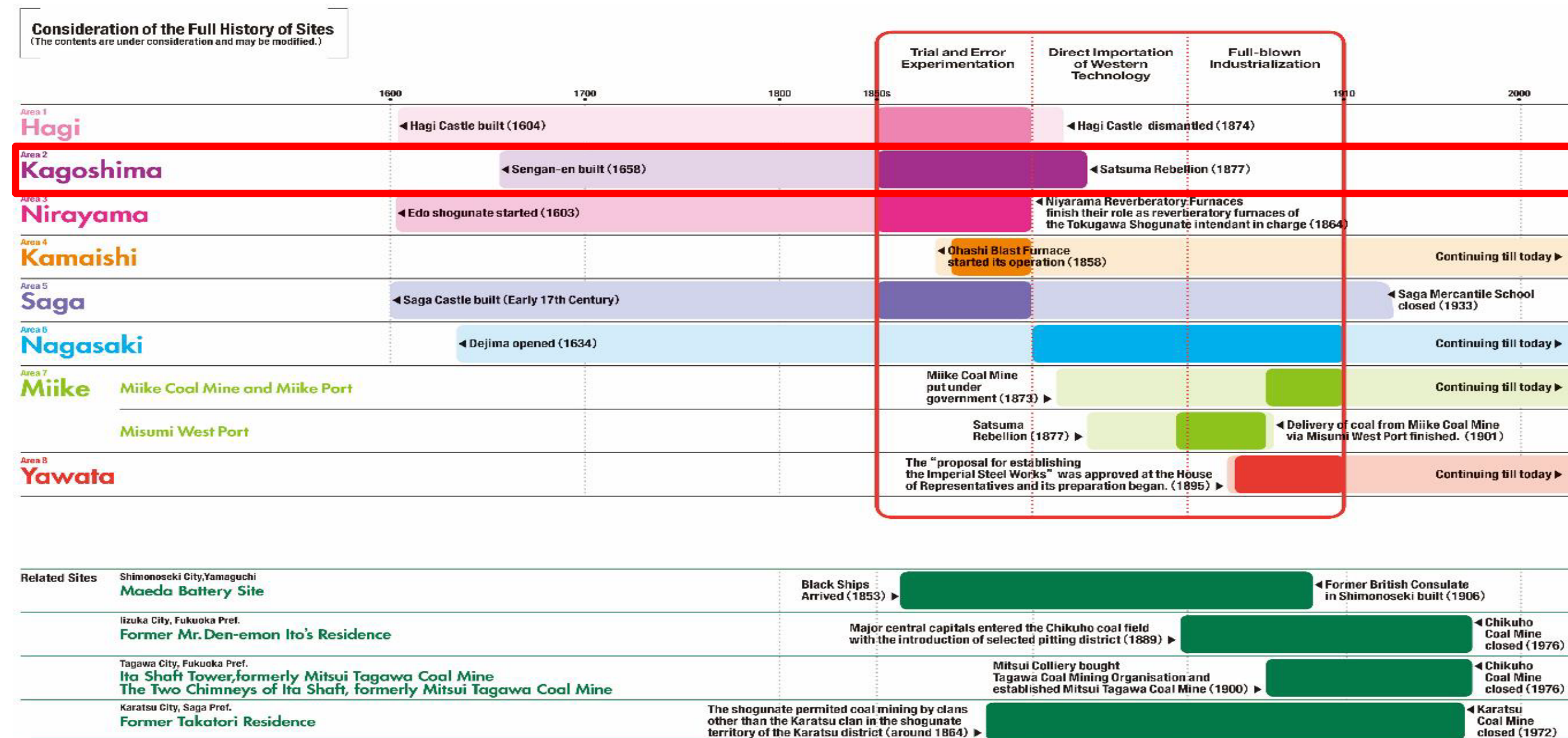
The Industrial Heritage Information Centre and the various local visitor centres will work together to build a system enabling the effective communication of the OUV of the Sites of Japan’s Meiji Industrial Revolution.



Related sites: Sites that were component part candidates in the provisional UNESCO World Heritage listing on the January 5, 2009, and that comprise industrial heritage (valuable assets that provide insight into the historical background and social situation of the time) that will be utilized in an integrated manner with the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution.”

Consideration of the Full History of Sites

The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO in 2017, addressed consideration of the full history of sites as shown in the figure below.



Related sites: Sites that were component part candidates in the provisional UNESCO World Heritage listing on the January 5, 2009, and that comprise industrial heritage (valuable assets that provide insight into the historical background and social situation of the time) that will be utilized in an integrated manner with the World Heritage Listed "Sites of Japan's Meiji Industrial Revolution."

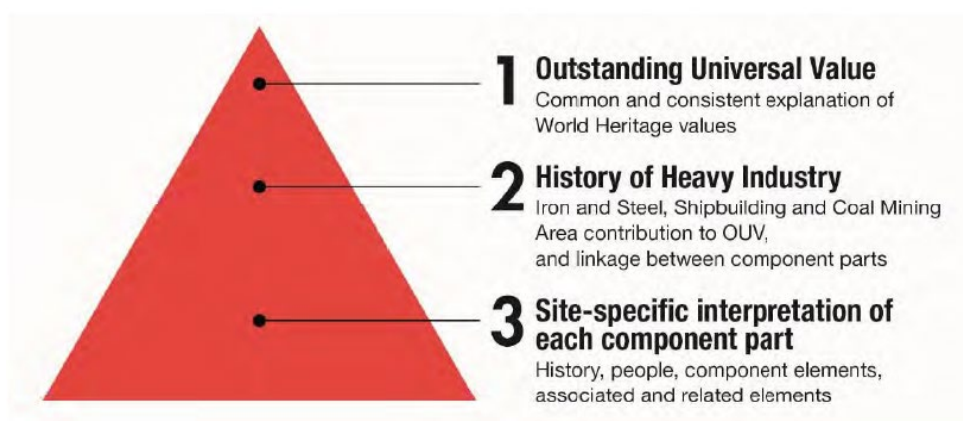
Interpretation in the Kagoshima Area

Approach of the Interpretation Strategy

The Interpretation Strategy provides the following schematic in relation to concepts for interpretation and presentation.

Interpretation for the Kagoshima area too will be approached in line with this in order to resolve the issues identified in interpretation audits.

Interpretation and presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of value and themes

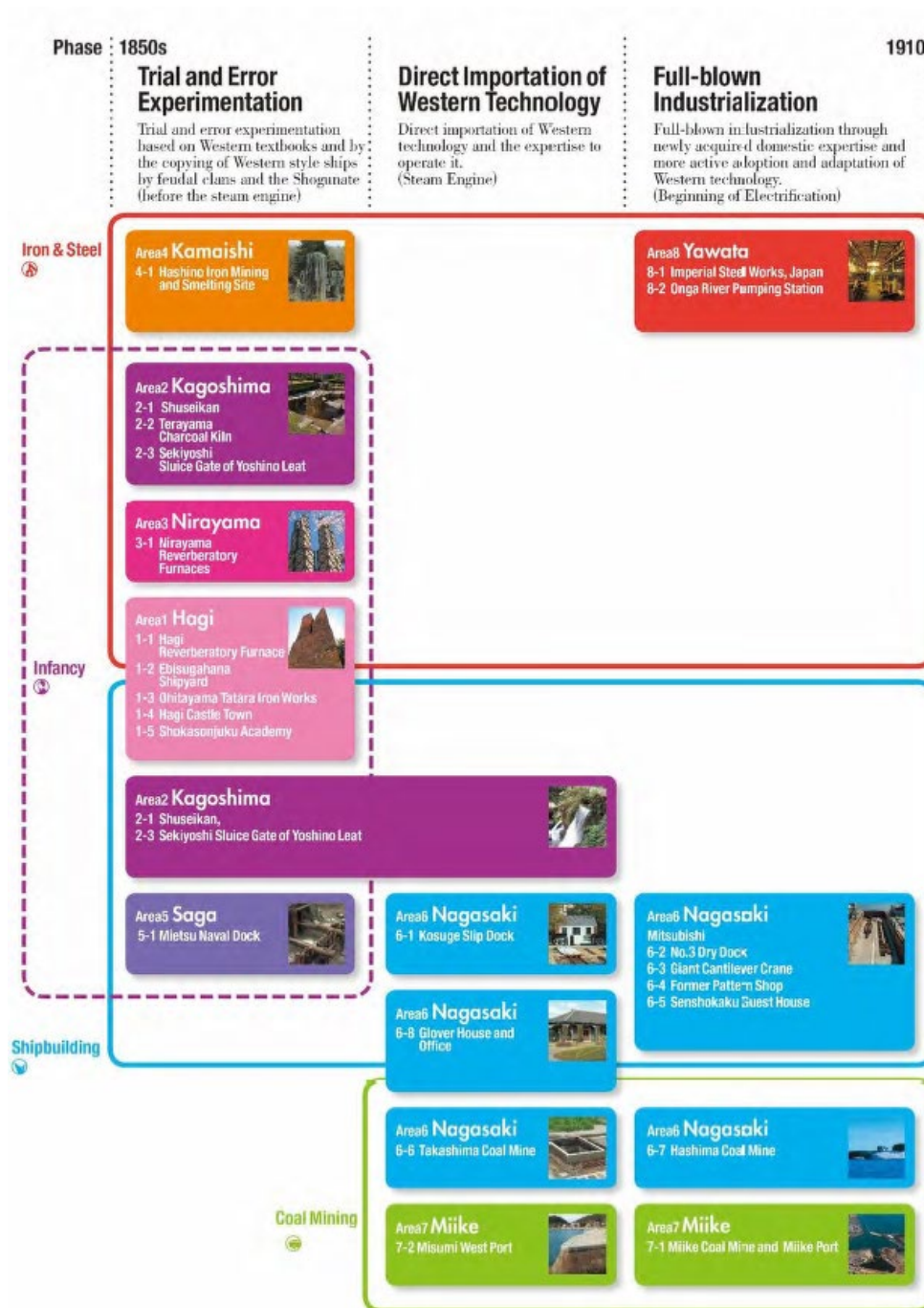


OUV stands at the top of the interpretation pyramid at the Industrial Heritage Information Centre and the various regions' visitor centres and is therefore the top-priority theme over the interpretation and presentation of individual regions and industries, such as history specific to an area or component part. Addressing interpretation in the order of (1) OUV, (2) the history of heavy industry, and (3) site-specific interpretation of each component part, as shown above, will ensure consistent presentation across the property

Interpretation flow at each local visitor centre

Hierarchy of Interpretation





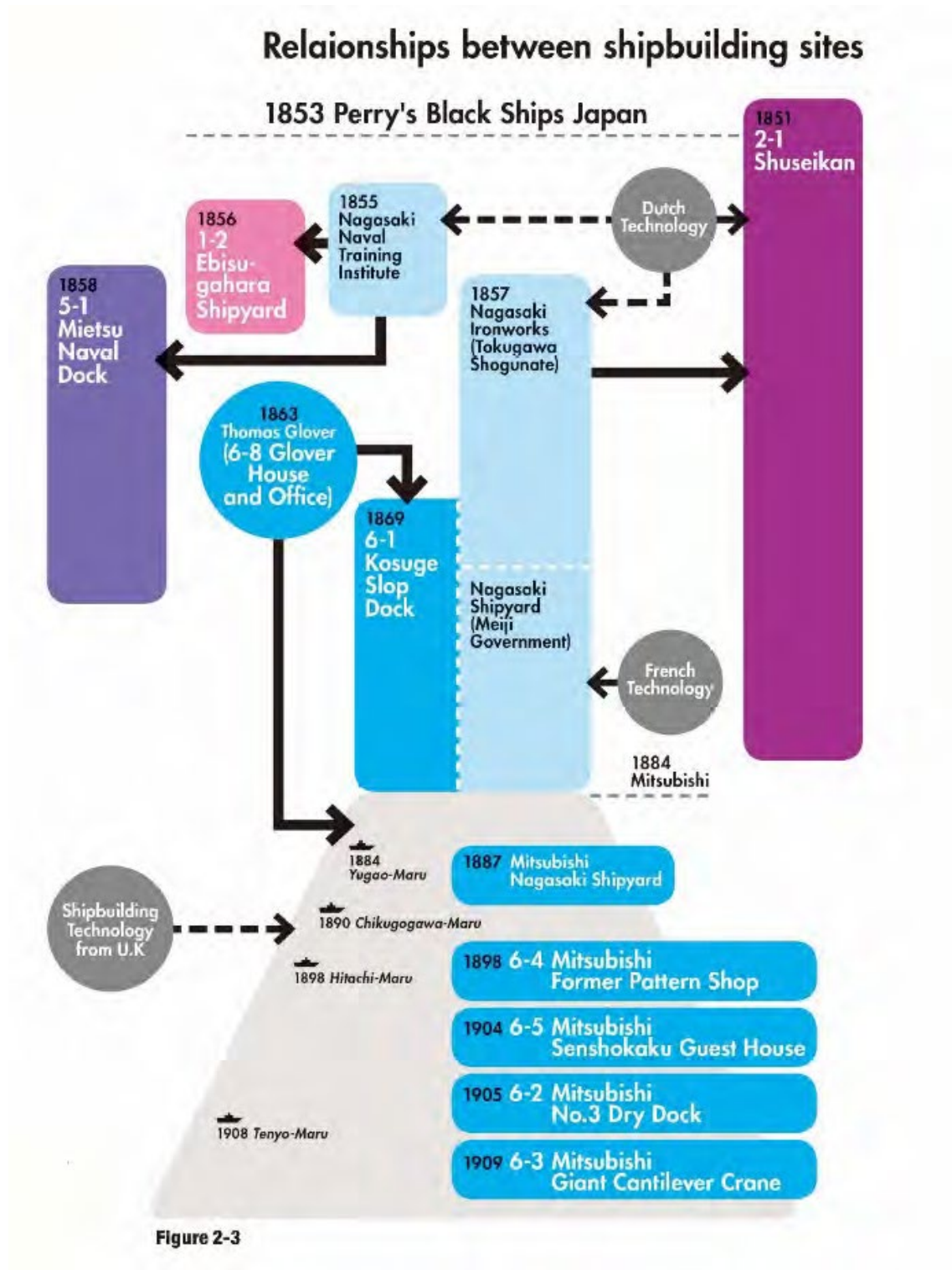


Figure 2-3

Relationship between Iron and Steel Sites

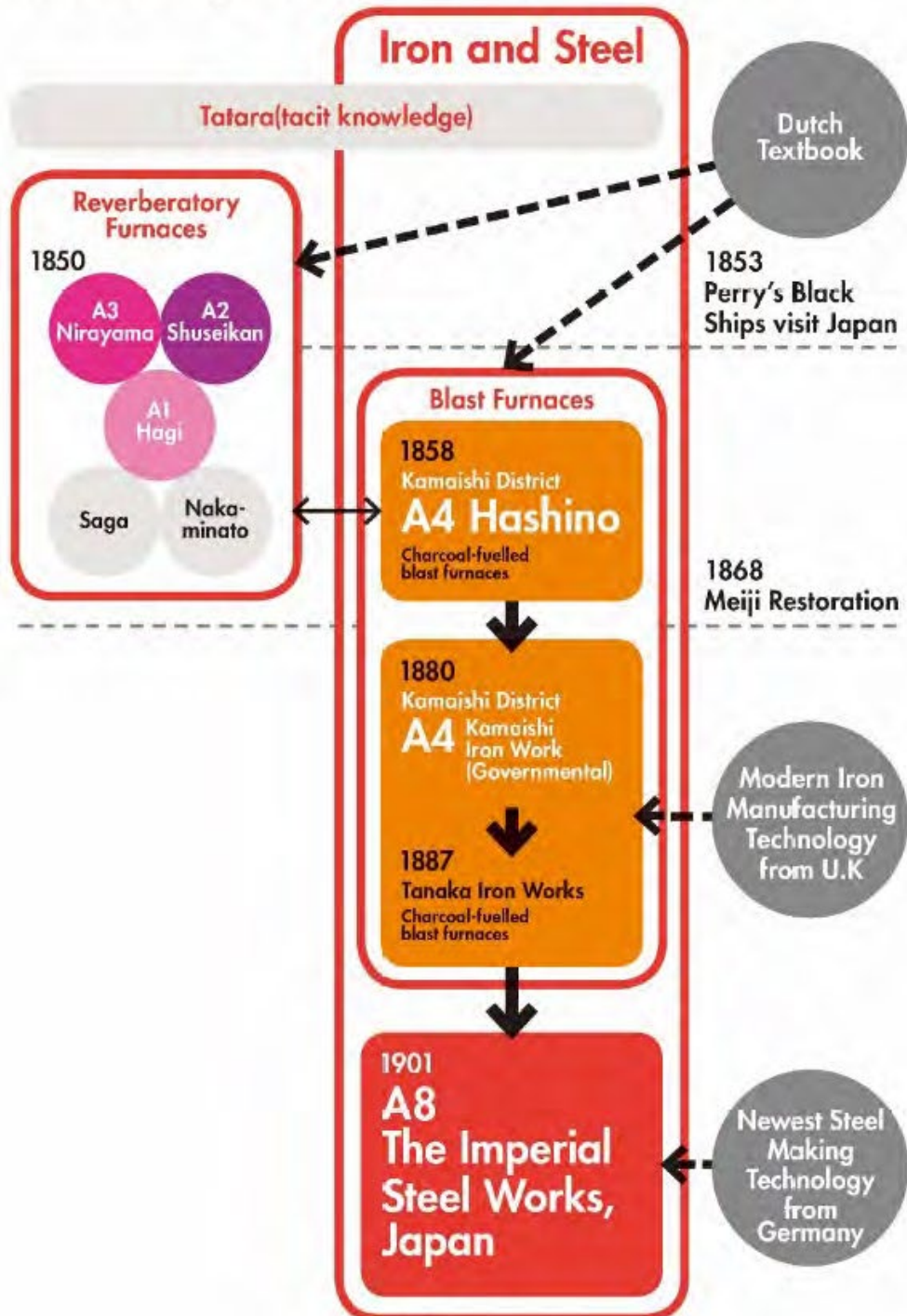


Figure 3-2




Presentation Using “Liquid Galaxy,” Etc.



The Industrial Heritage Information Centre, which was established in March 2020 pursuant to the Interpretation Strategy, uses an immersive video multi-display that draws on the World Heritage OUV period (1850s-1910), as well as the Consideration of the Full History of Sites schematic. It explains through images the history and transformation of component parts in the various areas, as well as the way that people lived, etc., presenting these in a way that enables visitors to experience in a very real way the evolution of the property, the contribution to OUV, and the full history. This area will also establish a digital archive of documents gathered by the Industrial Heritage Information Centre and the visitor centres in the area, which will be gradually reflected in the interpretation tools.



Kagoshima Area Component Parts

The Kagoshima Area contains three component parts in total, all heritage that relates to iron & steel and shipbuilding.

<p>Relevant industries: Iron and steel</p> <p>Name of component part: Shuseikan (Reverberatory Furnace)</p> <p>(Overview of component part) Lord Shimadzu Nariakira of the Satsuma Domain was quick to realize the importance of coastal defense after the shock of the Qing Dynasty's defeat in the Opium War. He started the Shuseikan Project with cannon manufacturing and shipbuilding at its core, pursuing the development of various industries. The first industrial complex in Japan employed 1,200 people at its height.</p>	
<p>Relevant industries: Shipbuilding</p> <p>Name of component part: Shuseikan (Former Machinery Factory)</p> <p>(Overview of component part) A repair shop completed in 1865 for machinery related to Western-style ships. Modeled after Nagasaki Ironworks which was of Dutch design, The shop was built by the Satsuma Domain with traditional construction techniques. It is the earliest Western factory built in Japan that still exists today, with machinery imported from the Netherlands for metal processing and repairing steam engines.</p>	
<p>Relevant industries: Shipbuilding</p> <p>Name of component part: Shuseikan (Foreign Engineers' Residence)</p> <p>(Overview of component part) The Kagoshima Spinning Mill, Japan's first Western-style spinning mill factory that used steam engines, invited British engineers for technological guidance. This structure was built to house such engineers.</p>	

<p>Relevant industries: Iron and steel</p> <p>Name of component part: Terayama Charcoal Kiln</p> <p>(Overview of component part) The remains of a charcoal kiln that was used to produce charcoal as fuel for the Shuseikan Project. The charcoal kiln remaining was built in 1858, and the kiln itself is in its original form, made of sturdy masonry. To prepare for the shortage in charcoal supply resulting from the Shuseikan Project, Nariakira ordered a charcoal kiln installed in Terayama Yoshino-cho to produce powerful white charcoal.</p>	
<p>Relevant industries: Iron and steel, shipbuilding</p> <p>Name of component part: Sekiyoshi Sluice Gate of Yoshino Leat</p> <p>(Overview of component part) The remains of the leat that supplied water as power for the Shuseikan Project. The primary power source was a water mill, and Nariakira built a new canal in 1852 to supply water to the Shuseikan water mill. The sluice gate of the time remains in Sekiyoshi, and a part of the leat still serves irrigation purposes today.</p>	

World Heritage Plaques

In line with the UNESCO Guidelines, World Heritage plaques have been installed at the various component parts to inform visitors properly about the OUV of the property.



Kagoshima Area: Distribution of Interpretation Facilities



Kagoshima Area: Hierarchy of Physical Interpretation and Presentation



Access Guide Maps

An English-version access map to guide visitors to component parts in each area has been created in addition to the Japanese version and is distributed free to visitors. This map gives an introduction to all component parts in the area and is structured to help visitors reach as many of them as possible.

By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites.

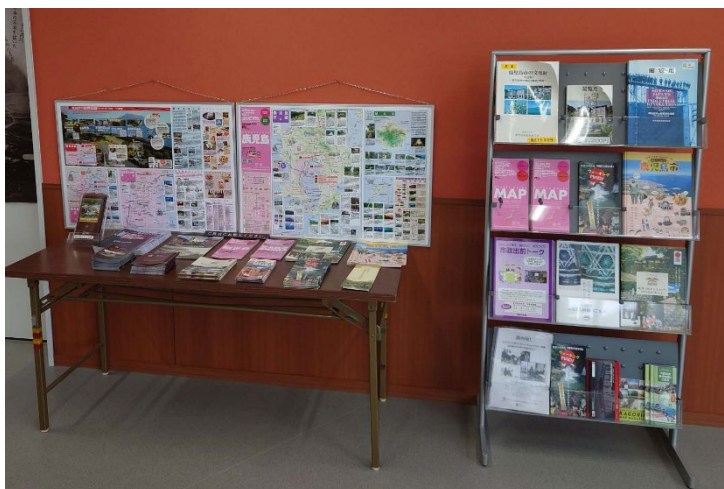


Information Counters

These are set up in administrative institutions and airports to distribute access guide maps and other information.



Kagoshima City Hall



Foreign Engineers' Residence (Ijinkan)
Management Office

Guide Map Distribution Points and Number of Maps Distributed

Guide map distribution points and the number of maps distributed are as follows.

Overall map		Kagoshima Map	
No. distributed	177,762	No. distributed	38,958
Japanese & English	177,762	Japanese	34,178
Main distribution point	No. distributed	Main distribution point	No. distributed
Administrative organizations	300	Administrative organizations	980
Airports	550	Airports/ Airlines	1,450
Hotels	50	Hotels	3,000
Car rental agencies	100	Car rental agencies	500
JR (Railway)	600	JR (Railway)	1,400
Tourist information centers	700	Tourist information centers	231
Michi-no-eki roadside stations	4,400	Michi-no-eki roadside stations	3,752
NEXCO	168,500	NEXCO	15,050
Public interest corporation/foundation/ incorporated association	550	Public interest corporation/foundation/ incorporated association	1,600
Other	2,012	Other	10,995
JR Kyushu Hakata Station General Information		Sengan-en	
West Nippon Expressway Retail Co., Ltd.		Fukuoka Airport	
West Nippon Expressway Service Holdings Company Limited		The Yakushima Environmental and Cultural Foundation	
Fugetsu Foods Co., Ltd.		Kitakyushu Convention & Visitors Association	
Fukuoka International Airport Co., Ltd.		JR Kagoshima Chuo Station Tourist Information Center	
Nagasaki Airport		JR Miyazaki Station Tourist Information Center	
Kagoshima Prefectural Library		Kitakyushu Convention & Visitors Association	
JR Kagoshima Chuo Station Tourist Information Center		Kagoshima City Shopping Street Federation	
Kitakyushu Convention & Visitors Association		Fukuoka City Tourist Information Center	
Omura City Hall Industrial Promotion Dept.		Kagoshima Airport	
JR Miyazaki Station Tourist Information Center		Fukuoka International Airport Co., Ltd.	
		Kagoshima Prefectural Library	
		Satsuma Students Museum	
		Satoyama wo Kangaerukai Nonprofit Organisation (NPO Satoyama)	

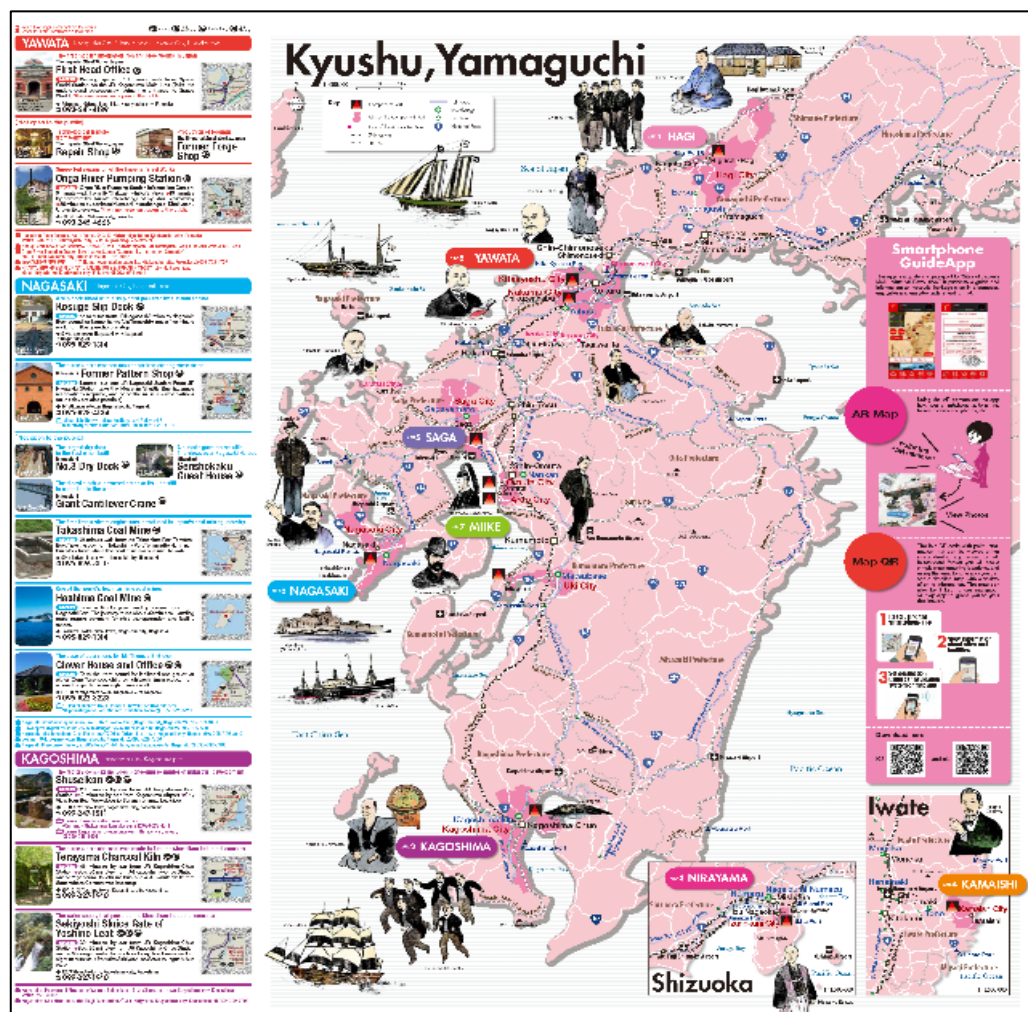
Total no. distributed
for the entire area

464,025

World Heritage Route

In accordance with the Interpretation Strategy, and also as noted in pages 395–396 of the Nomination Document, the World Heritage Route Promotion Council was founded to provide guidance and tourism infrastructure for understanding World Heritage as a whole. The Council attracts visitors to all component parts and related sites by producing maps, apps, and GPS navigation and by installing road signs and other signage using the common logo to promote the Sites of Japan's Meiji Industrial Revolution so that visitors are able to understand the World Heritage value constituted by the 23 component parts.

Work will continue to be undertaken steadily pursuant to the Nomination Document and the Interpretation Plan.





Map on p. 396 of the Nomination Document



World Heritage Route Promotion Council meeting

Installation of Road Signage, Etc., Using the Common Logo

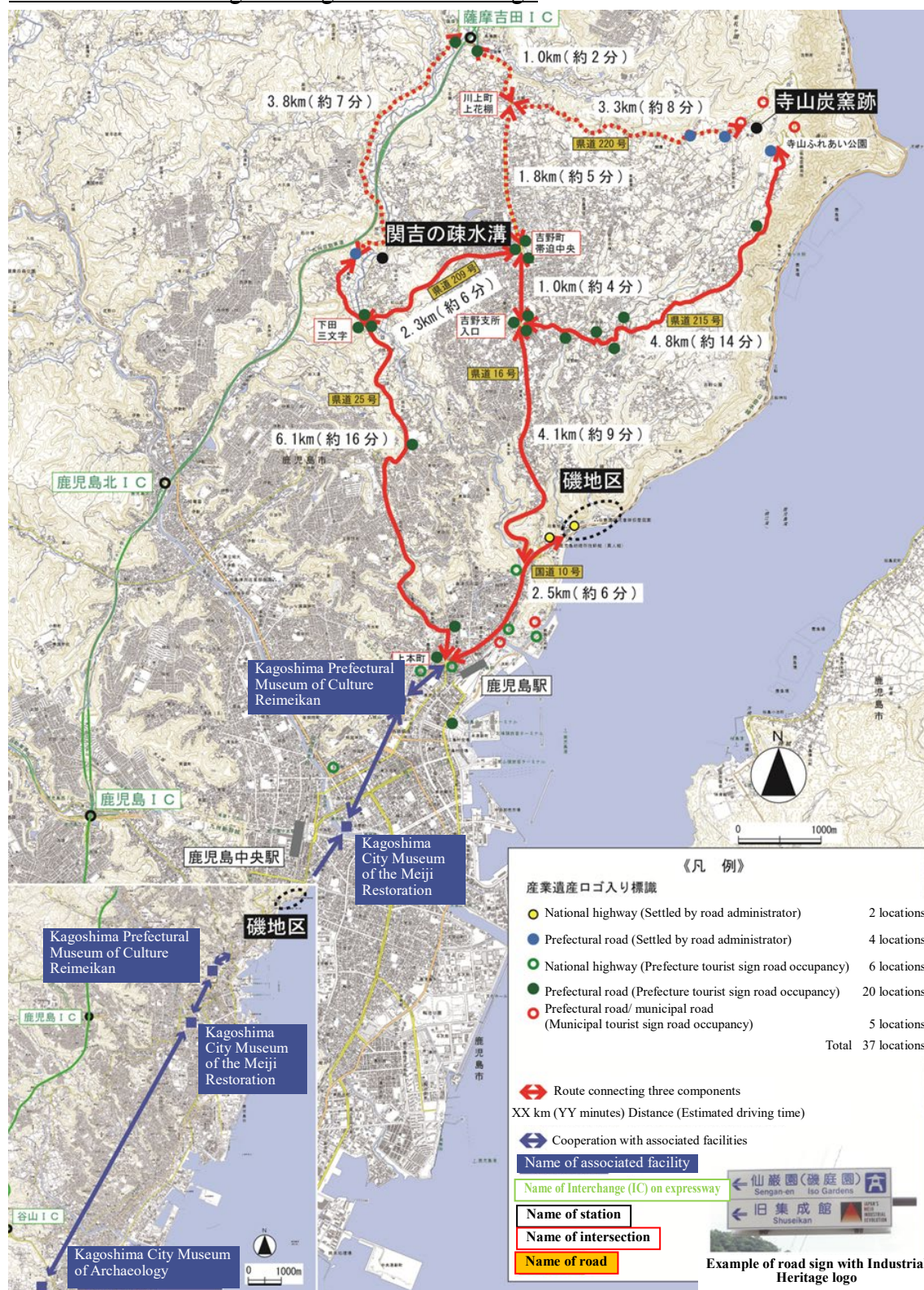
Status of installation of road signage

Place	No. of signs installed
Kagoshima City	37

Photos of road signage



Locations of Road Signs Using the Common Logo



Linkage with Car Navigation (Denso Car Navigation)

Example of linkage with smartphone app so that the target destination can be sent to a car navigation system



The destination can be sent directly from a smartphone to the car navigation system.



A video on how to use the application has been put up on YouTube.



App Utilization

The app introduces the Sites of Japan's Meiji Industrial Revolution, including detailed stories and explanations, as well as the historical background, using video and computer graphics, etc. Users can earn points by playing games and using the AR camera on the app and use them as coupons for souvenirs and other prizes. As such, it serves as a mechanism for both deepening understanding of World Heritage value and feeding back into World Heritage Route tours. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.



Use of Line App

Points acquired on the app can be exchanged for coupons.



Point-of-purchase advertising has been created and placed in stations and information centres, etc., to encourage people to sign up to the LINE app.



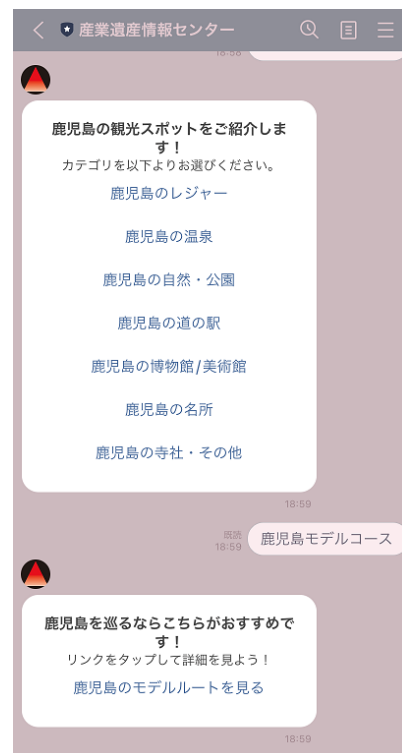
LINE is used as a runway for achieving two-way communication geared to the circumstances of the user based on locational information, such as the use of existing guide apps and communication about coupons that can be used in shops at the area visited. The service is provided in multiple languages so as to support international visitors.



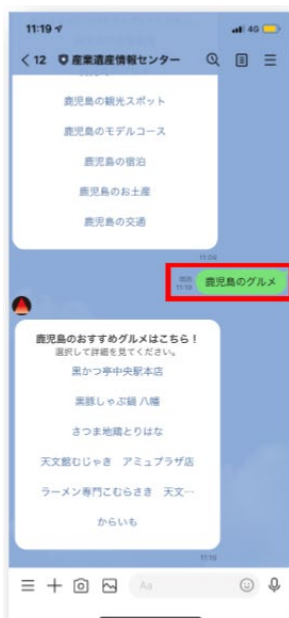
LINE functions (examples)



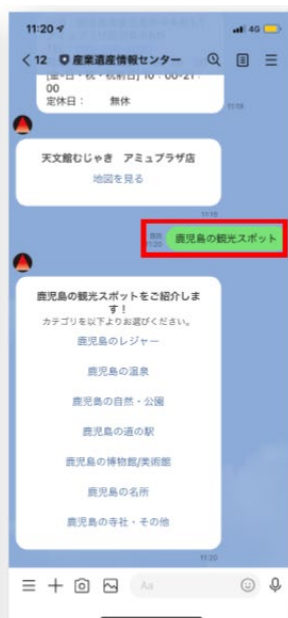
Introduction to model courses



AI chatbot function



Gourmet information



Tourist spots



Traffic information



Accommodation information

Digital Signage Functions

Digital signage has been installed in the Industrial Heritage Information Centre as a mechanism for encouraging multi-destination tourism by displaying local guide maps and information on multi-destination industrial heritage routes. AI chatbots have also been installed to respond to a wide range of multi-destination routes and tourism questions in real time.



Enhancement of digital content

The Kagoshima Area disseminates information related to the component parts through the websites of Kagoshima Prefecture, Kagoshima City, Kagoshima Modernization Industrial Heritage Partnership Council and the Facebook pages of Kagoshima Prefecture and Kagoshima City.

Kagoshima Prefecture has also developed a smartphone app to show images recreating facilities in operation through VR/ AR, 360-degree panorama CG, videos, and other content that are produced, aiming for further understanding by visitors on-site.

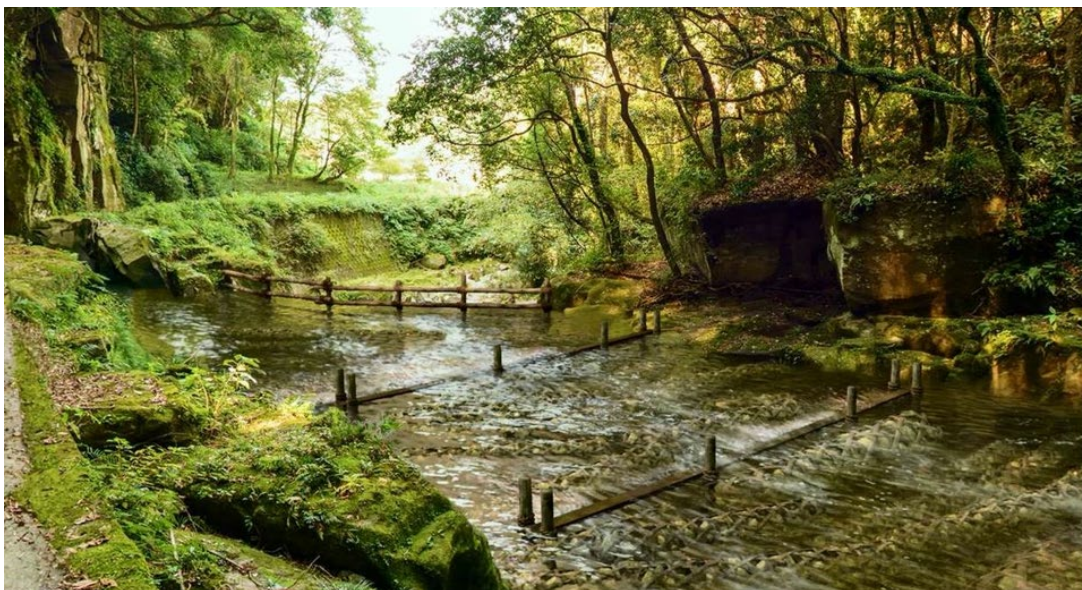
[Shuseikan 360-degree panorama CG]



[Terayama Charcoal Kiln CG]



[Sekiyoshi Sluice Gate of Yoshino Leat CG]



[CG of the Former Kagoshima Foreign Engineers' Residence, Kagoshima Spinning Mill, etc.]



Visitor Centres

The Kagoshima Area is equipped with one visitor centre and five auxiliary facilities with exhibits of component parts and the industrial sector in line with the interpretation strategy. Each facility cooperates with the local community to prepare exhibits that best bring out the true World Heritage values in harmony with the historical and cultural values of the region. They aim to create exhibits that allow visitors to understand the value of the components easily.

Based on points raised in interpretation audits, local visitor centres will work with the Industrial Heritage Information Centre to digitize a huge volume of primary historic materials and use digital tools to enhance exhibits.

[Former Kagoshima Foreign Engineers' Residence (Ijinkan)]

A model of Shuseikan in its entirety, an exhibit recreating the lives of engineers, the relocation history of the Engineers' Residence, interpretive videos, models, and panels for the Shuseikan Project, and an introduction to the component parts situated across eleven cities in eight prefectures can all be found at this facility.

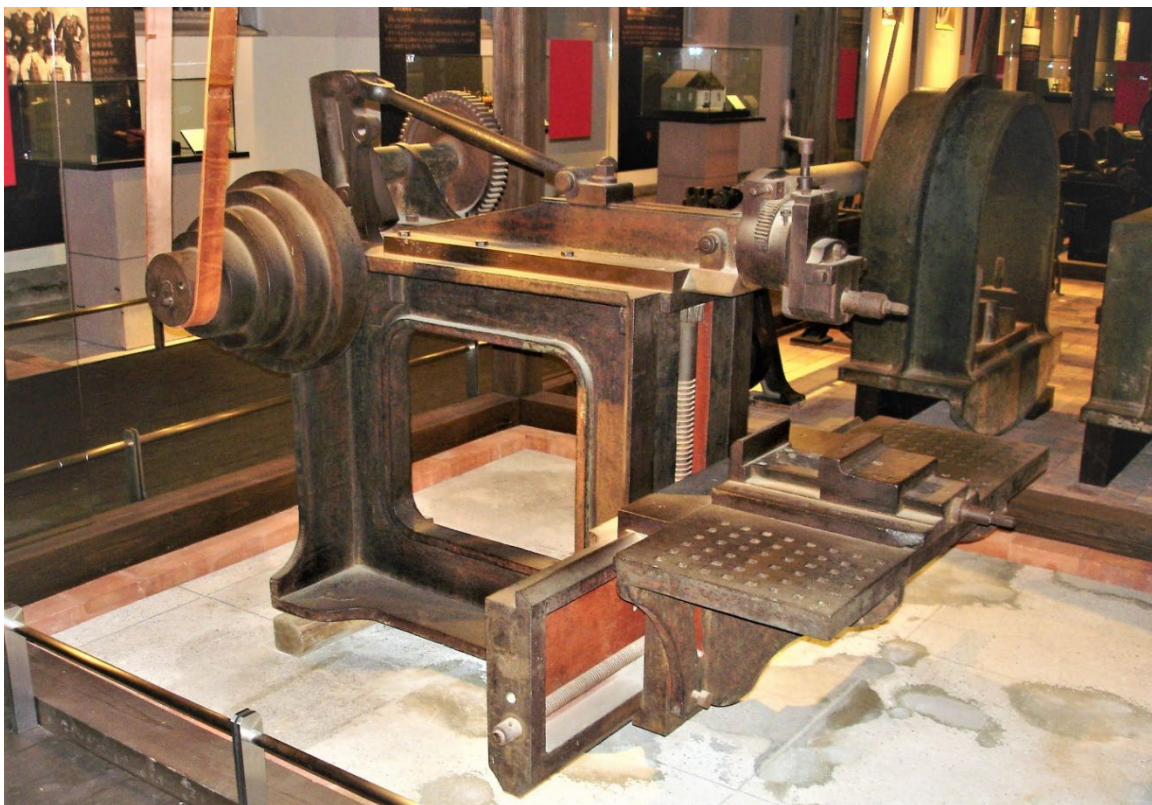


[Former Shuseikan Machinery Factory (Currently Shokoshuseikan)]

One of the buildings that represent the second phase of the Shuseikan Project. It currently serves as the Shoko Shuseikan Museum, where exhibits on the Shuseikan Project, as well as the history and culture of the Shimadzu Clan, are on display.



(Former exhibit)



[Kagoshima World Heritage Orientation Centre]

A facility where visitors can gain a deep understanding of stories and values surrounding Satsuma, centering around the reverberatory furnace remains that are an important component in the “Sites of Japan’s Meiji Industrial Revolution.” An overview of the “Sites of Japan’s Meiji Industrial Revolution,” the history up to its inscription as a World Heritage Site, and displays on Shimadzu Nariakira and the Shuseikan Project can be found.



[Kagoshima Prefectural Museum of Culture Reimeikan]

Built on the former site of Kagoshima Castle, this museum holds academic research and displays on the region's history and cultural heritage. Displays related to the “Sites of Japan’s Meiji Industrial Revolution” can also be found, such as of modernization projects and the traditional techniques that can be seen in skill used for stonewall masonry.



[Kagoshima City Museum of the Meiji Restoration]

Located in Kajiya-cho where many individuals who contributed to the Meiji Restoration were from, the facility makes it easy for visitors to learn about Satsuma at the end of the Edo era and the heroes who supported the Meiji Restoration. Models and videos regarding Shimadzu Nariakira and the Shuseikan Project are on display.





[Kagoshima City Museum of Archaeology]

The history of Kagoshima City, from the Paleolithic to the modern age, is introduced using buried cultural properties and other items. Interpretation of the “Sites of Japan’s Meiji Industrial Revolution” is also provided through excavation survey results, panels, and models.



Monitor tour



Children's education programs

School visits to provide lectures to elementary school and junior high school students

Visits to schools were made to provide lectures utilizing the supplementary reading book “Kagoshima Time Travel,” aiming to raise interest among children and students in the component parts of the Sites of Japan’s Meiji Industrial Revolution that exist in the prefecture and to deepen their understanding of these components in terms of World Heritage values, as well as to foster awareness as citizens of the prefecture to pass on this understanding to future generations.



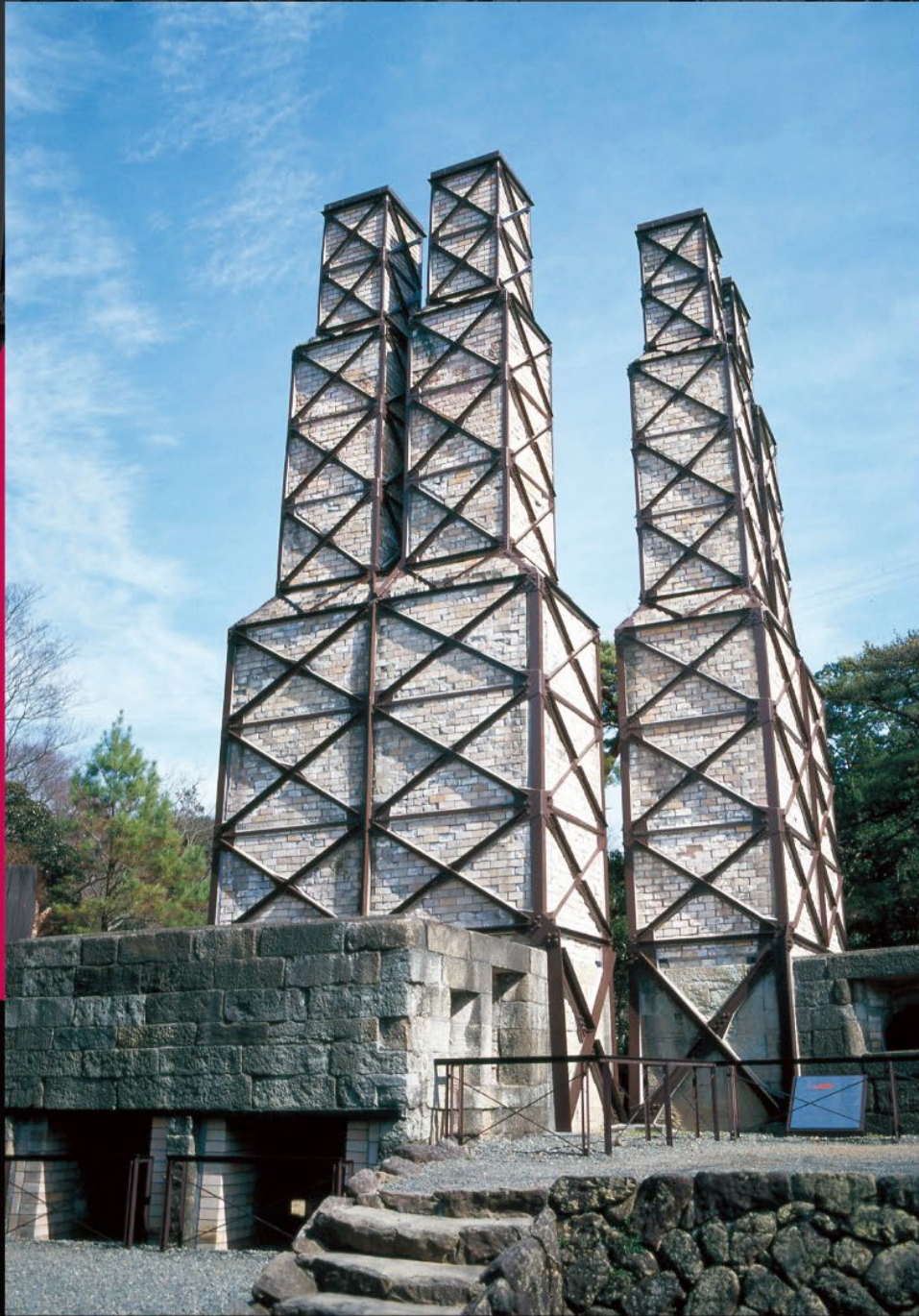
World Cultural Heritage Children's University

This event was held to commemorate the fifth anniversary of the inscription to help citizens deepen their understanding of the “Sites of Japan’s Meiji Industrial Revolution” and the component parts within Kagoshima.

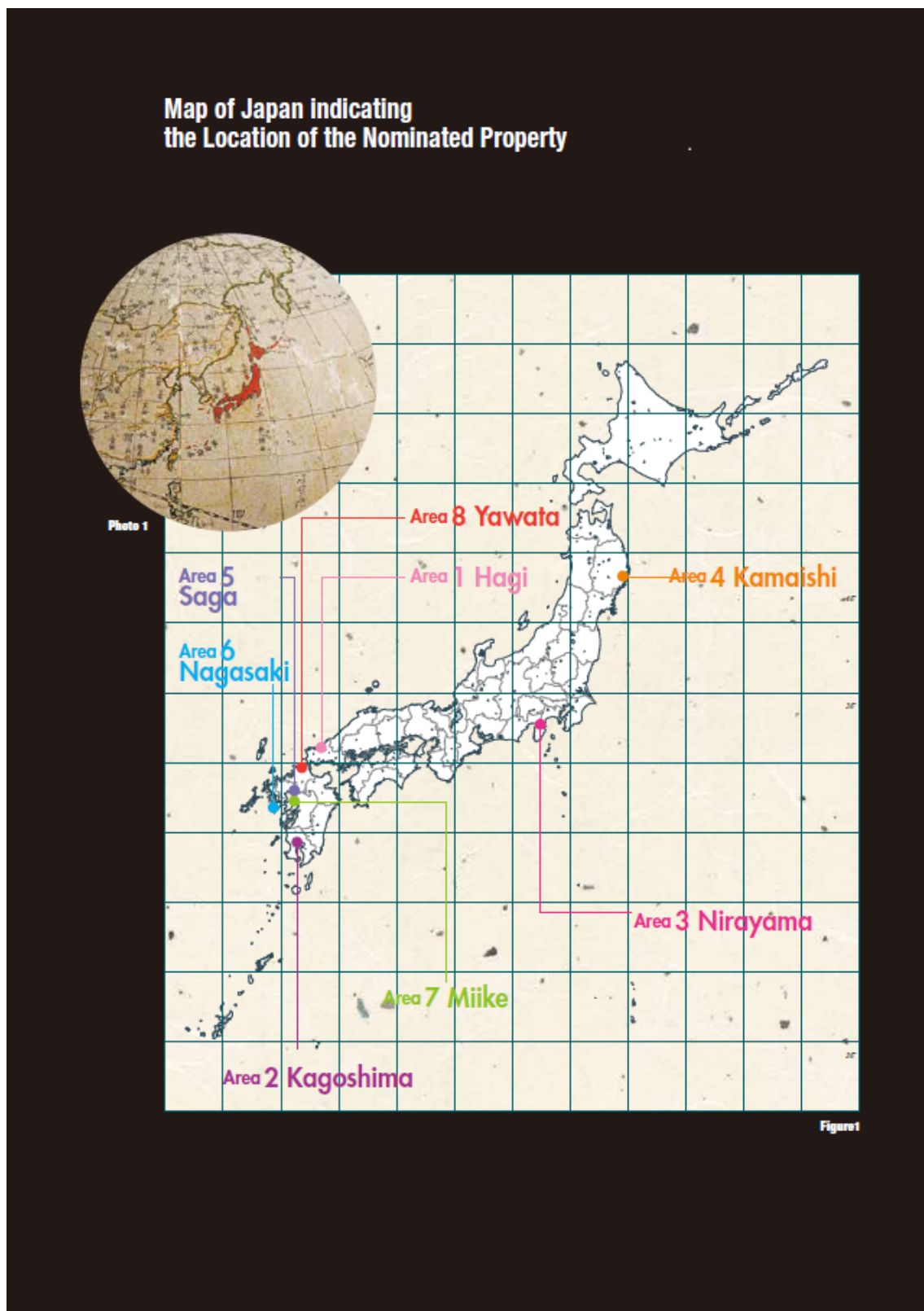


Area3 Nirayama

AREA-SPECIFIC INTERPRETATION PLAN



【Area List】

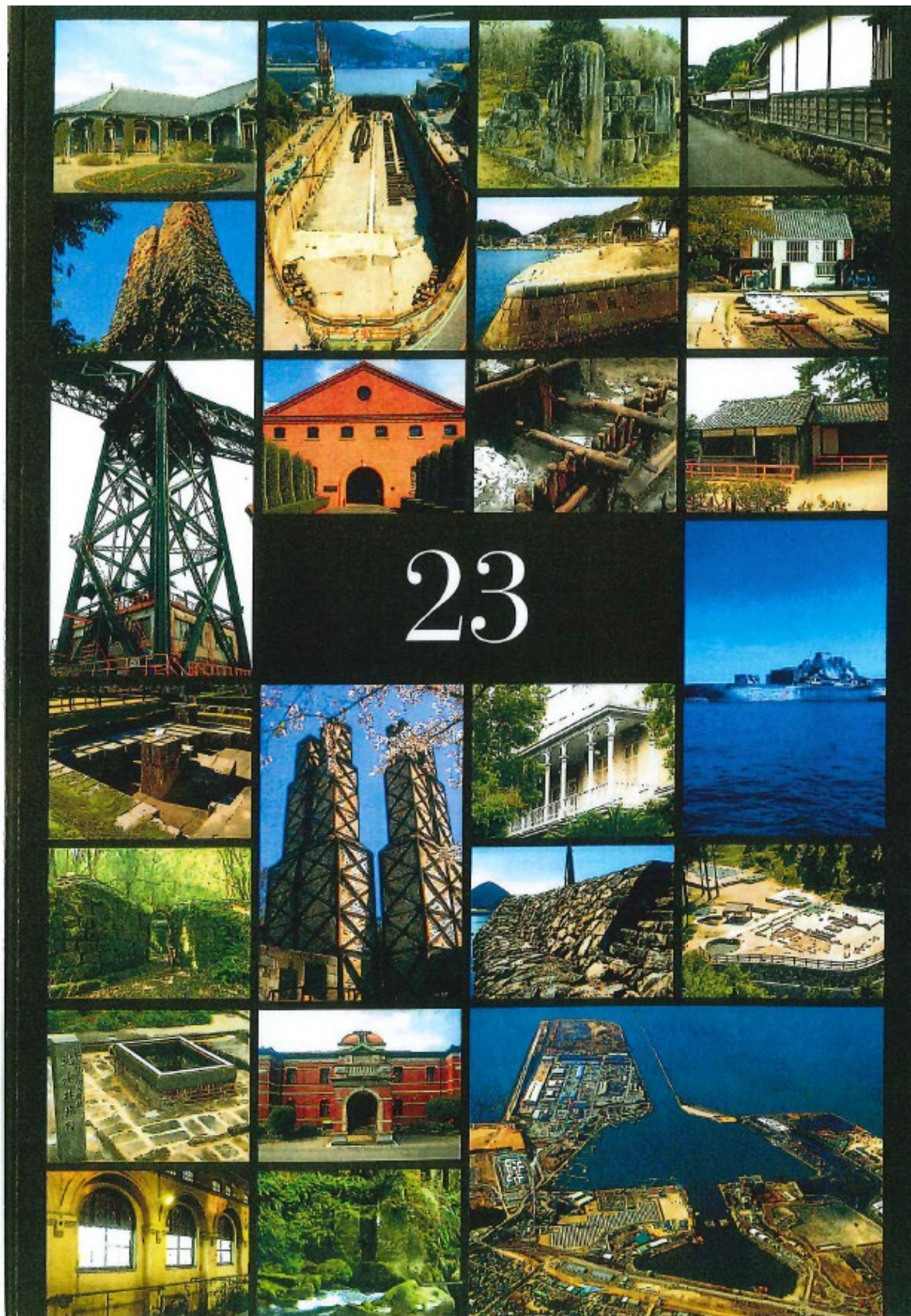


【Component Name】

List of the Component Parts

Area	Site	ID	Component Part
A1 Hagi	1 Hagi Proto-industrial Heritage	1-1	Hagi Reverberatory Furnace
		1-2	Ebisugahana Shipyard
		1-3	Ohitayama Tataro Iron Works
		1-4	Hagi Castle Town
		1-5	Shokasonjuku Academy
A2 Kagoshima	2 Shuseikan	2-1	Shuseikan
		2-2	Terayama Charcoal Kiln
		2-3	Sekiyoshi Sluice Gate of Yoshino Leat
A3 Nirayama	3 Nirayama Reverberatory Furnaces	3-1	Nirayama Reverberatory Furnaces
A4 Kamaishi	4 Hashino Iron Mining and Smelting Site	4-1	Hashino Iron Mining and Smelting Site
A5 Saga	5 Mietsu Naval Dock	5-1	Mietsu Naval Dock
A6 Nagasaki	6 Nagasaki Shipyard	6-1	Kosuge Slip Dock
		6-2	Mitsubishi No.3 Dry Dock
		6-3	Mitsubishi Giant Cantilever Crane
		6-4	Mitsubishi Former Pattern Shop
		6-5	Mitsubishi Senshokaku Guest House
	7 Takashima Coal Mine	6-6	Takashima Coal Mine
		6-7	Hashima Coal Mine
	8 Glover House and Office	6-8	Glover House and Office
A7 Miike	9 Miike Coal Mine and Miike Port	7-1	Miike Coal Mine and Miike Port
	10 Misumi West Port	7-2	Misumi West Port
A8 Yawata	11 The Imperial Steel Works, Japan	8-1	The Imperial Steel Works, Japan
		8-2	Onga River Pumping Station

Table1



SITES OF
JAPAN'S
MEIJI INDUSTRIAL
REVOLUTION
IRON & STEEL, SHIPBUILDING
AND COAL MINING

Executive Summary

Brief Synthesis

“Sites of Japan’s Meiji Industrial Revolution: : Iron and Steel, Shipbuilding and Coal Mining” comprise a singular ensemble of industrial heritage sites that represent the first successful transfer of industrialization from the West to a non-Western nation.

From the middle of the 19th century to the early 20th century, Japan achieved rapid industrialization that was founded on the key industrial sectors of shipbuilding, iron and steel, and coal mining. The initial phase was one of trial and error experimentation in iron making and shipbuilding, based mostly on Western textbooks, and by copying examples of Western ships. This was followed by the more successful importation of Western technology and the expertise to operate it and, by the late Meiji period, full-blown industrialization through newly acquired domestic expertise and the active adaptation of Western technology to best suit Japanese needs and social traditions. This successful industrialization was achieved in just a little over 50 years without colonization, and on Japan’s own terms. The property is testimony to this unique phase in world history.

Justification for Criteria

Criterion (ii)

The property is a series of heritage sites that, together, uniquely illustrate the process by which feudal Japan sought technology transfer from Western Europe and America from the middle of the 19th century. This technology was adopted and progressively adapted to satisfy specific domestic needs and social traditions, thus enabling Japan to become a world-ranking industrial nation by the early 20th century.

Criterion (iv)

The technological ensemble of key industrial sites of shipbuilding, iron and steel, and coal mining is testimony to Japan's unique achievement in world history as the first non-Western country to successfully industrialize. Viewed as an Asian cultural response to Western industrial values, the ensemble had no counterpart elsewhere in the world.

Statement of Integrity

The 23 component parts are the best, and often the only, surviving examples of the key attributes that represent shipbuilding, the iron and steel, and coal mining industries and that are necessary to express Outstanding Universal Value. In each case, the boundary of the component part has been drawn to include the essential features that, overall, contribute to Outstanding Universal Value.

Component parts are in good condition and have mechanisms in place to control deterioration and keep sites free from the adverse effects of development. They have been variously affected by continued use, re-use or lengthy periods of abandonment, and their physical integrity varies between well preserved and fragmentary, the latter being sufficiently intact to be able to represent the former whole. In some cases, where the evidence is primarily archaeological, sufficient investigation has been carried out to verify that a substantial archaeological site survives in good condition for further study and presentation. In other cases, in particular those that remain in operational industrial use, ongoing use and maintenance have resulted in an extraordinarily high level of integrity of working industrial elements.

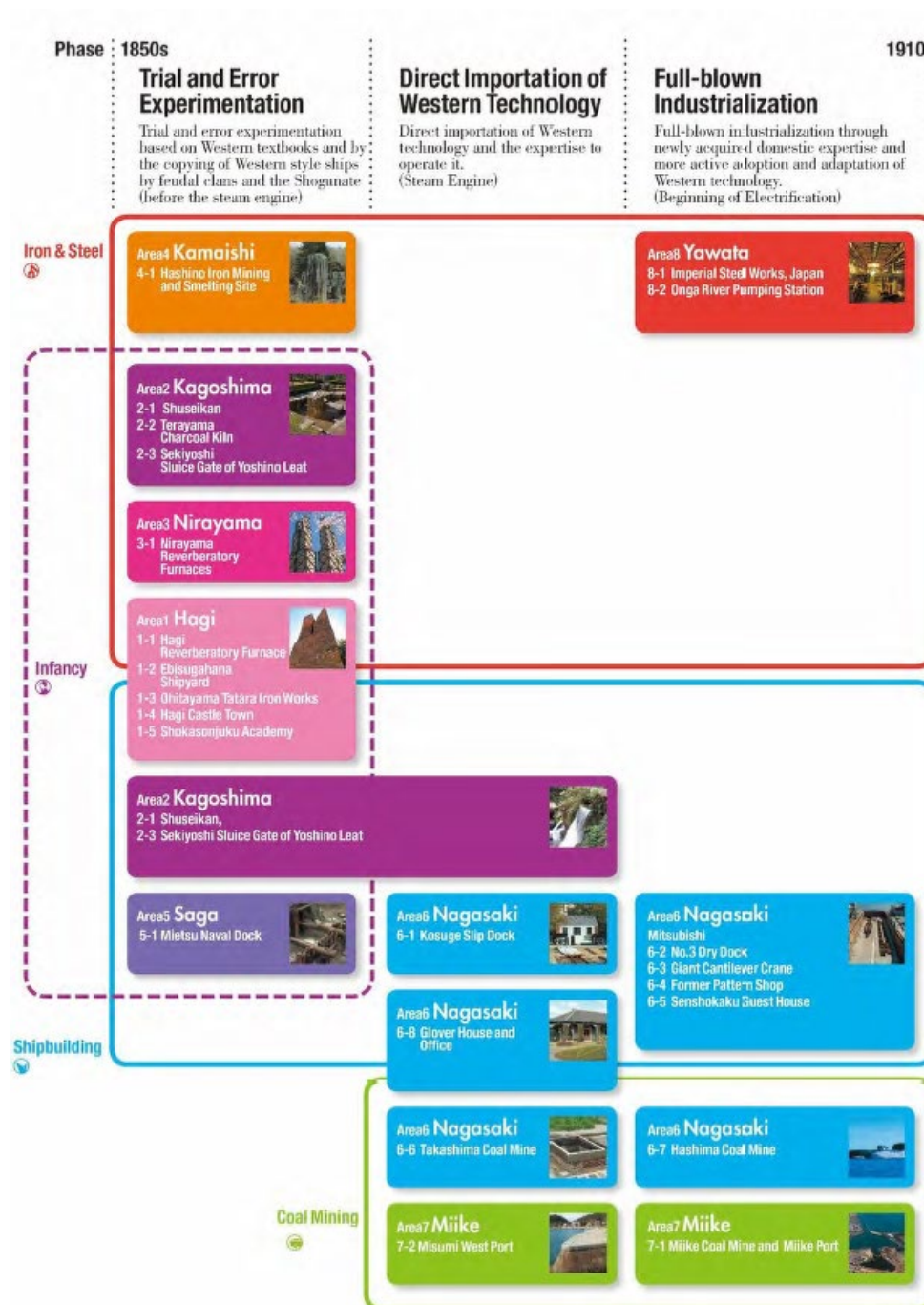
Statement of Authenticity

The property as a whole as well as at the level of each component part meets the conditions of authenticity in relation to Outstanding Universal Value. It has a high degree of authenticity as the best surviving group of industrial remains that represent, and demonstrate, the first, and rapid, transfer of industrialization from the West to a non-Western nation.

With regard to 'form and design' and 'materials and substance', the component parts constitute the original forms and materials of the range of industrial components necessary to represent the transfer of heavy industry from the West to Japan. Some contain sites that range from fragmentary or archaeological, that are nonetheless authentic relics of important industrial components of the series, to those that comprise substantially intact authentic physical remains that have been managed for many years as historic sites which display these characteristics. Others possess an extremely complete survival not only of form, design and materials but also of continuing use and function.

Industrial History Related to the Nirayama Area

The Nirayama Area encompasses component parts that retain records related to iron and steel in the first phase, Trial and Error Experimentation, in the World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”



The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO on November 30, 2017, as an appendix to the State of Conservation Report noted the following:

11. Interpretation Plan (extract)**(1) Consistent OUV rollout across all component parts**

Based on the Interpretation Strategy, the consistent interpretation of OUV should be presented across all component parts. This will be agreed by all stakeholders, and coordinated and implemented commonly in a branded World Heritage style.

(2) and (3) Progress in dealing with the “full history” of each site, including information gathering related to workers

Advice from international experts who are members of the Expert Committee on the Industrial Heritage including Operational Properties (Cabinet Secretariat of Japan), from the international heritage expert who was the ICOMOS technical evaluation field assessor of the World Heritage nomination of the “Sites of Japan’s Meiji Industrial Revolution”, and from the President of the ICOMOS International Scientific Committee on Interpretation and Presentation, comprises the following four key policies:

1) Focus on the interpretation of Outstanding Universal Value; in conformity with the primary purpose of the World Heritage, OUV of the inscribed property should be presented clearly at each site, not confusing with other, albeit related, issues. Based on this, Recommendation g)* should be implemented.

2) The scope of the “full history” of each site, except for the OUV period (from 1850s to 1910) as described on page 78, falls into two parts: prior to 1850s, and from 1910 to the present. The target of the full history should be narrowed down, considering the local values that supplement the understanding of the background of each component part. Where relevant, with regard to the interpretation of the full history on the location of each component part, high quality research such as collecting primary historical documents and recording oral testimonies should be carried out, and the result of this research should, at some stage, be made publicly available through appropriate media.

* Recommendation g)

“Preparing an interpretive strategy for the presentation of the nominated property, which gives particular emphasis to the way each of the sites contributes to OUV and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.”

Based on the Interpretation Strategy, we have had multiple audits of the current status of interpretation at the component parts and visitor centres, etc., in the various areas undertaken by international experts familiar with industrial assets and the interpretation thereof in countries around the world.

As a result, auditor Barry Gamble identified the following issues in relation to the Nirayama area.

- Izunokuni City's development of the Furnace Visitor Centre (200,000 visitors in 2018) and the ongoing enhancement of the site is to be commended. Since the audit in 2017, the further works undertaken (tree management, new signage, land acquisition, conservation works) provide a more holistic understanding and experience of the site. For example, the now clearer visual connection between the river and the furnaces illustrates the direct relationship between the two elements. These works also embrace other experiences around the site such as the tea plantation and the viewing areas.
- The City's ongoing conservation, management and presentation of the site is an exemplar model that should be shared with the other Areas. It also clearly demonstrates one of the aims of the WH Convention, that is the WHS should have social and economic benefits to the local and broader communities.
- Izunokuni City is proposing to install the "common exhibition" within the visitor centre's entrance area. The visitor will then be able to better understand and experience the engaging and well-designed exhibition on the Component Part and its broader history. Currently, the quality and content of the presentation of overall OUV of the series is not adequate in comparison with the (occasional) over-emphasis of the contribution of the site (Component Part).
- The presentation of the site should also include what, and where, significant events/impacts/achievements relevant to Nirayama were experienced elsewhere in the WHS and beyond. Content should draw from the widely-consulted and approved texts in the Nomination Document.

- There is the opportunity with the Egawa House for Izunokuni City to enhance its interpretation while also supporting an increase in visitation to the Egawa House (currently around 30,000, with an estimated annual carrying capacity of 50,000); thus extending the overall visitor experience to the area and expanding on the WHS story. However, this will need to be carefully managed to retain the current personable and intimate experience, and ensure that the structures and gardens are not adversely impacted. Around 50,000 visitors seem viable as a manageable and achievable target.
- The new archival facility at the Egawa House provides the opportunity to provide additional educational experiences and materials that could be used for exhibitions etc.
- Izunokuni City is proposing to remove the Heda Shipbuilding Museum from the third tier of the Interpretation Strategy's hierarchy in developing their interpretation plan. There was a discussion that this associative site demonstrates one of the significant impacts of the Nirayama Reverberatory Furnaces' technological achievements and one of the WHS three themes. The museum is not managed by Izunokuni City. The removal of this facility from the hierarchy's third tier will not have an adverse impact on the interpretation of the WHS OUV and its attributes.

Discussions have been held regarding this interpretation plan for the Nirayama Area thus far by the local conservation council.

As referred to in the evaluation above, an issue for this area is realizing an interpretation that better reflects the World Heritage values in harmony with the historical and cultural values of the region through the addition of the common exhibition. Thus, the timing in which exhibits are replaced will factor in the common exhibition, and this issue will be addressed in a systematic way. The common exhibition will be implemented in coordination with the Industrial Heritage Information Centre.

Other recommendations will also be put into consideration, and improvement to interpretation will be appropriately addressed with regard to visitor management at Egawa Residence.

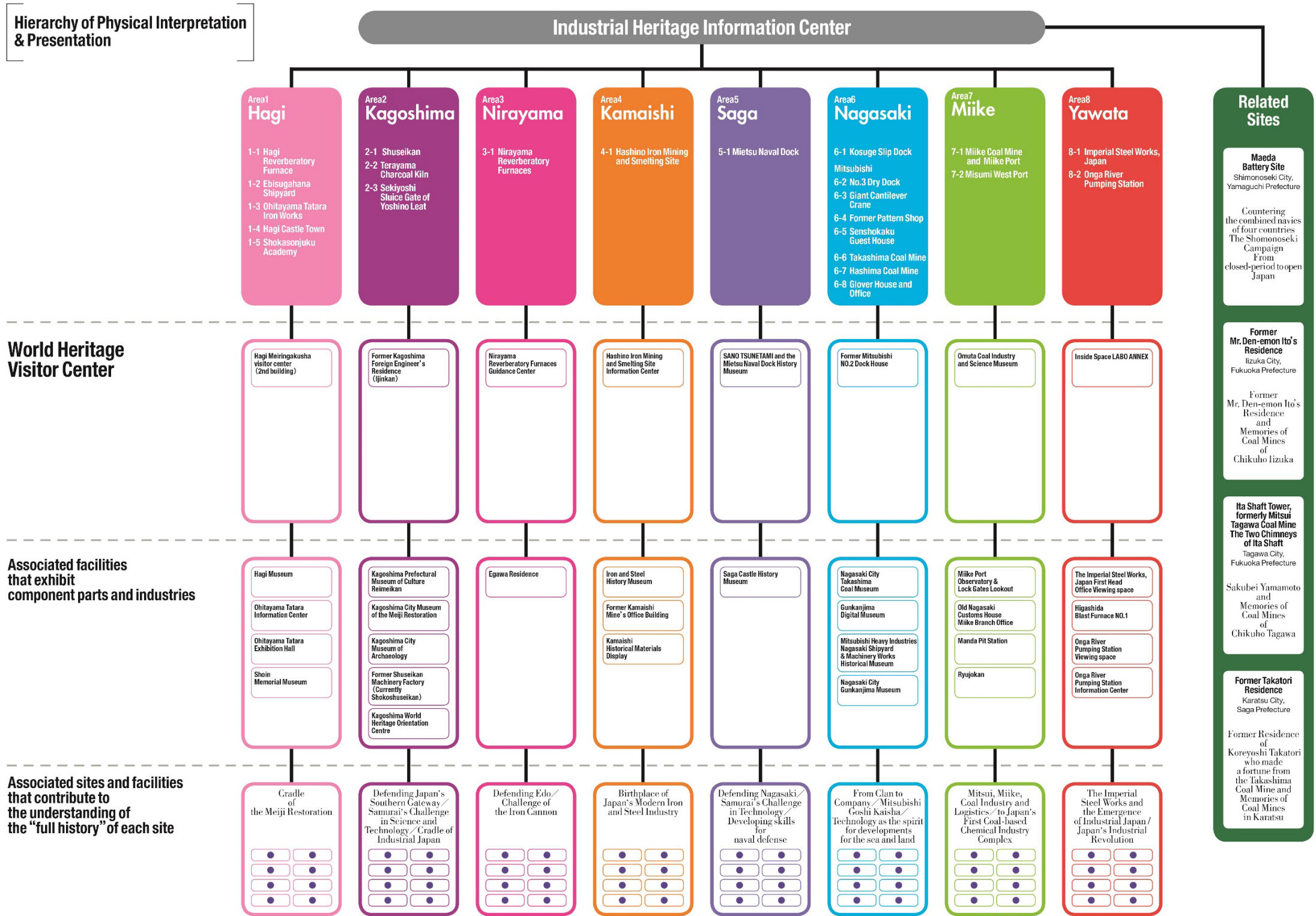
The local conservation council will review the implementation progress of this plan and consider ways to make improvements as appropriate going forward.



Local Conservation Council meeting

Hierarchy of Physical Interpretation and Presentation

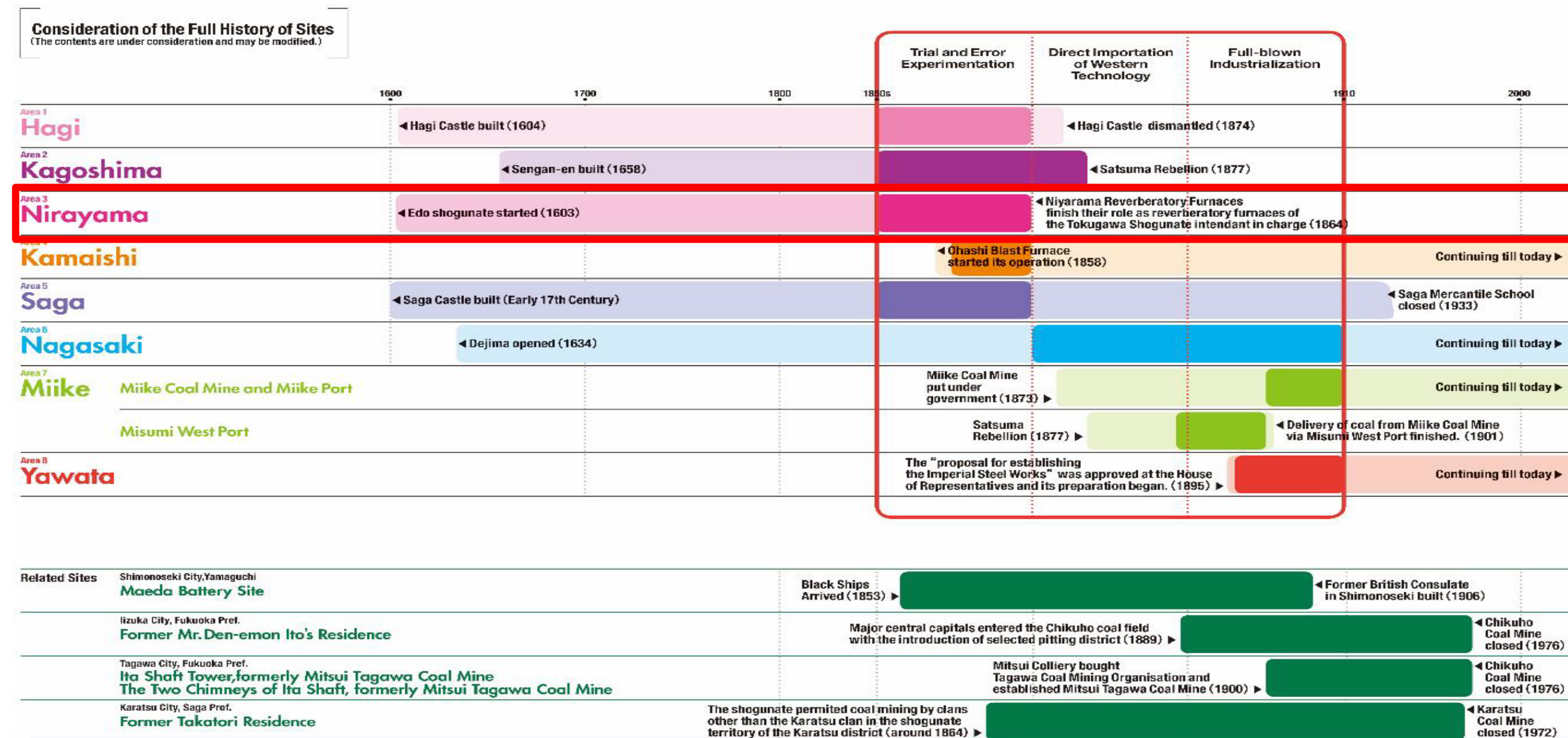
The Industrial Heritage Information Centre and the various local visitor centres will work together to build a system enabling the effective communication of the OUV of the Sites of Japan’s Meiji Industrial Revolution.



Related sites: Sites that were component part candidates in the provisional UNESCO World Heritage listing on the January 5, 2009, and that comprise industrial heritage (valuable assets that provide insight into the historical background and social situation of the time) that will be utilized in an integrated manner with the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution.”

Consideration of the Full History of Sites

The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO in 2017, addressed consideration of the full history of sites as shown in the figure below.



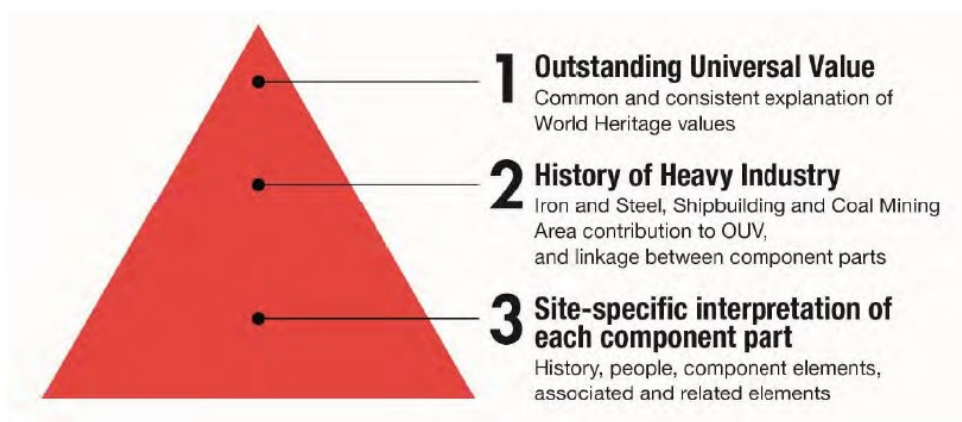
Interpretation in the Nirayama Area

Approach of the Interpretation Strategy

The Interpretation Strategy provides the following schematic in relation to concepts for interpretation and presentation.

Interpretation for the Nirayama area too will be approached in line with this in order to resolve the issues identified in interpretation audits.

Interpretation and presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of value and themes

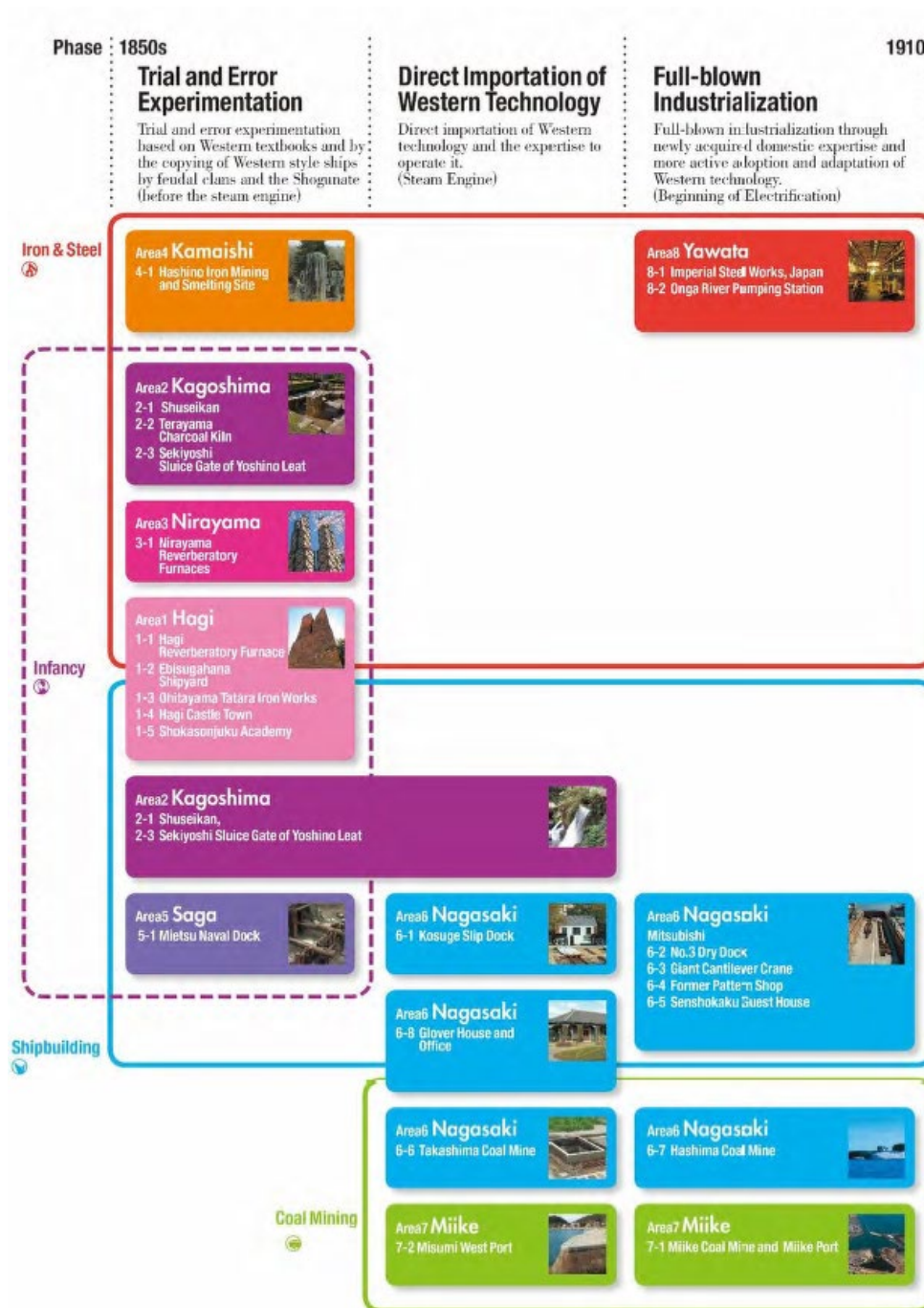


OUV stands at the top of the interpretation pyramid at the Industrial Heritage Information Centre and the various regions' visitor centres and is therefore the top-priority theme over the interpretation and presentation of individual regions and industries, such as history specific to an area or component part. Addressing interpretation in the order of (1) OUV, (2) the history of heavy industry, and (3) site-specific interpretation of each component part, as shown above, will ensure consistent presentation across the property

Interpretation flow at each local visitor centre

Hierarchy of Interpretation





Relationship between Iron and Steel Sites

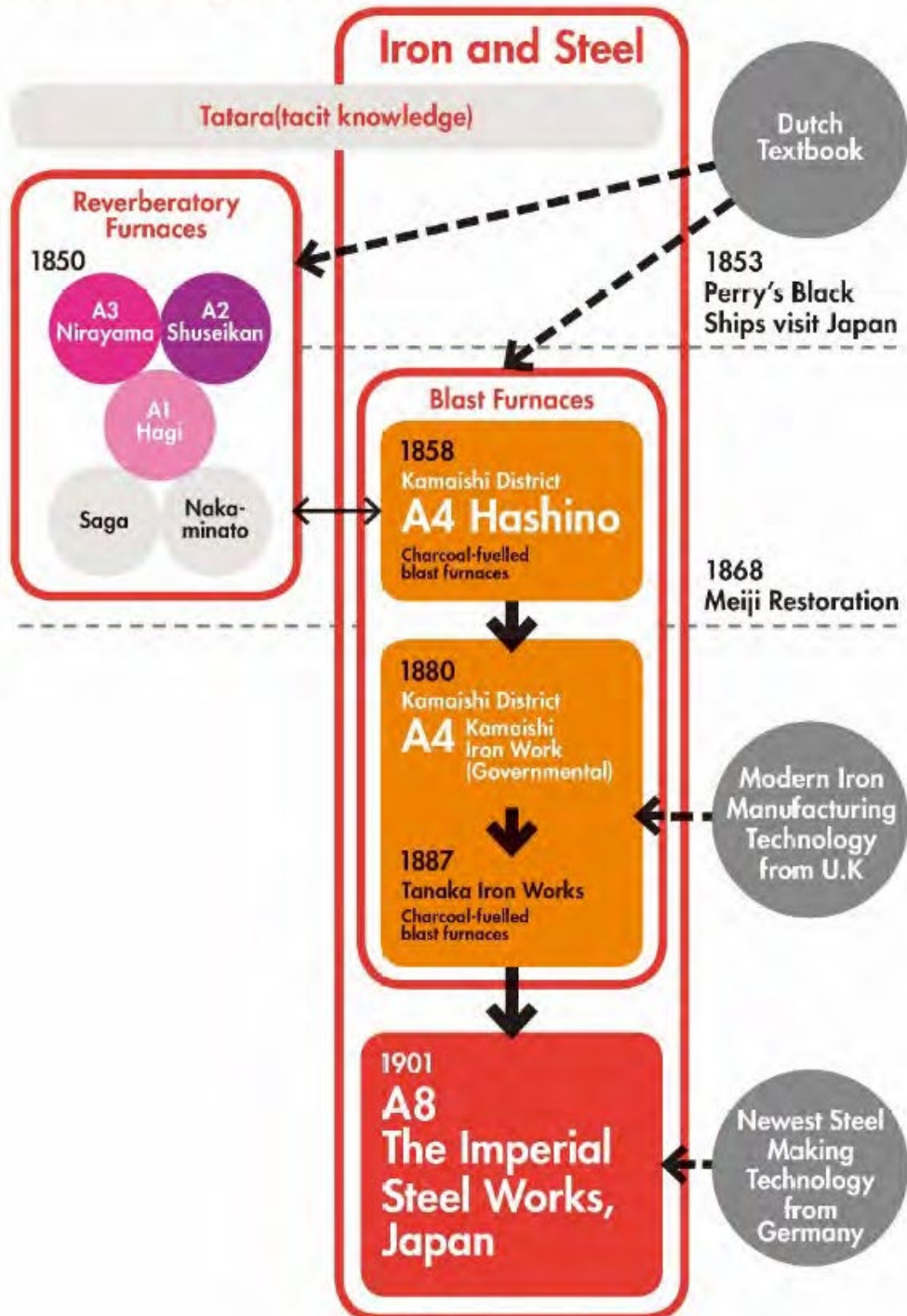



Figure 3-2

Presentation Using “Liquid Galaxy,” Etc.

The Industrial Heritage Information Centre, which was established in March 2020 pursuant to the Interpretation Strategy, uses an immersive video multi-display that draws on the World Heritage OUV period (1850s-1910), as well as the Consideration of the Full History of Sites schematic. It explains through images the history and transformation of component parts in the various areas, as well as the way that people lived, etc., presenting these in a way that enables visitors to experience in a very real way the evolution of the property, the contribution to OUV, and the full history. This area will also establish a digital archive of documents gathered by the Industrial Heritage Information Centre and the visitor centres in the area, which will be gradually reflected in the interpretation tools.



Nirayama Area Component Parts

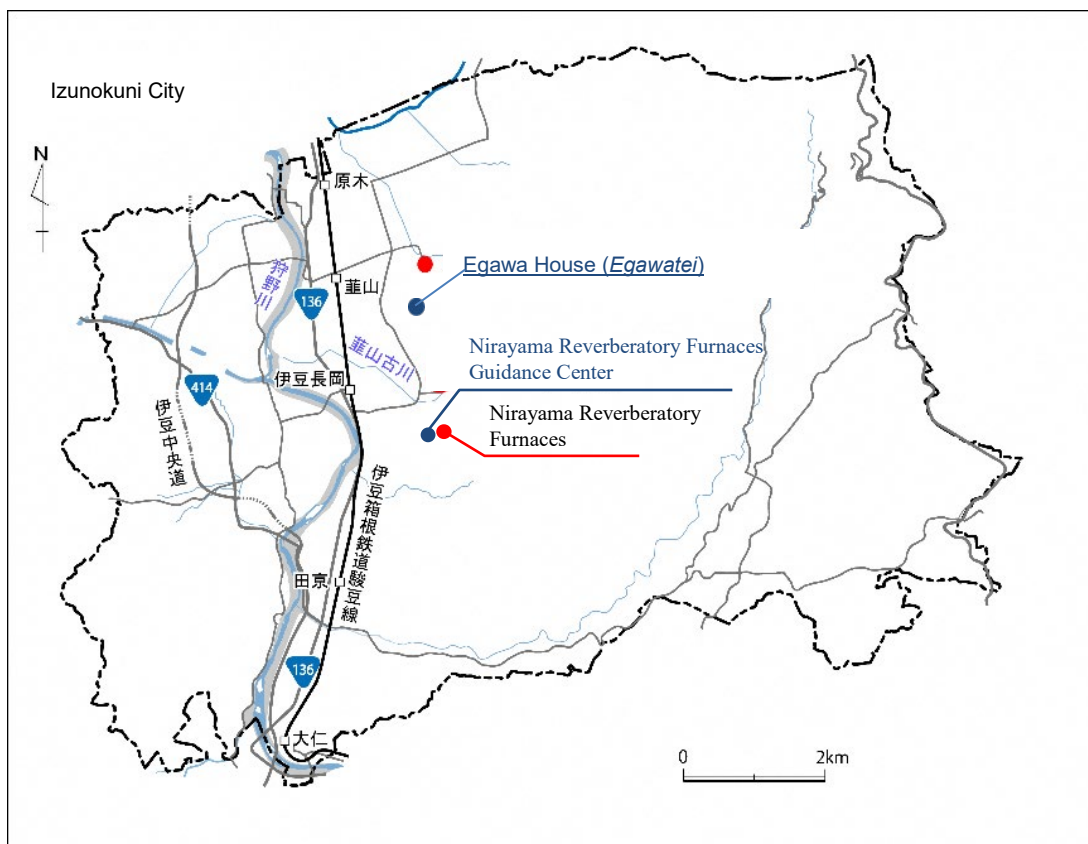
Relevant industries: Iron and steel	
Name of component part: The Nirayama Reverberatory Furnaces	
<p>(Overview of component part)</p> <p>This is one of three reverberatory furnaces still remaining today out of eleven that were made for constructing cannons to address the sense of crisis looming regarding coastal defense. Egawa Hidetatsu, a Shogunate intendent in Nirayama, proposed its construction in response to the arrival of the Black Ships. His son, Hidetoshi, completed the construction with traditional techniques in cooperation with engineers of the Saga domain using documents by a major general of the Dutch army, Huguenin.</p>	

World Heritage Plaques

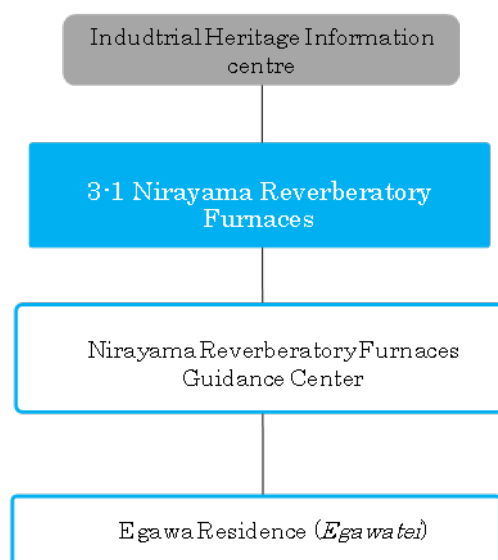
In line with the UNESCO Guidelines, World Heritage plaques have been installed at the various component parts to inform visitors properly about the OUV of the property.



Nirayama Area: Distribution of Interpretation Facilities



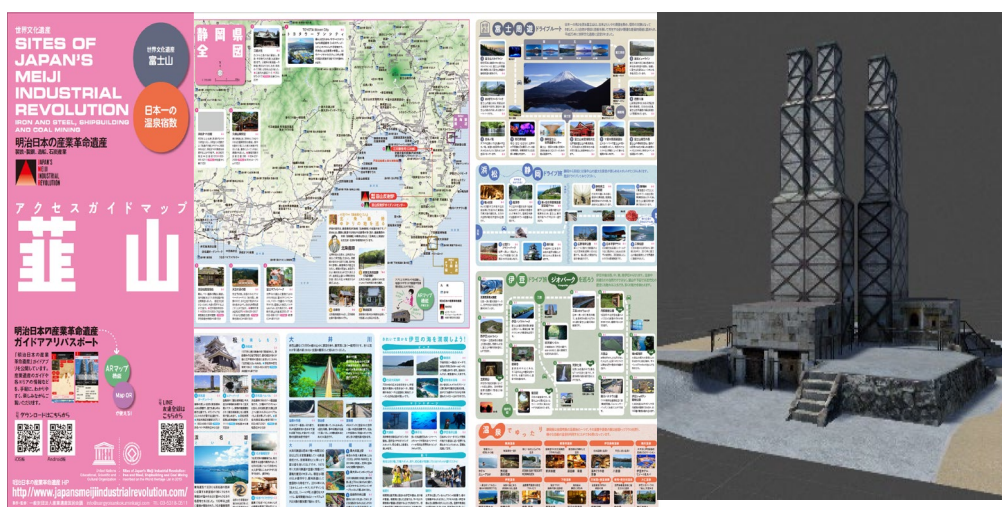
Nirayama Area: Hierarchy of Physical Interpretation and Presentation



Access Guide Maps

An English-version access map to guide visitors to component parts in each area has been created in addition to the Japanese version and is distributed free to visitors. This map gives an introduction to all component parts in the area and is structured to help visitors reach as many of them as possible.

By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites.



Information Counters

These are set up in administrative institutions to distribute access guide maps and other information.



Izunokuni City Hall



Nirayama Reverberatory Furnaces Guidance Center

GuideMap Distribution Points and Number of Maps Distributed

Guide map distribution points and the number of maps distributed are as follows.

Overall map		Nirayama Map	
No. distributed	177,762	No. distributed	1,810
Japanese & English	177,762	Japanese	1,310
Main distribution point	No. distributed	Main distribution point	No. distributed
Administrative organizations	300	Administrative organizations	1,510
Airports	550	Airports	0
Hotels	50	Hotels	0
Car rental agencies	100	Car rental agencies	0
JR (Railway)	600	JR (Railway)	0
Tourist information centers	700	Tourist information centers	0
Michi-no-eki roadside stations	4,400	Michi-no-eki roadside stations	0
NEXCO (Expressway)	168,500	NEXCO (Expressway)	0
Public interest corporation/foundation/ incorporated association	550	Public interest corporation/foundation/ incorporated association	0
Other	2,012	Other	300
JR Kyushu Hakata Station General Information		Nakama City Regional Exchange Center – Nakama <i>gaido no kai</i> (guide group)	
West Nippon Expressway Retail Co., Ltd.		Kagoshima Prefecture Tourism/Culture Sports Promotion Division	
West Nippon Expressway Service Holdings Company Limited		Izunokuni City, Shizuoka	
Fugetsu Foods Co., Ltd.			
Fukuoka International Airport Co., Ltd.			
Nagasaki Airport			
Kagoshima Prefectural Library			
JR Kagoshima Chuo Station Tourist Information Center			
Kitakyushu Convention & Visitors Association			
Omura City Hall Industrial Promotion Dept.			
JR Miyazaki Station Tourist Information Center			

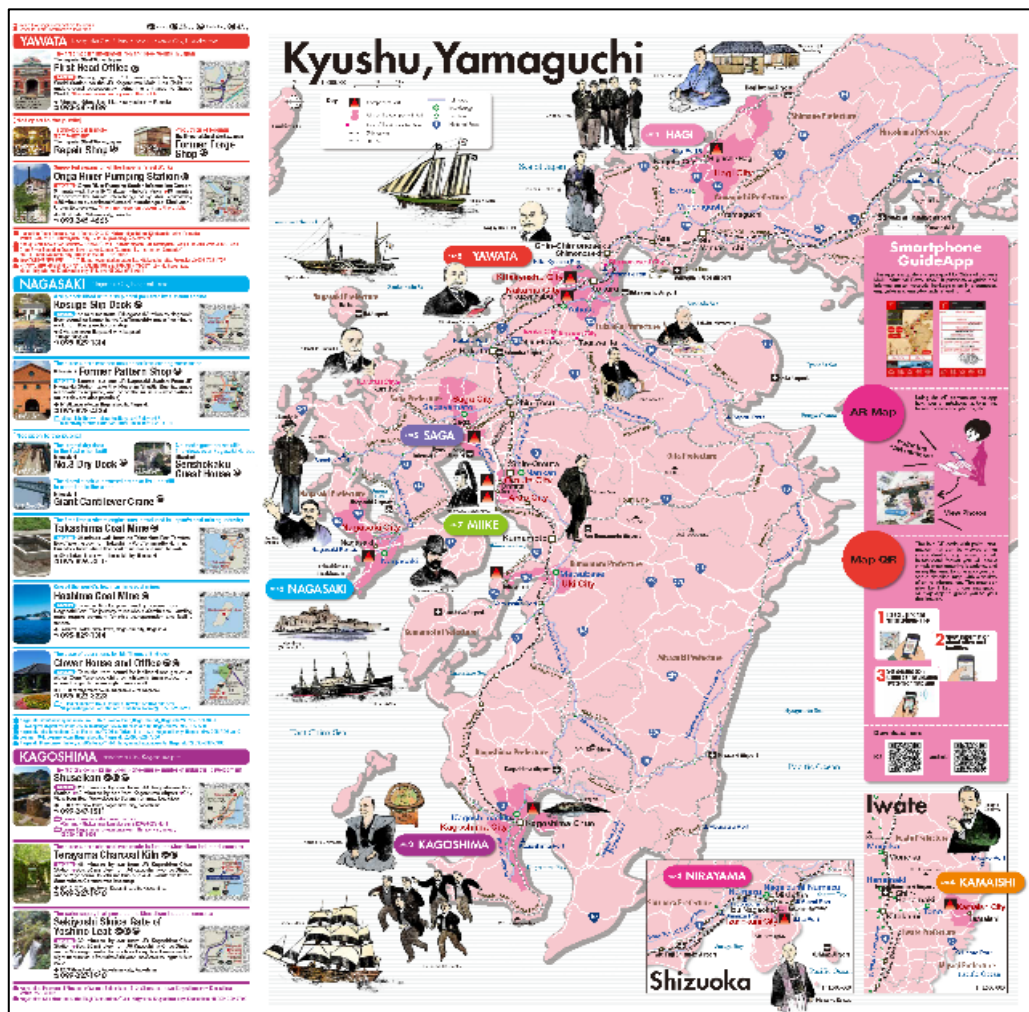
Total no. distributed
for the entire area

464,025

World Heritage Route

In accordance with the Interpretation Strategy, and also as noted in pages 395–396 of the Nomination Document, the World Heritage Route Promotion Council was founded to provide guidance and tourism infrastructure for understanding World Heritage as a whole. The Council attracts visitors to all component parts and related sites by producing maps, apps, and GPS navigation and by installing road signs and other signage using the common logo to promote the Sites of Japan's Meiji Industrial Revolution so that visitors are able to understand the World Heritage value constituted by the 23 component parts.

Work will continue to be undertaken steadily pursuant to the Nomination Document and the Interpretation Plan.





Map on p. 396 of the Nomination Document



World Heritage Route Promotion Council meeting

Installation of Road Signage, Etc., Using the Common Logo

Status of installation of road signage

Place	No. of signs installed
Izunokuni City	3
Kannami-cho	1

Photos of road signage



Locations of Road Signs Using the Common Logo



Linkage with Car Navigation (Denso Car Navigation)

Example of linkage with smartphone app so that the target destination can be sent to a car navigation system



The destination can be sent directly from a smartphone to the car navigation system.



A video on how to use the application has been put up on YouTube.



App Utilization

The app introduces the Sites of Japan's Meiji Industrial Revolution, including detailed stories and explanations, as well as the historical background, using video and computer graphics, etc. Users can earn points by playing games and using the AR camera on the app and use them as coupons for souvenirs and other prizes. As such, it serves as a mechanism for both deepening understanding of World Heritage value and feeding back into World Heritage Route tours. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.



Use of Line App

Points acquired on the app can be exchanged for coupons.



Point-of-purchase advertising has been created and placed in stations and information centres, etc., to encourage people to sign up to the LINE app.



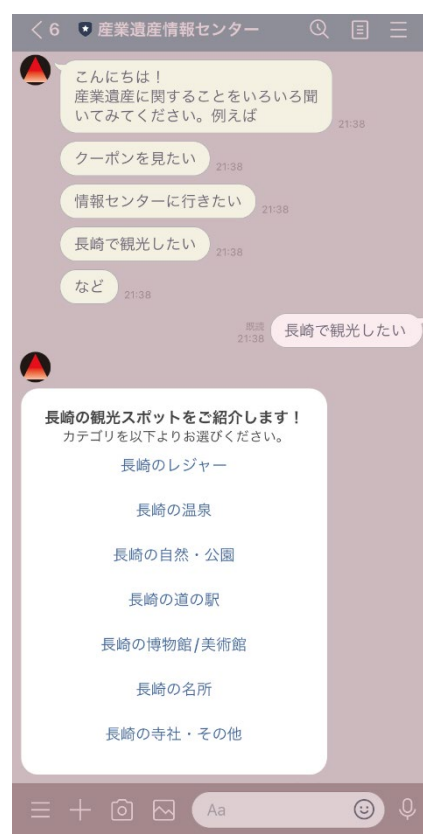
LINE is used as a runway for achieving two-way communication geared to the circumstances of the user based on locational information, such as the use of existing guide apps and communication about coupons that can be used in shops at the area visited. The service is provided in multiple languages so as to support international visitors.



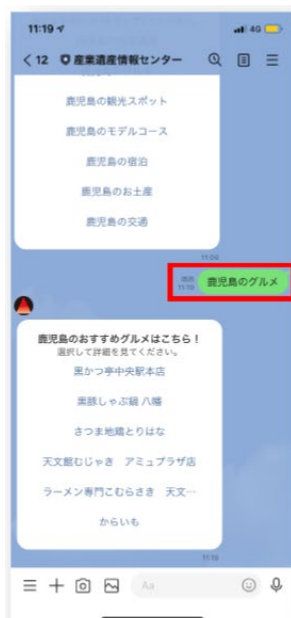
LINE functions (examples)



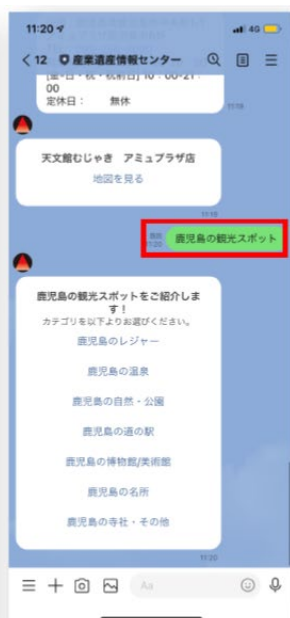
Introduction to model courses



AI chatbot function



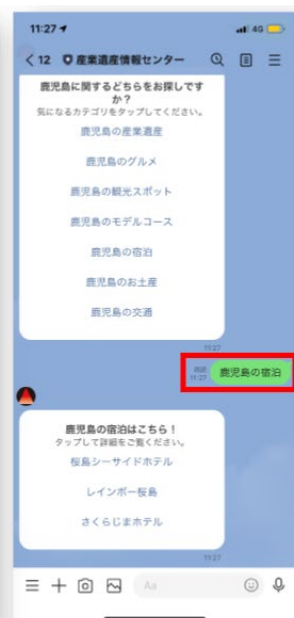
Gourmet information



Tourist spots



Traffic information



Accommodation information

Digital Signage Functions

Digital signage has been installed in the Industrial Heritage Information Centre as a mechanism for encouraging multi-destination tourism by displaying local guide maps and information on multi-destination industrial heritage routes. AI chatbots have also been installed to respond to a wide range of multi-destination routes and tourism questions in real time.



Visitor Centres

The Nirayama Area is equipped with one visitor centre and one auxiliary facility with exhibits of component parts and the industrial sector in line with the interpretation strategy. Each facility cooperates with the local community to prepare exhibits that best bring out the true World Heritage values in harmony with the historical and cultural values of the region. They aim to create exhibits that allow visitors to easily understand the value of the components. Based on points raised in interpretation audits, local visitor centres will work with the Industrial Heritage Information Centre to digitize a huge volume of primary historic materials and use digital tools to enhance exhibits.

[Nirayama Reverberatory Furnaces Guidance Center]

The Nirayama Reverberatory Furnaces Guidance Center provides information on the value of the Sites of Japan's Meiji Industrial Revolution, presents descriptive videos on large screens, displays original material and panels to exhibit the history of the Nirayama Reverberatory Furnaces, and explains its positioning as a component part.



[Egawa Residence (*Egawatei*)]

Egawa Residence is an important cultural property that was the residence of the Shogunate intendent Egawa Hidetatsu, who was in charge of the construction of the Nirayama Reverberatory Furnaces. Many historical documents stored at the residence corroborate the authenticity of the Nirayama Reverberatory Furnaces. The residence is open to the public, and exhibits pertaining to the Nirayama Reverberatory Furnaces are on display.

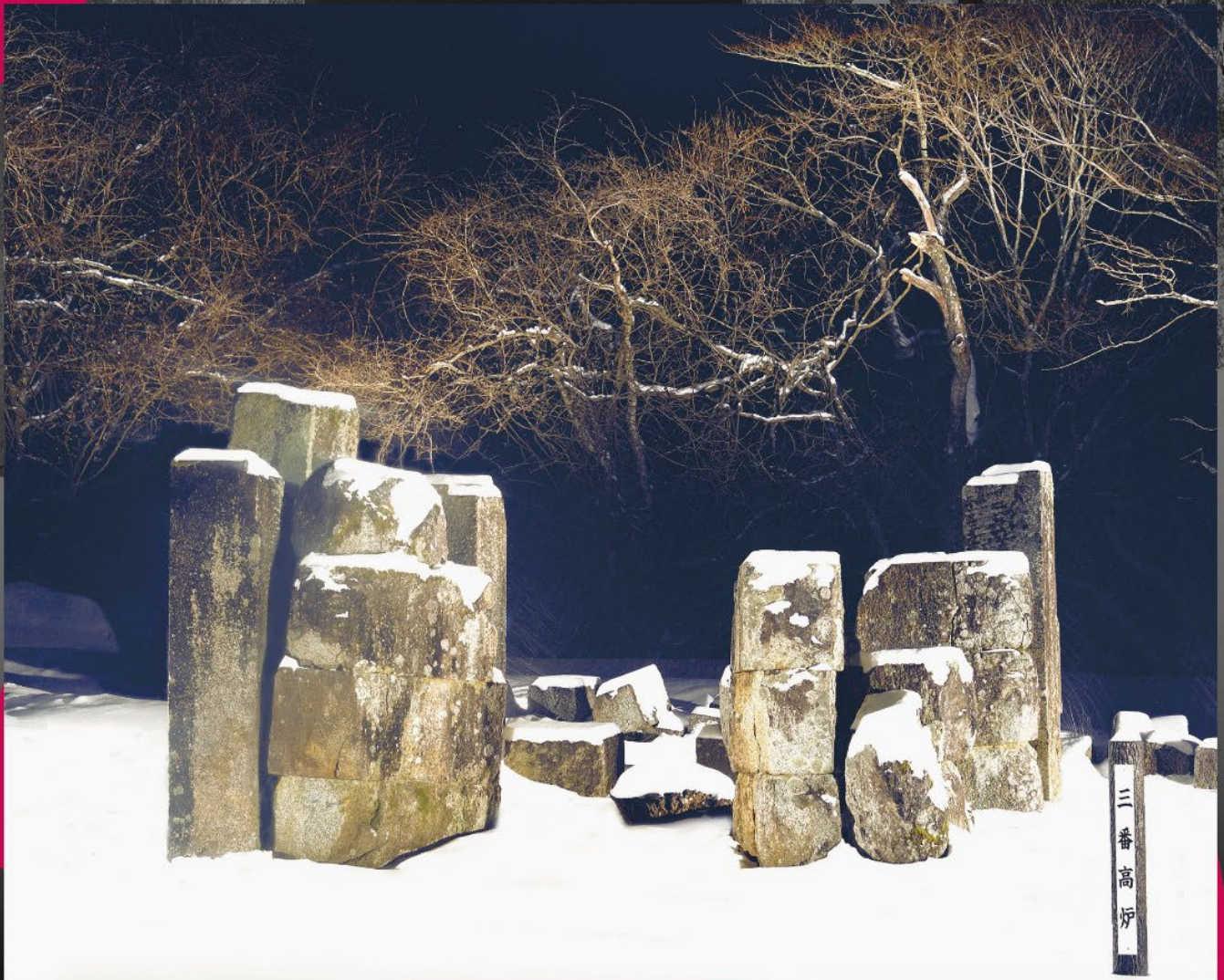




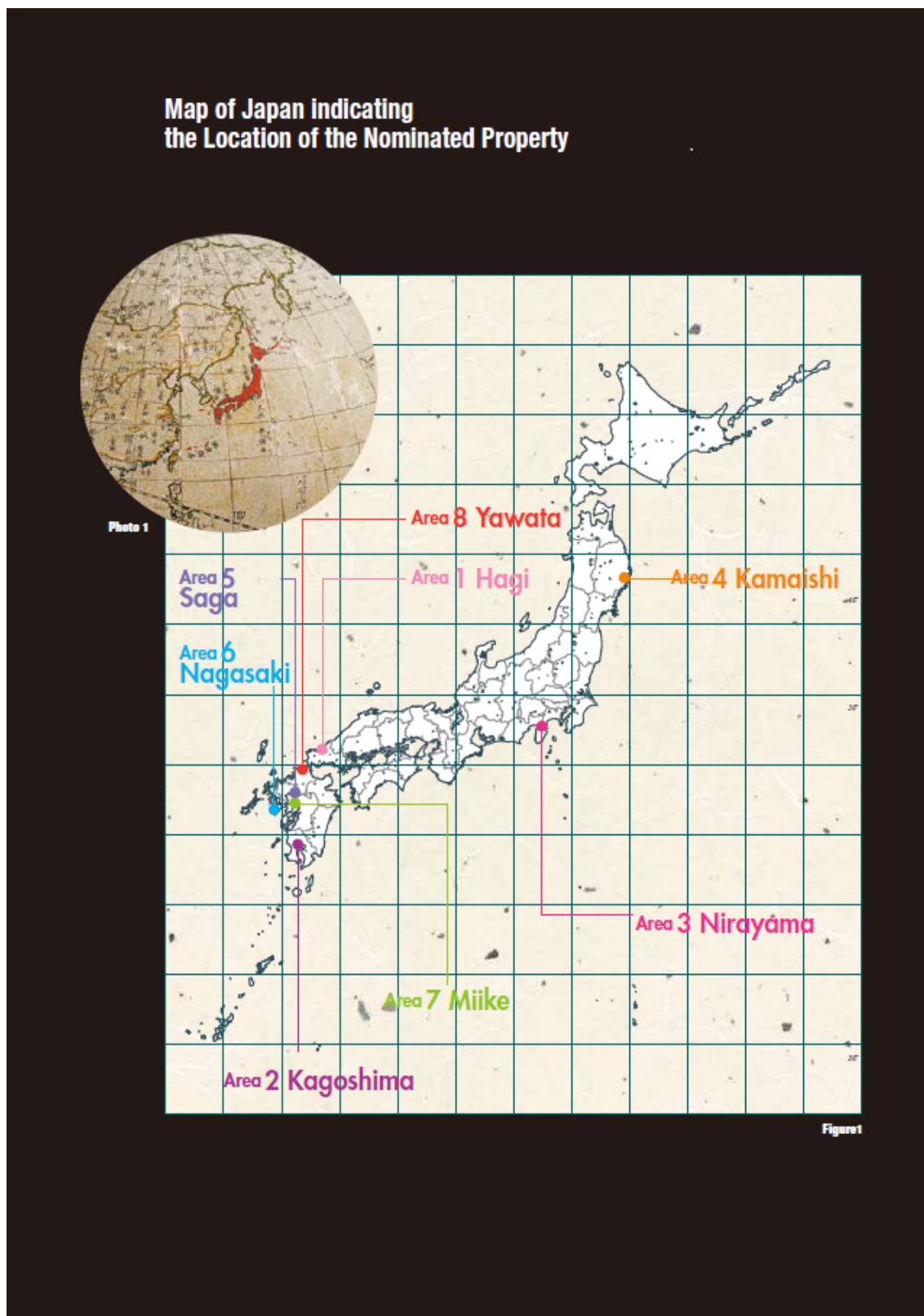
Area4 Kamaishi

Appendix 1-4

AREA-SPECIFIC INTERPRETATION PLAN



【Area List】

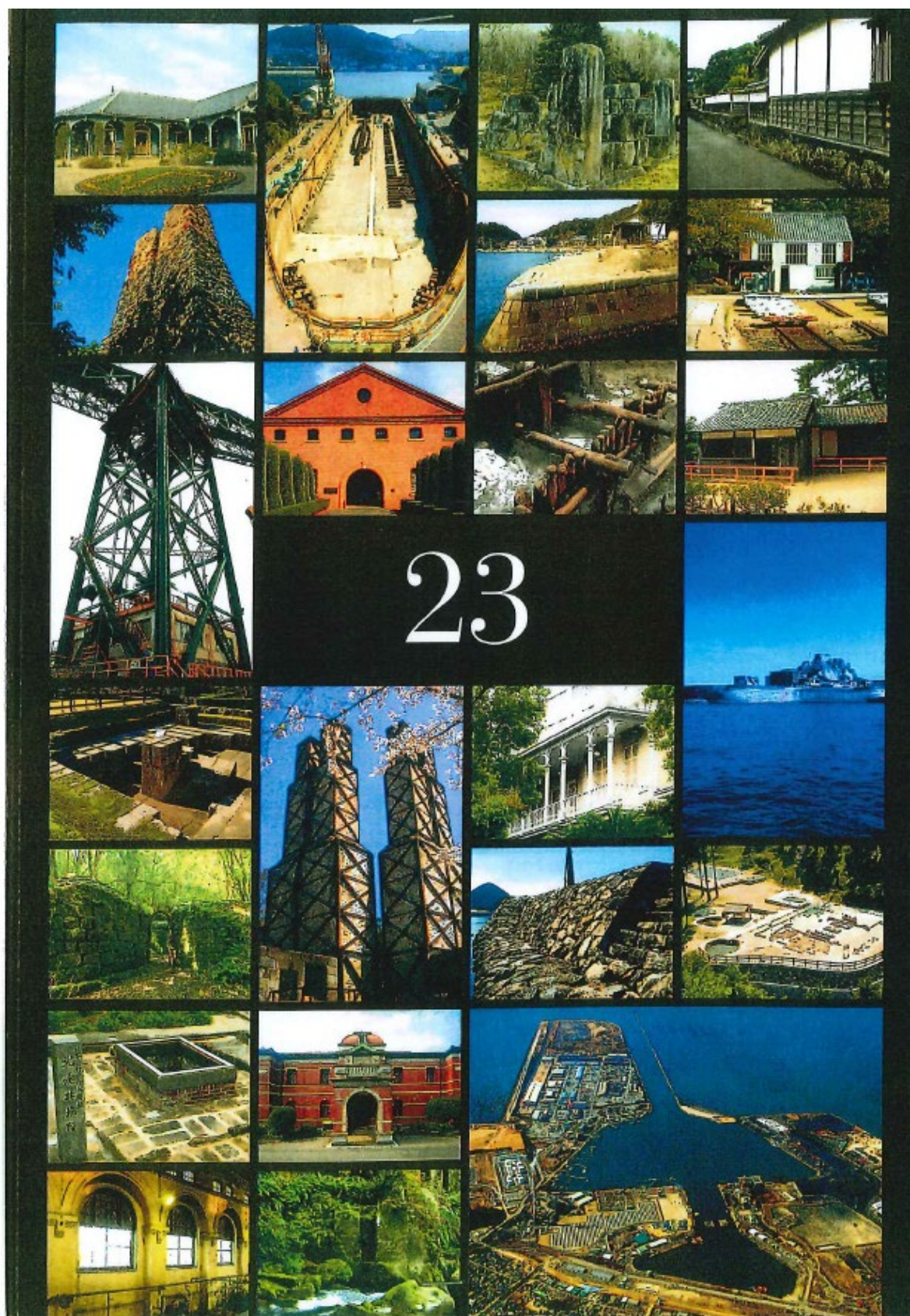


【Component Name】

List of the Component Parts

Area	Site	ID	Component Part
A1 Hagi	1 Hagi Proto-industrial Heritage	1-1	Hagi Reverberatory Furnace
		1-2	Ebisugahana Shipyard
		1-3	Ohitayama Tataro Iron Works
		1-4	Hagi Castle Town
		1-5	Shokasonjuku Academy
A2 Kagoshima	2 Shuseikan	2-1	Shuseikan
		2-2	Terayama Charcoal Kiln
		2-3	Sekiyoshi Sluice Gate of Yoshino Leat
A3 Nirayama	3 Nirayama Reverberatory Furnaces	3-1	Nirayama Reverberatory Furnaces
A4 Kamaishi	4 Hashino Iron Mining and Smelting Site	4-1	Hashino Iron Mining and Smelting Site
A5 Saga	5 Mietsu Naval Dock	5-1	Mietsu Naval Dock
A6 Nagasaki	6 Nagasaki Shipyard	6-1	Kosuge Slip Dock
		6-2	Mitsubishi No.3 Dry Dock
		6-3	Mitsubishi Giant Cantilever Crane
		6-4	Mitsubishi Former Pattern Shop
		6-5	Mitsubishi Senshokaku Guest House
	7 Takashima Coal Mine	6-6	Takashima Coal Mine
		6-7	Hashima Coal Mine
	8 Glover House and Office	6-8	Glover House and Office
A7 Miike	9 Miike Coal Mine and Miike Port	7-1	Miike Coal Mine and Miike Port
	10 Misumi West Port	7-2	Misumi West Port
A8 Yawata	11 The Imperial Steel Works, Japan	8-1	The Imperial Steel Works, Japan
		8-2	Onga River Pumping Station

Table1



SITES OF
JAPAN'S
MEIJI INDUSTRIAL
REVOLUTION
IRON & STEEL, SHIPBUILDING
AND COAL MINING

Executive Summary

Brief Synthesis

“Sites of Japan’s Meiji Industrial Revolution: : Iron and Steel, Shipbuilding and Coal Mining” comprise a singular ensemble of industrial heritage sites that represent the first successful transfer of industrialization from the West to a non-Western nation.

From the middle of the 19th century to the early 20th century, Japan achieved rapid industrialization that was founded on the key industrial sectors of shipbuilding, iron and steel, and coal mining. The initial phase was one of trial and error experimentation in iron making and shipbuilding, based mostly on Western textbooks, and by copying examples of Western ships. This was followed by the more successful importation of Western technology and the expertise to operate it and, by the late Meiji period, full-blown industrialization through newly acquired domestic expertise and the active adaptation of Western technology to best suit Japanese needs and social traditions. This successful industrialization was achieved in just a little over 50 years without colonization, and on Japan’s own terms. The property is testimony to this unique phase in world history.

Justification for Criteria

Criterion (ii)

The property is a series of heritage sites that, together, uniquely illustrate the process by which feudal Japan sought technology transfer from Western Europe and America from the middle of the 19th century. This technology was adopted and progressively adapted to satisfy specific domestic needs and social traditions, thus enabling Japan to become a world-ranking industrial nation by the early 20th century.

Criterion (iv)

The technological ensemble of key industrial sites of shipbuilding, iron and steel, and coal mining is testimony to Japan's unique achievement in world history as the first non-Western country to successfully industrialize. Viewed as an Asian cultural response to Western industrial values, the ensemble had no counterpart elsewhere in the world.

Statement of Integrity

The 23 component parts are the best, and often the only, surviving examples of the key attributes that represent shipbuilding, the iron and steel, and coal mining industries and that are necessary to express Outstanding Universal Value. In each case, the boundary of the component part has been drawn to include the essential features that, overall, contribute to Outstanding Universal Value.

Component parts are in good condition and have mechanisms in place to control deterioration and keep sites free from the adverse effects of development. They have been variously affected by continued use, re-use or lengthy periods of abandonment, and their physical integrity varies between well preserved and fragmentary, the latter being sufficiently intact to be able to represent the former whole. In some cases, where the evidence is primarily archaeological, sufficient investigation has been carried out to verify that a substantial archaeological site survives in good condition for further study and presentation. In other cases, in particular those that remain in operational industrial use, ongoing use and maintenance have resulted in an extraordinarily high level of integrity of working industrial elements.

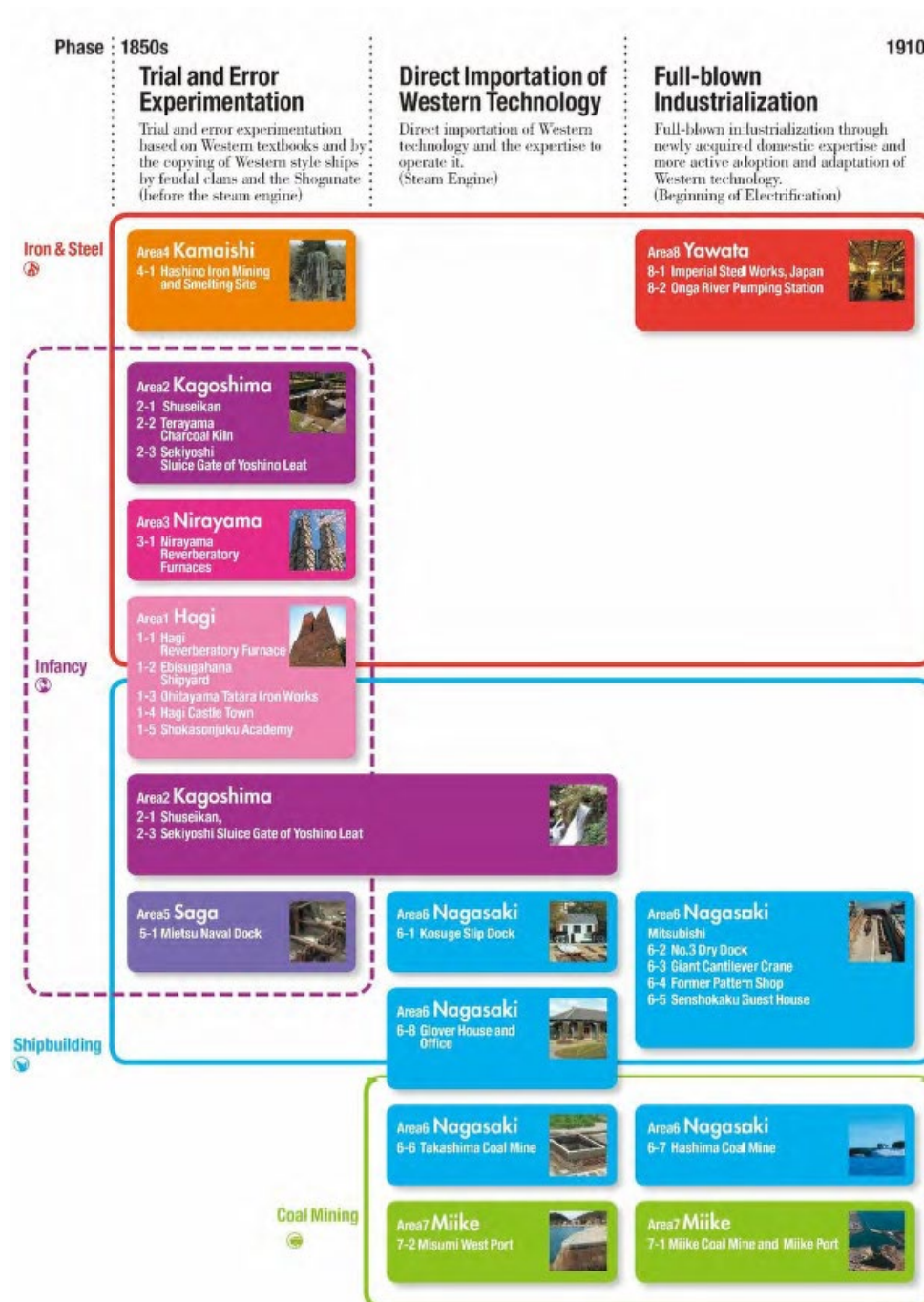
Statement of Authenticity

The property as a whole as well as at the level of each component part meets the conditions of authenticity in relation to Outstanding Universal Value. It has a high degree of authenticity as the best surviving group of industrial remains that represent, and demonstrate, the first, and rapid, transfer of industrialization from the West to a non-Western nation.

With regard to 'form and design' and 'materials and substance', the component parts constitute the original forms and materials of the range of industrial components necessary to represent the transfer of heavy industry from the West to Japan. Some contain sites that range from fragmentary or archaeological, that are nonetheless authentic relics of important industrial components of the series, to those that comprise substantially intact authentic physical remains that have been managed for many years as historic sites which display these characteristics. Others possess an extremely complete survival not only of form, design and materials but also of continuing use and function.

Industrial History Related to the Kamaishi Area

The Kamaishi Area encompasses component parts that retain records related to iron and steel in the first phase, Trial and Error Experimentation, of the World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”



The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO on November 30, 2017, as an appendix to the State of Conservation Report noted the following:

11. Interpretation Plan (extract)

(1) Consistent OUV rollout across all component parts

Based on the Interpretation Strategy, the consistent interpretation of OUV should be presented across all component parts. This will be agreed by all stakeholders, and coordinated and implemented commonly in a branded World Heritage style.

(2) and (3) Progress in dealing with the “full history” of each site, including information gathering related to workers

Advice from international experts who are members of the Expert Committee on the Industrial Heritage including Operational Properties (Cabinet Secretariat of Japan), from the international heritage expert who was the ICOMOS technical evaluation field assessor of the World Heritage nomination of the “Sites of Japan’s Meiji Industrial Revolution”, and from the President of the ICOMOS International Scientific Committee on Interpretation and Presentation, comprises the following four key policies:

1) Focus on the interpretation of Outstanding Universal Value; in conformity with the primary purpose of the World Heritage, OUV of the inscribed property should be presented clearly at each site, not confusing with other, albeit related, issues. Based on this, Recommendation g)* should be implemented.

2) The scope of the “full history” of each site, except for the OUV period (from 1850s to 1910) as described on page 78, falls into two parts: prior to 1850s, and from 1910 to the present. The target of the full history should be narrowed down, considering the local values that supplement the understanding of the background of each component part. Where relevant, with regard to the interpretation of the full history on the location of each component part, high quality research such as collecting primary historical documents and recording oral testimonies should be carried out, and the result of this research should, at some stage, be made publicly available through appropriate media.

* Recommendation g)

“Preparing an interpretive strategy for the presentation of the nominated property, which gives particular emphasis to the way each of the sites contributes to OUV and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.”

Based on the Interpretation Strategy, we have had multiple audits of the current status of interpretation at the component parts and visitor centres, etc., in the various areas undertaken by international experts familiar with industrial assets and the interpretation thereof in countries around the world.

As a result, auditor Barry Gamble identified the following issues in relation to the Kamaishi area.

- Since the last audit, key changes and developments at the Hashino Iron Mining Smelting site and Information Centre include the presentation of information with the introduction of new interpretation panels and the updated application (based on augmented reality) to use with mobile devices. Both provide information in more than one language. The Information Centre provides a well-balanced presentation of the WHS OUV, followed by the contribution made by the Component Part and how it links with other relevant Component Parts. Its fuller history is also outlined.
- At the Iron and Steel History Museum (13,000 visitors), ongoing interpretation and presentation includes further developing the exhibition content to clearly demonstrate the connection and links between Niryama, and Yawata, via Kamaishi. It also includes the impacts of the legacy of iron mining and smelting, and its continuous development, until the present day. The museum presents in more than one language, including the furnace sound and light show, exhibition panels and labels, and a guide book.
- At the Former Kamaishi Mine Office site, holistic improvements offer a more diverse experience that provides a wider interpretation and presentation of the site eg new interpretive panels which show how the site operated. This is provided in multiple languages, museum labels, and a guide leaflet.
- The Kamaishi Historical Material Display provides an appropriate associative understanding of the fuller history of the Area drawing links with the WHS and this Component Part. Labels in English.
- Training for guides and teachers and educational programs which focus on smelting.

Appendix 1-4

Discussions have been held regarding this interpretation plan for the Kamaishi Area thus far by the local conservation council.

In light of the evaluation above, exhibits will continue to be installed that better reflect the World Heritage values in harmony with the historical and cultural values of the region, as well as programs for visitors to deepen their understanding of World Heritage values in cooperation with the Industrial Heritage Information Centre.

The local conservation council will review the implementation progress of this plan and consider ways to make improvements as appropriate.

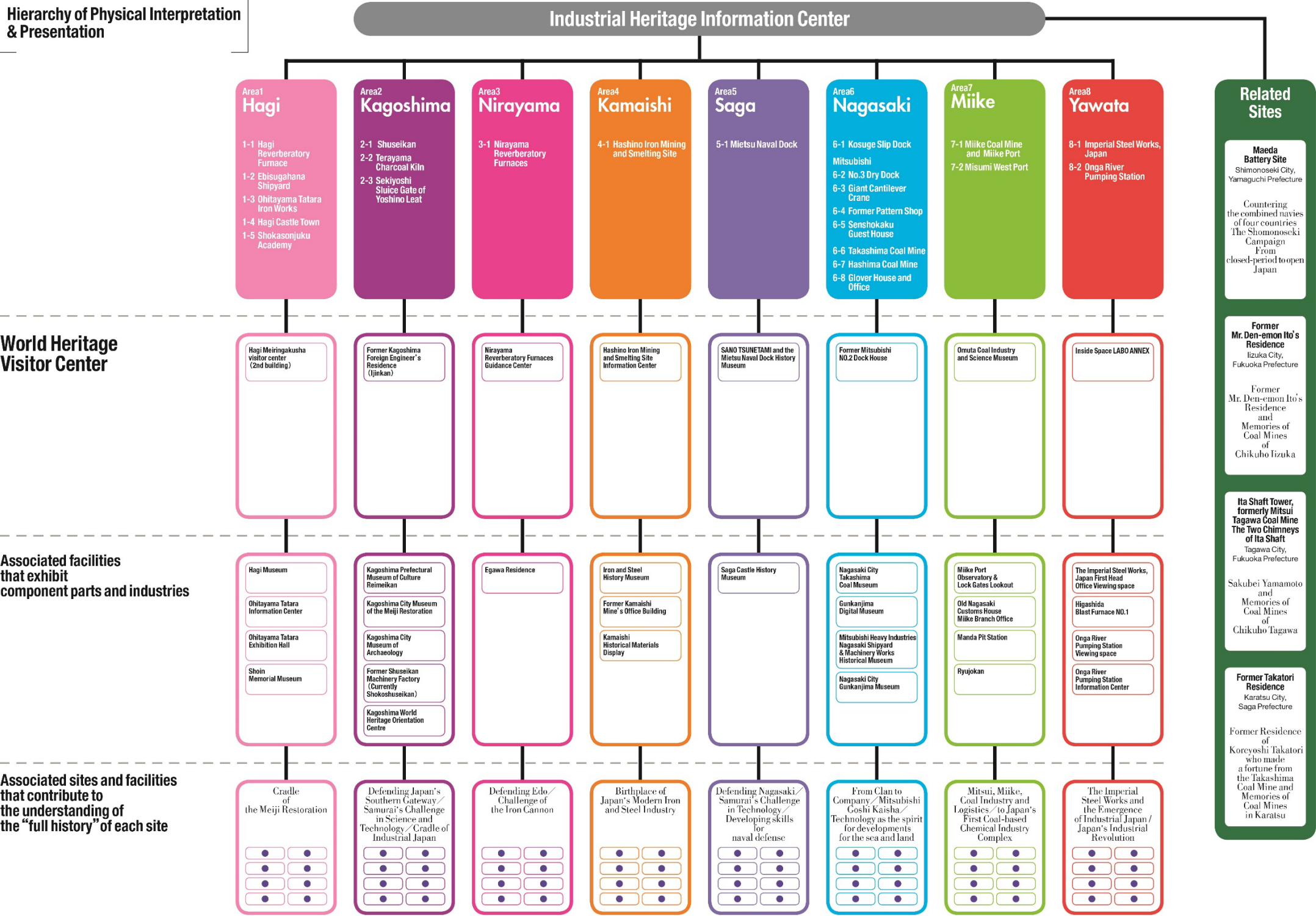


Local Conservation Council meeting

Hierarchy of Physical Interpretation and Presentation

The Industrial Heritage Information Centre and the various local visitor centres will work together to build a system enabling the effective communication of the OUV of the Sites of Japan’s Meiji Industrial Revolution.

Hierarchy of Physical Interpretation & Presentation

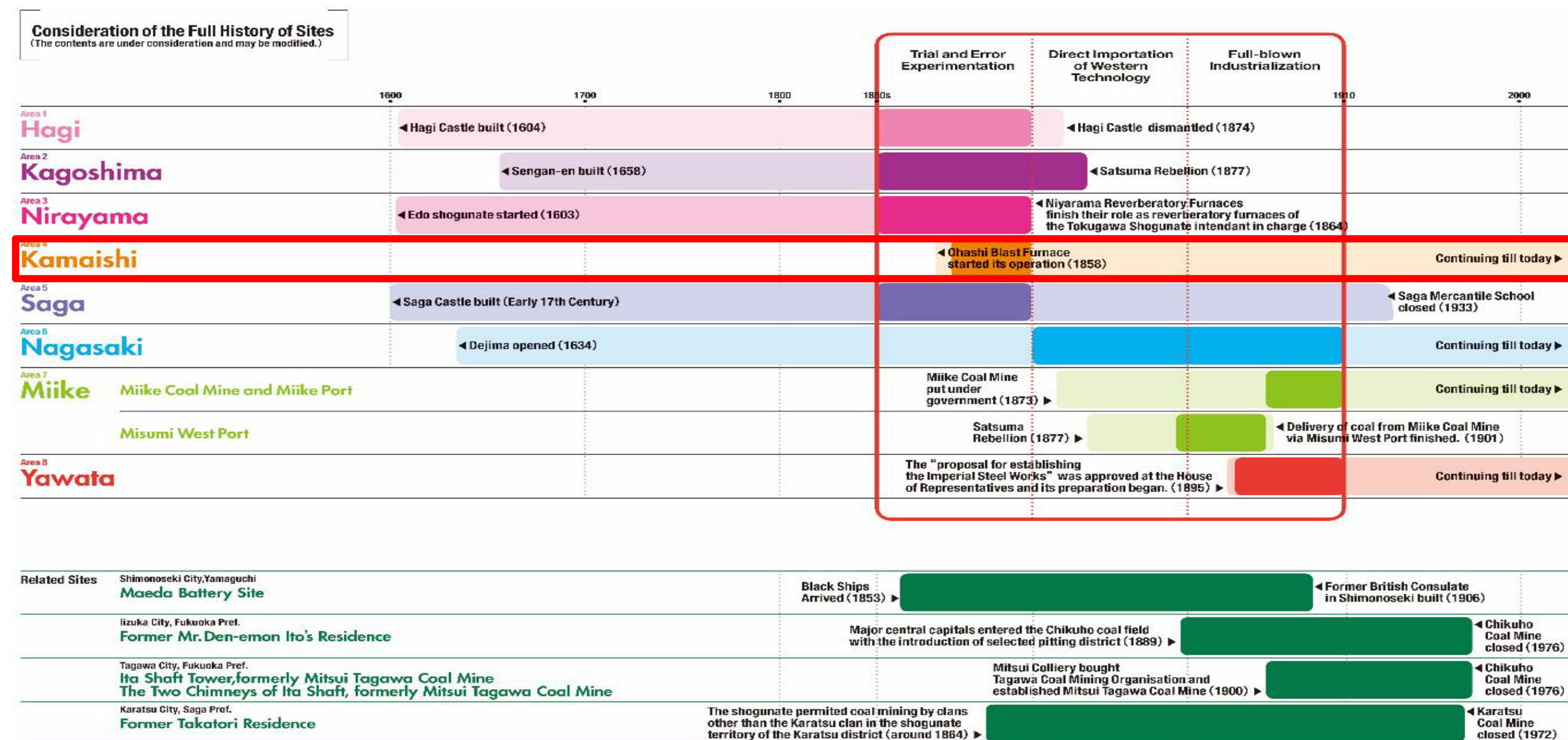


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Appendix 1-4

Consideration of the Full History of Sites

The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO in 2017, addressed consideration of the full history of sites as shown in the figure below.



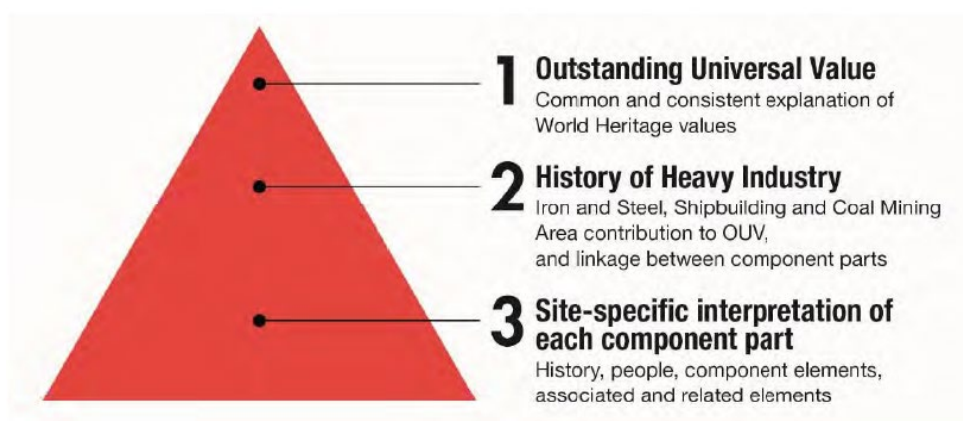
Interpretation in the Kamaishi Area

Approach of the Interpretation Strategy

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Interpretation for the Kamaishi area too will be approached in line with this in order to resolve the issues identified in interpretation audits.

Interpretation and presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of value and themes



OUV stands at the top of the interpretation pyramid at the Industrial Heritage Information Centre and the various regions' visitor centres and is therefore the top-priority theme over the interpretation and presentation of individual regions and industries, such as history specific to an area or component part. Addressing interpretation in the order of (1) OUV, (2) the history of heavy industry, and (3) site-specific interpretation of each component part, as shown above, will ensure consistent presentation across the property

Interpretation flow at each local visitor centre

Hierarchy of Interpretation



Relationship between Iron and Steel Sites

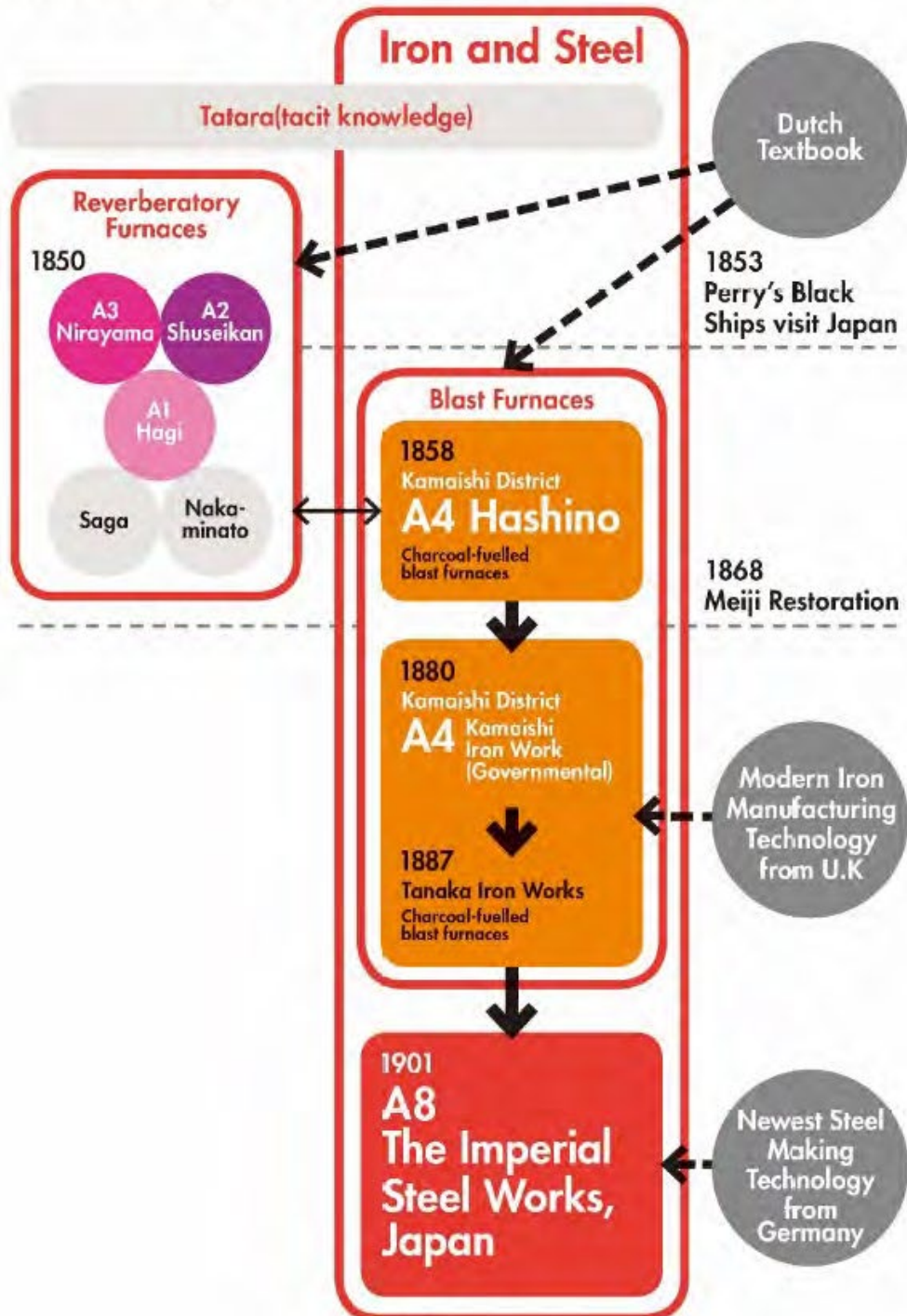



Figure 3-2

Presentation Using “Liquid Galaxy,” Etc.

The Industrial Heritage Information Centre, which was established in March 2020 pursuant to the Interpretation Strategy, uses an immersive video multi-display that draws on the World Heritage OUV period (1850s-1910), as well as the Consideration of the Full History of Sites schematic. It explains through images the history and transformation of component parts in the various areas, as well as the way that people lived, etc., presenting these in a way that enables visitors to experience in a very real way the evolution of the property, the contribution to OUV, and the full history. This area will also establish a digital archive of documents gathered by the Industrial Heritage Information Centre and the visitor centers in the area, which will be gradually reflected in the interpretation tools.



Kamaishi Area Component Parts

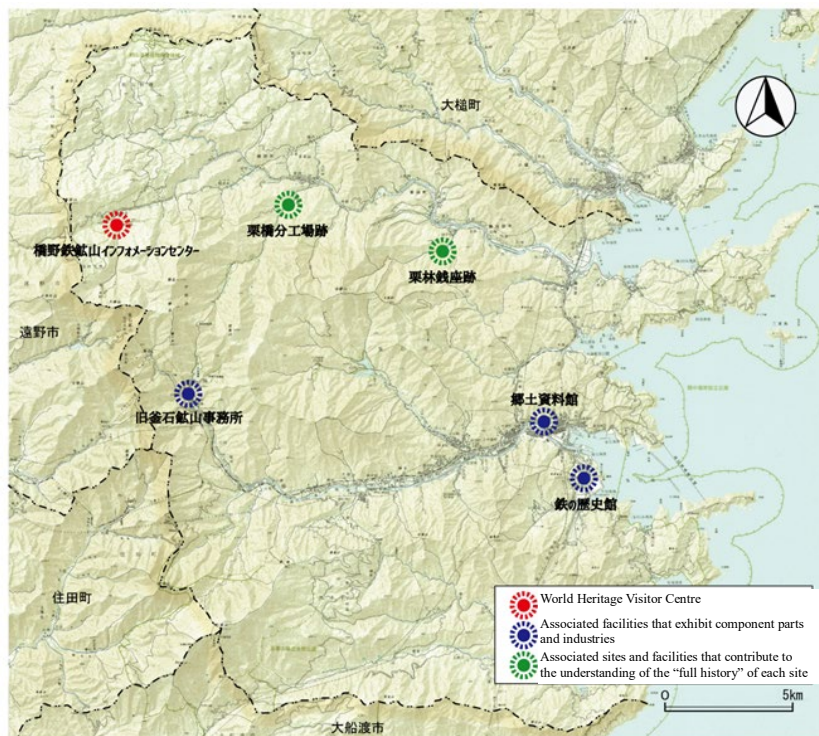
Relevant industries: Iron and steel	
Name of component part: Hashino Iron Mining and Smelting Site	
(Overview of component part) Japan's oldest surviving remains of a blast furnace. Using iron ore from Japan's largest iron mine Kamaishi Mine as raw material, Takato Oshima from the Morioka Domain incorporated blast furnace techniques referencing only Dutch books. The component part comprises the remains of a mining site used for iron mining, a transport route to transport the iron, and blast furnaces for smelting, preserving the industrial landscape of the time. It is an asset as a pioneer of the industrial revolution in the iron and steel sector.	

World Heritage Plaques

In line with the UNESCO Guidelines, World Heritage plaques have been installed at the various component parts to inform visitors properly about the OUV of the property.



Interpretation facilities in the Kamaishi Area



Kamaishi Area: Hierarchy of Physical Interpretation and Presentation



Access Guide Maps

An English-version access map to guide visitors to component parts in each area has been created in addition to the Japanese version and is distributed free to visitors. This map gives an introduction to all component parts in the area and is structured to help visitors reach as many of them as possible.

By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites.



Information Counters

These are set up in administrative institutions and airports to distribute access guide maps and other information.



Iron and Steel History Museum



Tourist information center

Appendix 1-4

Guide Map Distribution Points and Number of Maps Distributed

Guide map distribution points and the number of maps distributed are as follows.

Overall map		Kamaishi Map	
No. distributed	177,762	No. distributed	44,135
Japanese & English	177,762	Japanese	23,754
Main distribution point	No. distributed	Main distribution point	No. distributed
Administrative organizations	300	Administrative organizations	41,650
Airports	550	Airports	0
Hotels	50	Hotels	980
Car rental agencies	100	Car rental agencies	0
JR (Railway)	600	JR (Railway)	0
Tourist information centers	700	Tourist information centers	0
Michi-no-eki roadside stations	4,400	Michi-no-eki roadside stations	0
NEXCO	168,500	NEXCO	0
Public interest corporation/foundation/ incorporated association	550	Public interest corporation/foundation/ incorporated association	0
Other	2,012	Other	1,505
JR Kyushu Hakata Station General Information		Inside the Kamaishi City Iron and Steel Museum	
West Nippon Expressway Retail Co., Ltd.		World Heritage Division, Culture and Sports Department, Kamaishi City	
West Nippon Expressway Service Holdings Company Limited		Hotel Folkloro Sanriku Kamaishi	
Fugetsu Foods Co., Ltd.		Ninohe City Hotel	
Fukuoka International Airport Co., Ltd.		Rikuchu Kaigan Grand Hotel	
Nagasaki Airport		Hotel Bright Inn Morioka	
Kagoshima Prefectural Library		Hiraizumi Hotel Musashibo	
JR Kagoshima Chuo Station Tourist Information Center		Morioka Grand Hotel	
Kitakyushu Convention & Visitors Association		The Park Hotel Jodogahama	
Omura City Hall Industrial Promotion Dept.		APA Hotel Kitakami-Ekinishi	
JR Miyazaki Station Tourist Information Center		Iwate Hotel Shidotaira	

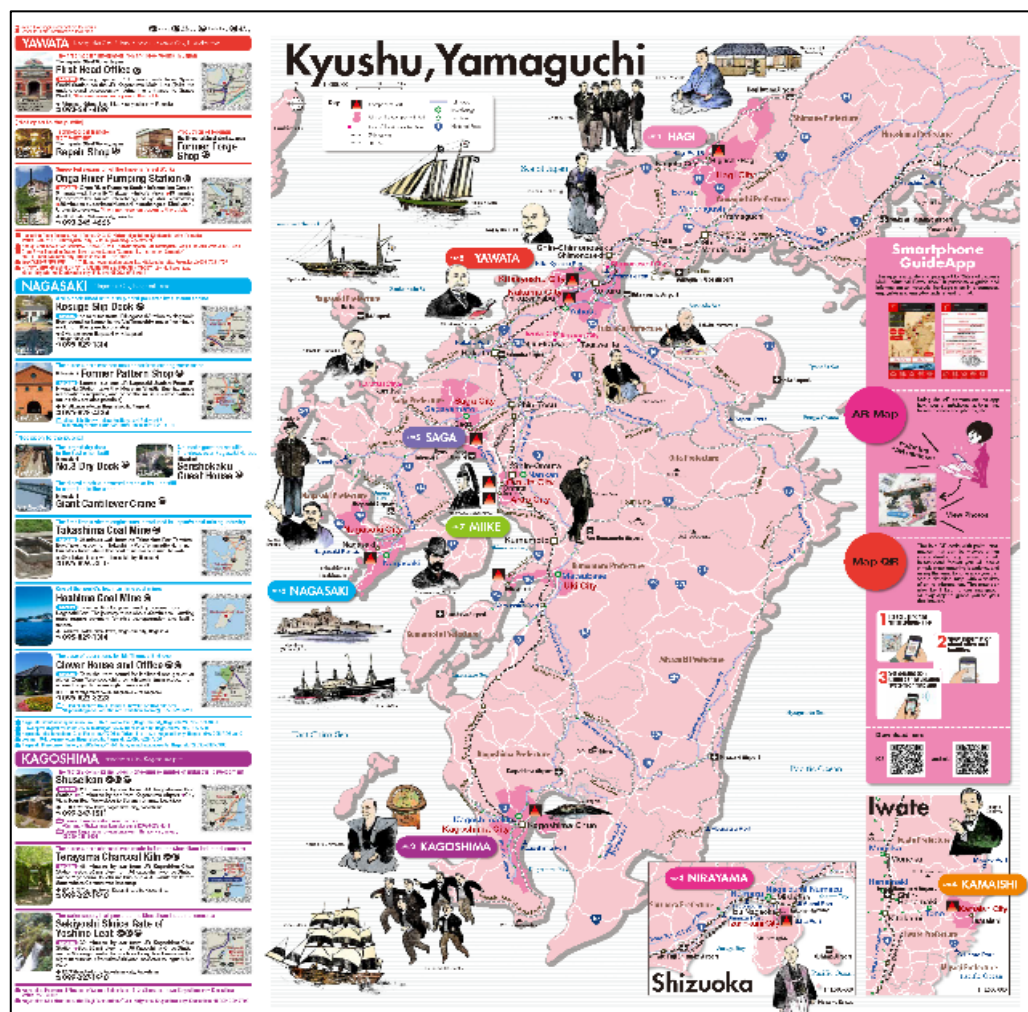
Total no. distributed
for the entire area

464,025

World Heritage Route

In accordance with the Interpretation Strategy, and also as noted in pages 395–396 of the Nomination Document, the World Heritage Route Promotion Council was founded to provide guidance and tourism infrastructure for understanding World Heritage as a whole. The Council attracts visitors to all component parts and related sites by producing maps, apps, and GPS navigation and by installing road signs and other signage using the common logo to promote the Sites of Japan's Meiji Industrial Revolution so that visitors are able to understand the World Heritage value constituted by the 23 component parts.

Work will continue to be undertaken steadily pursuant to the Nomination Document and the Interpretation Plan.



Appendix 1-4



Map on p. 396 of the Nomination Document



World Heritage Route Promotion Council meeting

Installation of Road Signage, Etc., Using the Common Logo

Status of installation of road signage

Place	No. of signs installed
Kamaishi City	20
Otsuchi-cho	1

Photos of road signage



In front of Michi-no-eki Kamaishi Sennintoge



Teramae intersection

Appendix 1-4

Locations of Road Signs Using the Common Logo



Linkage with Car Navigation (Denso Car Navigation)

Example of linkage with smartphone app so that the target destination can be sent to a car navigation system



Appendix 1-4

The destination can be sent directly from a smartphone to the car navigation system.



A video on how to use the application has been put up on YouTube.



App Utilization

The app introduces the Sites of Japan's Meiji Industrial Revolution, including detailed stories and explanations, as well as the historical background, using video and computer graphics, etc. Users can earn points by playing games and using the AR camera on the app and use them as coupons for souvenirs and other prizes. As such, it serves as a mechanism for both deepening understanding of World Heritage value and feeding back into World Heritage Route tours. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.



Appendix 1-4

Use of Line App

Points acquired on the app can be exchanged for coupons.



Point-of-purchase advertising has been created and placed in stations and information centres, etc., to encourage people to sign up to the LINE app.



LINE is used as a runway for achieving two-way communication geared to the circumstances of the user based on locational information, such as the use of existing guide apps and communication about coupons that can be used in shops at the area visited. The service is provided in multiple languages so as to support international visitors.

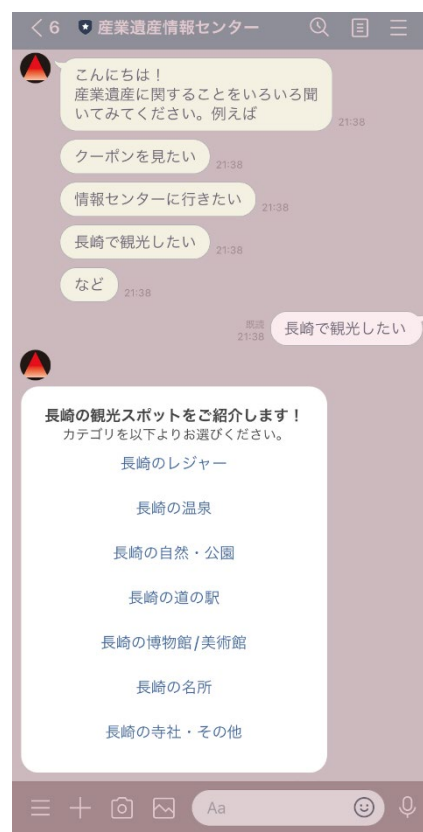


Appendix 1-4

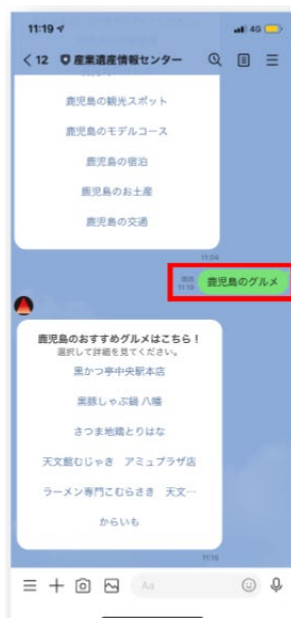
LINE functions (examples)



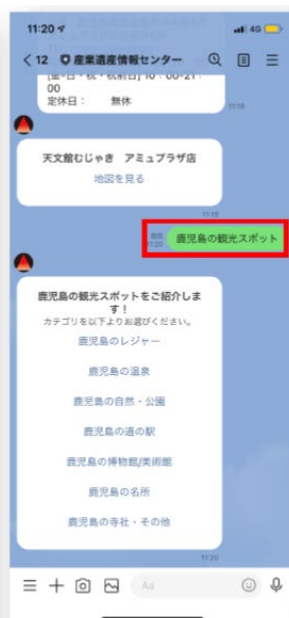
Introduction to model courses



AI chatbot function



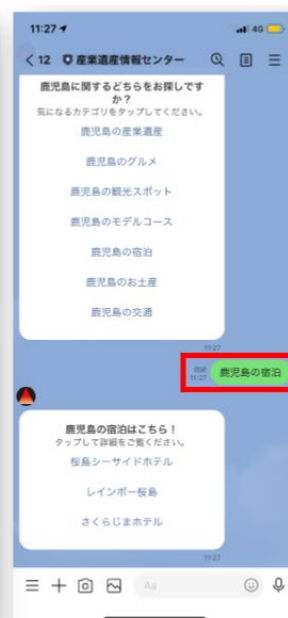
Gourmet information



Tourist spots



Traffic information



Accommodation information

Enhancement of digital content

For the Kamaishi Area, information is provided through a smartphone application, with content created using digital technology that recreates scenes from iron-making in the past and of the blast furnace edifice.

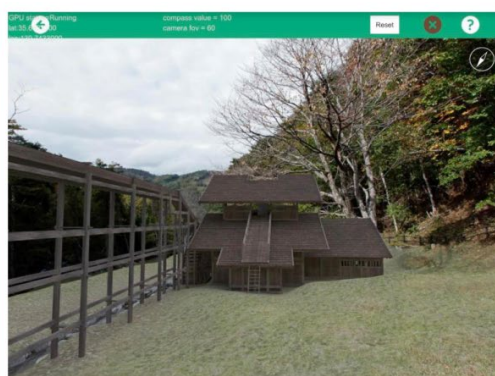
Going forward, the smartphone application utilizing digital content will be enhanced for the blocks that will be made open to the public in conjunction with surveys and work based on the restoration and public utilization plan for the Hashino Iron Mine.

Initiatives

Relevant component	Initiative details	Schedule	Entity in charge
Hashino Iron Mining & Smelting Site	Hashino Iron Mining and Smelting Site Tourism Guide App	2018	Iwate Prefecture
Hashino Iron Mining & Smelting Site	Hashino Iron Mining and Smelting Site Second Blast Furnace AR images	2019	Kamaishi City
Hashino Iron Mining & Smelting Site	Deliver information on components with the Kamaishi, Iwate guide map integrated with AR and MapQR	2019	National Congress of Industrial Heritage

*As of September 30, 2022

Example of digital technology interpretation of blast furnace
(AR image of Hashino Iron Mining and Smelting Site blast furnace)

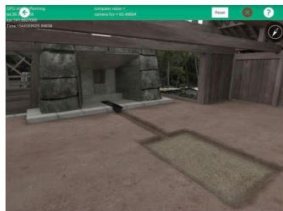


- ・ 別ウィンドウでムービーを表示
- ・ ムービーは1種



・ パノラマアングルは全部で4種

640 VR2



650 VR3



VR4

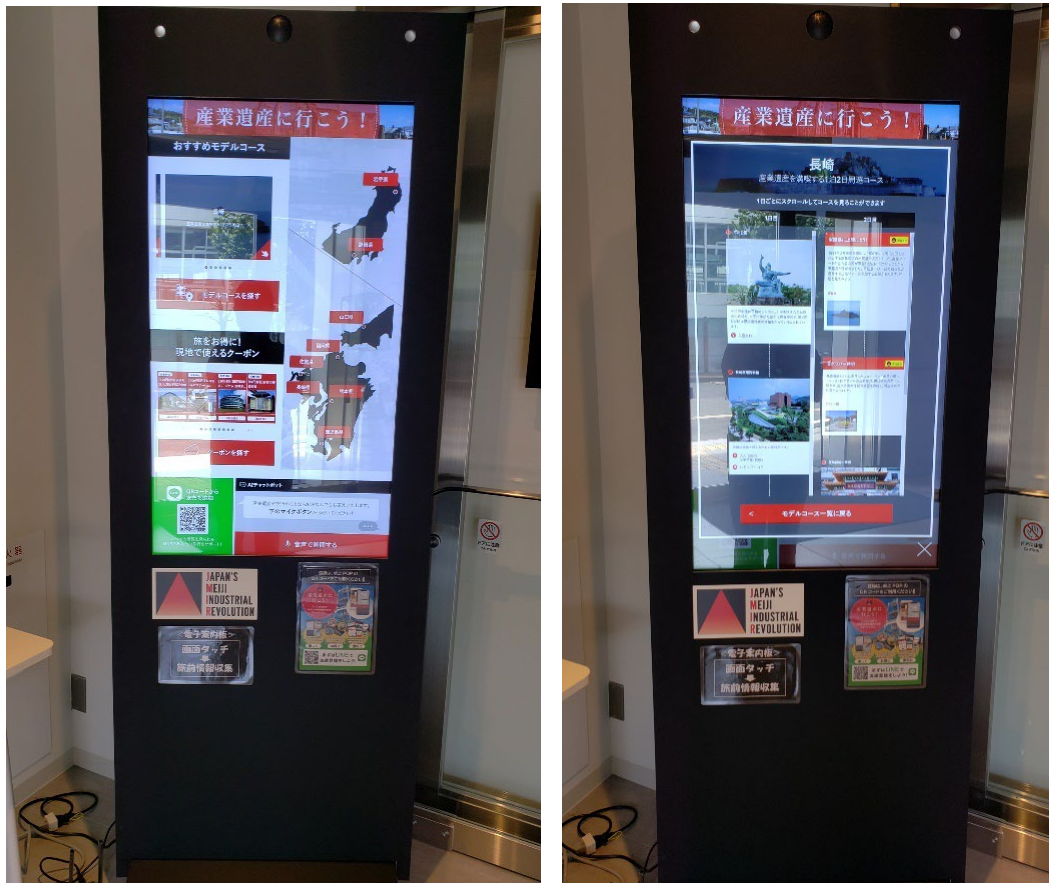


660

Appendix 1-4

Digital Signage Functions

Digital signage has been installed in the Industrial Heritage Information Centre as a mechanism for encouraging multi-destination tourism by displaying local guide maps and information on multi-destination industrial heritage routes. AI chatbots have also been installed to respond to a wide range of multi-destination routes and tourism questions in real time.



Visitor Centres

The Kamaishi Area is equipped with one visitor center and three auxiliary facilities with exhibits of component parts and the industrial sector in line with the interpretation strategy. Each facility cooperates with the local community to prepare exhibits that best bring out the true World Heritage values in harmony with the historical and cultural values of the region. They aim to create exhibits that allow visitors to understand the value of the components easily.

Based on points raised in interpretation audits, local visitor centres will work with the Industrial Heritage Information Centre to digitize a huge volume of primary historic materials and use digital tools to enhance exhibits.

[Hashino Iron Mining and Smelting Information Center]

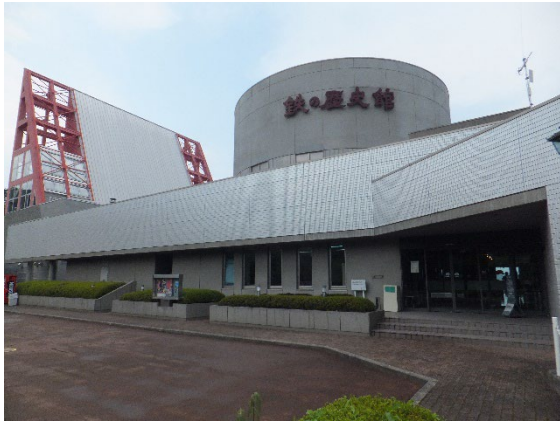
An introduction to the OUV and 23 component parts of the World Heritage “Sites of Japan’s Meiji Industrial Revolution” is available, and the history of the Hashino Iron Mining and Smelting Site, as well as an overview of the facilities (ruins), are explained in detail here. An excavation survey is conducted every year, and results are exhibited between November and early December.



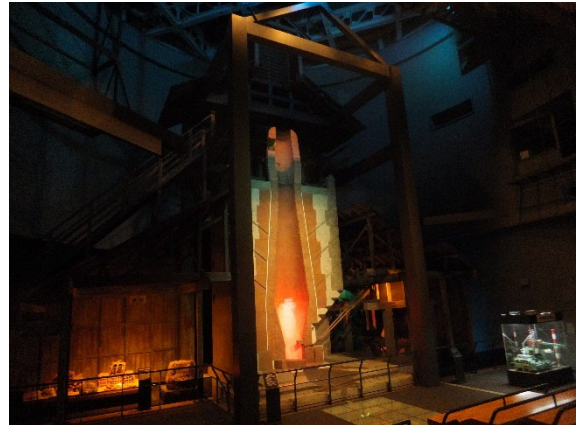
Appendix 1-4

[Iron and Steel History Museum]

Visitors can learn about the history of iron and steel centered around the father of modern ironmaking, Takato Oshima, and the history of the Hashino Iron Mining and Smelting Site. The entire history of ironmaking surrounding the World Heritage “Sites of Japan’s Meiji Industrial Revolution” (1850-1910) is introduced here.



Exterior



General production theater



First floor



Second floor

[Former Kamaishi Mine's Office Building]

A concrete formwork block-structured building built in 1951 was the general office for the Kamaishi Mine and is a registered tangible cultural property of Japan. The building is located at the site of the Ohashi blast furnace, the birthplace of modern ironmaking, and currently exhibits focusing on the remains of the blast furnace and digging (mining) at the Kamaishi Mine.



Second floor (Mining gallery)



Second floor (Minerals room)

Appendix 1-4

[Kamaishi Historical Materials Display]

Features the nature, archaeology, and folk customs of Kamaishi. Wide-ranging materials related to the bombardment by the Allied forces in 1945 and to tsunamis, in particular, are exhibited. An intricate 1/100 scale model of the Hashino blast furnace ruins is on display in the ironmaking area.



Exterior



Earthquake corner



War disaster corner



Ironmaking corner
(Hashino blast furnace ruins model)

Monitor tour



Children's education programs



Experience ironmaking



Experience casting



Ore collecting



Iron certification



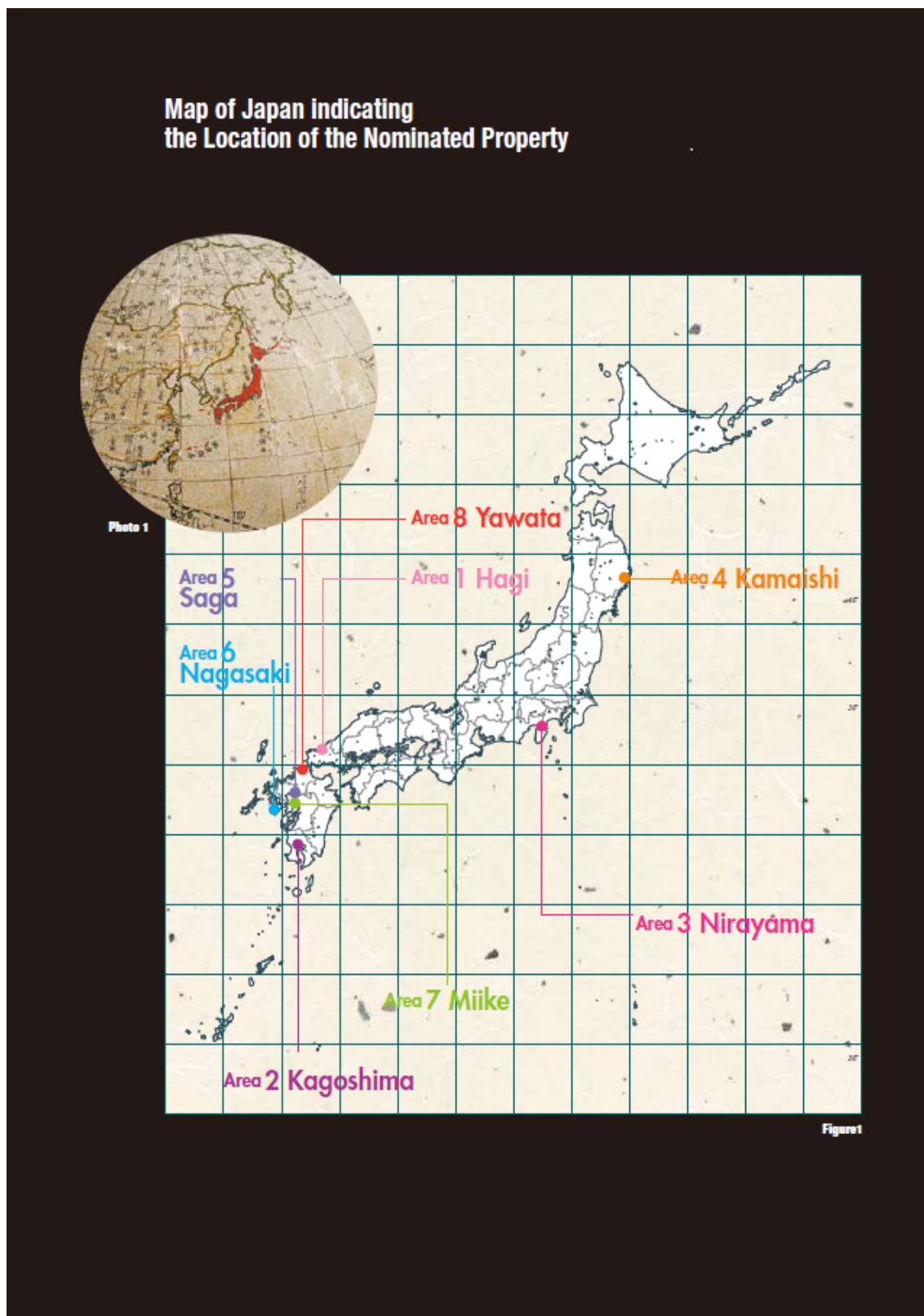
Iron educational presentation

Area5 Saga

AREA-SPECIFIC INTERPRETATION PLAN



【Area List】

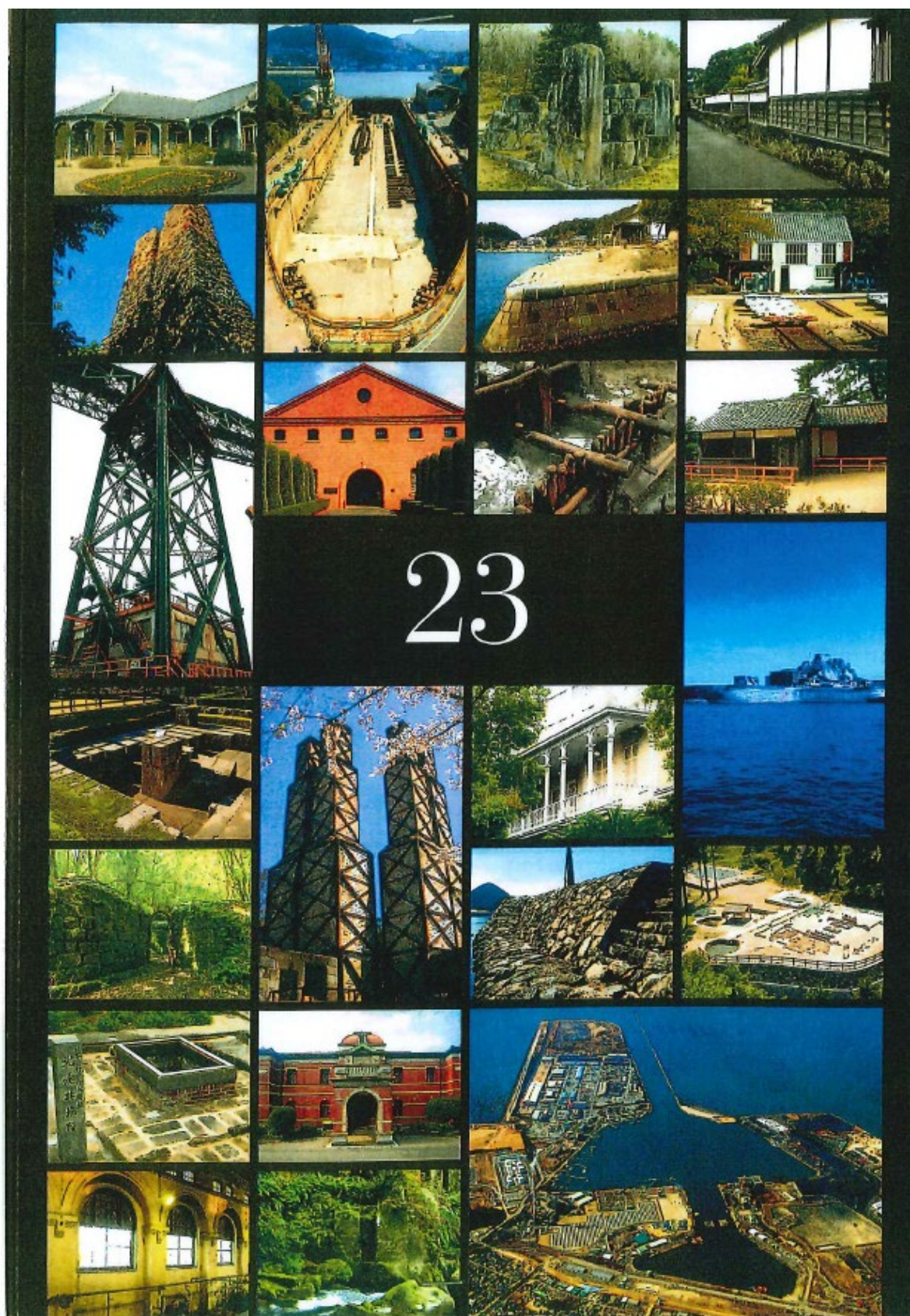


【Component Name】

List of the Component Parts

Area	Site	ID	Component Part
A1 Hagi	1 Hagi Proto-industrial Heritage	1-1	Hagi Reverberatory Furnace
		1-2	Ebisugahana Shipyard
		1-3	Ohitayama Tataro Iron Works
		1-4	Hagi Castle Town
		1-5	Shokasonjuku Academy
A2 Kagoshima	2 Shuseikan	2-1	Shuseikan
		2-2	Terayama Charcoal Kiln
		2-3	Sekiyoshi Sluice Gate of Yoshino Leat
A3 Nirayama	3 Nirayama Reverberatory Furnaces	3-1	Nirayama Reverberatory Furnaces
A4 Kamaishi	4 Hashino Iron Mining and Smelting Site	4-1	Hashino Iron Mining and Smelting Site
A5 Saga	5 Mietsu Naval Dock	5-1	Mietsu Naval Dock
A6 Nagasaki	6 Nagasaki Shipyard	6-1	Kosuge Slip Dock
		6-2	Mitsubishi No.3 Dry Dock
		6-3	Mitsubishi Giant Cantilever Crane
		6-4	Mitsubishi Former Pattern Shop
		6-5	Mitsubishi Senshokaku Guest House
	7 Takashima Coal Mine	6-6	Takashima Coal Mine
		6-7	Hashima Coal Mine
	8 Glover House and Office	6-8	Glover House and Office
A7 Miike	9 Miike Coal Mine and Miike Port	7-1	Miike Coal Mine and Miike Port
	10 Misumi West Port	7-2	Misumi West Port
A8 Yawata	11 The Imperial Steel Works, Japan	8-1	The Imperial Steel Works, Japan
		8-2	Onga River Pumping Station

Table1



SITES OF
JAPAN'S
MEIJI INDUSTRIAL
REVOLUTION
IRON & STEEL, SHIPBUILDING
AND COAL MINING

Executive Summary

Brief Synthesis

“Sites of Japan’s Meiji Industrial Revolution: : Iron and Steel, Shipbuilding and Coal Mining” comprise a singular ensemble of industrial heritage sites that represent the first successful transfer of industrialization from the West to a non-Western nation.

From the middle of the 19th century to the early 20th century, Japan achieved rapid industrialization that was founded on the key industrial sectors of shipbuilding, iron and steel, and coal mining. The initial phase was one of trial and error experimentation in iron making and shipbuilding, based mostly on Western textbooks, and by copying examples of Western ships. This was followed by the more successful importation of Western technology and the expertise to operate it and, by the late Meiji period, full-blown industrialization through newly acquired domestic expertise and the active adaptation of Western technology to best suit Japanese needs and social traditions. This successful industrialization was achieved in just a little over 50 years without colonization, and on Japan’s own terms. The property is testimony to this unique phase in world history.

Justification for Criteria

Criterion (ii)

The property is a series of heritage sites that, together, uniquely illustrate the process by which feudal Japan sought technology transfer from Western Europe and America from the middle of the 19th century. This technology was adopted and progressively adapted to satisfy specific domestic needs and social traditions, thus enabling Japan to become a world-ranking industrial nation by the early 20th century.

Criterion (iv)

The technological ensemble of key industrial sites of shipbuilding, iron and steel, and coal mining is testimony to Japan's unique achievement in world history as the first non-Western country to successfully industrialize. Viewed as an Asian cultural response to Western industrial values, the ensemble had no counterpart elsewhere in the world.

Statement of Integrity

The 23 component parts are the best, and often the only, surviving examples of the key attributes that represent shipbuilding, the iron and steel, and coal mining industries and that are necessary to express Outstanding Universal Value. In each case, the boundary of the component part has been drawn to include the essential features that, overall, contribute to Outstanding Universal Value.

Component parts are in good condition and have mechanisms in place to control deterioration and keep sites free from the adverse effects of development. They have been variously affected by continued use, re-use or lengthy periods of abandonment, and their physical integrity varies between well preserved and fragmentary, the latter being sufficiently intact to be able to represent the former whole. In some cases, where the evidence is primarily archaeological, sufficient investigation has been carried out to verify that a substantial archaeological site survives in good condition for further study and presentation. In other cases, in particular those that remain in operational industrial use, ongoing use and maintenance have resulted in an extraordinarily high level of integrity of working industrial elements.

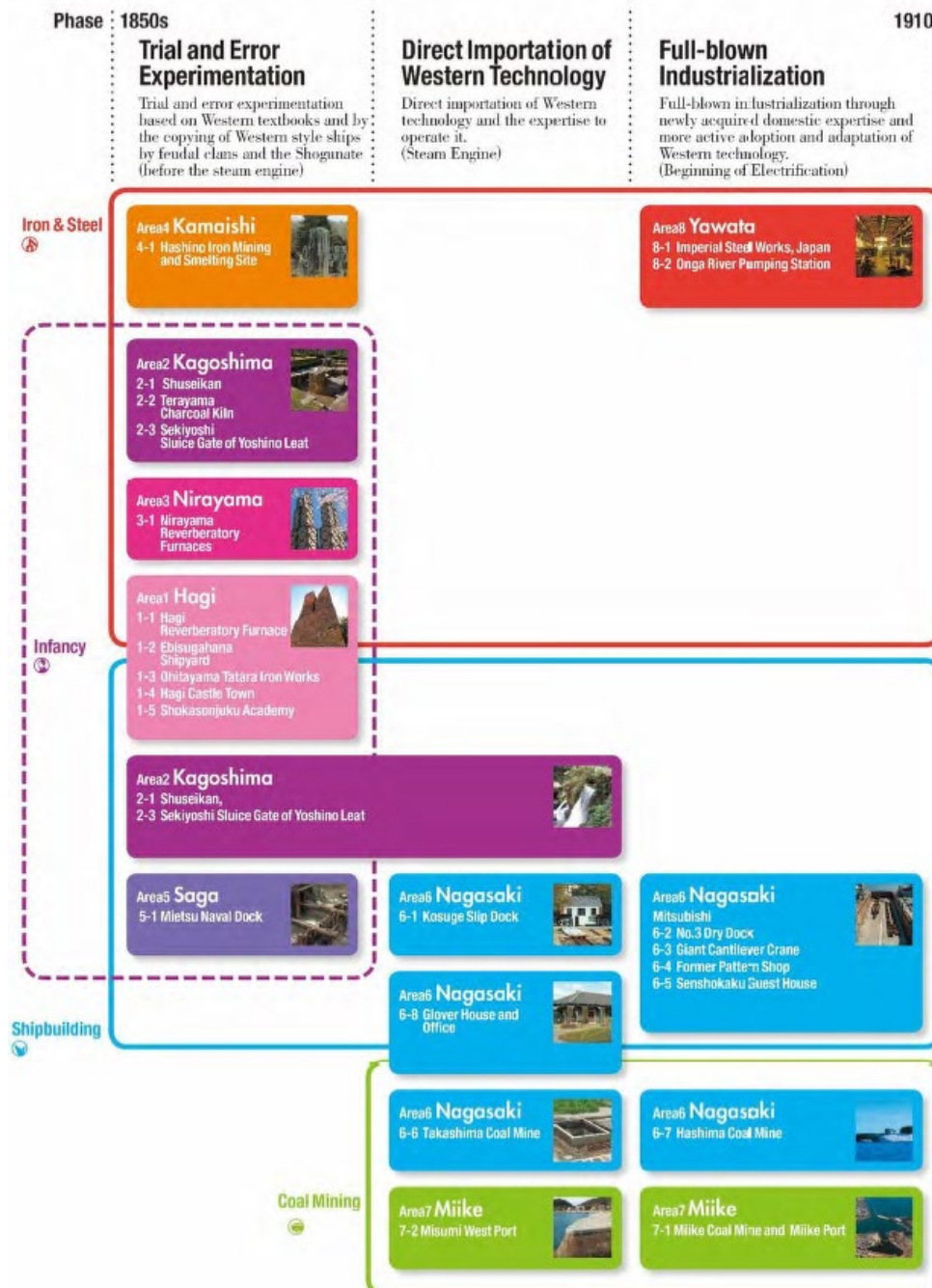
Statement of Authenticity

The property as a whole as well as at the level of each component part meets the conditions of authenticity in relation to Outstanding Universal Value. It has a high degree of authenticity as the best surviving group of industrial remains that represent, and demonstrate, the first, and rapid, transfer of industrialization from the West to a non-Western nation.

With regard to 'form and design' and 'materials and substance', the component parts constitute the original forms and materials of the range of industrial components necessary to represent the transfer of heavy industry from the West to Japan. Some contain sites that range from fragmentary or archaeological, that are nonetheless authentic relics of important industrial components of the series, to those that comprise substantially intact authentic physical remains that have been managed for many years as historic sites which display these characteristics. Others possess an extremely complete survival not only of form, design and materials but also of continuing use and function.

Industrial History Related to the Saga Area

The Saga area contains multiple component parts chronicling the first phases (Trial and Error Experimentation) of Shipbuilding aspects of the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”



The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO on November 30, 2017, as an appendix to the State of Conservation Report noted the following:

11. Interpretation Plan (extract)

(1) Consistent OUV rollout across all component parts

Based on the Interpretation Strategy, the consistent interpretation of OUV should be presented across all component parts. This will be agreed by all stakeholders, and coordinated and implemented commonly in a branded World Heritage style.

(2) and (3) Progress in dealing with the “full history” of each site, including information gathering related to workers

Advice from international experts who are members of the Expert Committee on the Industrial Heritage including Operational Properties (Cabinet Secretariat of Japan), from the international heritage expert who was the ICOMOS technical evaluation field assessor of the World Heritage nomination of the “Sites of Japan’s Meiji Industrial Revolution”, and from the President of the ICOMOS International Scientific Committee on Interpretation and Presentation, comprises the following four key policies:

1) Focus on the interpretation of Outstanding Universal Value; in conformity with the primary purpose of the World Heritage, OUV of the inscribed property should be presented clearly at each site, not confusing with other, albeit related, issues. Based on this, Recommendation g)* should be implemented.

2) The scope of the “full history” of each site, except for the OUV period (from 1850s to 1910) as described on page 78, falls into two parts: prior to 1850s, and from 1910 to the present. The target of the full history should be narrowed down, considering the local values that supplement the understanding of the background of each component part. Where relevant, with regard to the interpretation of the full history on the location of each component part, high quality research such as collecting primary historical documents and recording oral testimonies should be carried out, and the result of this research should, at some stage, be made publicly available through appropriate media.

* Recommendation g)

“Preparing an interpretive strategy for the presentation of the nominated property, which gives particular emphasis to the way each of the sites contributes to OUV and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.”

Based on the Interpretation Strategy, we have had multiple audits of the current status of interpretation at the component parts and visitor centres, etc., in the various areas undertaken by international experts familiar with industrial assets and the interpretation thereof in countries around the world.

As a result, auditor Barry Gamble identified the following issues in relation to the Saga area.

- Ongoing professional work at Mietsu Naval Dock and the associated museum, including excavation archaeology, furthers the interpretation and conservation of the Component Part. This is to be complimented.
- The plans they have developed to inform the development of Mietsu Naval Dock and the museum are to be commended.
- The OUV and linkages with other component parts (especially those in Nagasaki where there are very close historic relationships) will be essential in these developments, and an accurate (evidenced) and balanced history is crucial, as in all Component Parts. Content should draw from the widely-consulted and approved texts in the Nomination Document.

Discussions have been held regarding this interpretation plan for the Saga Area thus far by the local conservation council.

The issues pointed out as a result of the above interpretation audit—achieving linkage with other component parts, including those in Nagasaki, and introducing a balanced, accurate history—have been addressed along with other continuous enhancements in cooperation with the Industrial Heritage Information Centre and relevant areas. Exhibits that better reflect the World Heritage values in harmony with the historical and cultural values of the region were also installed.

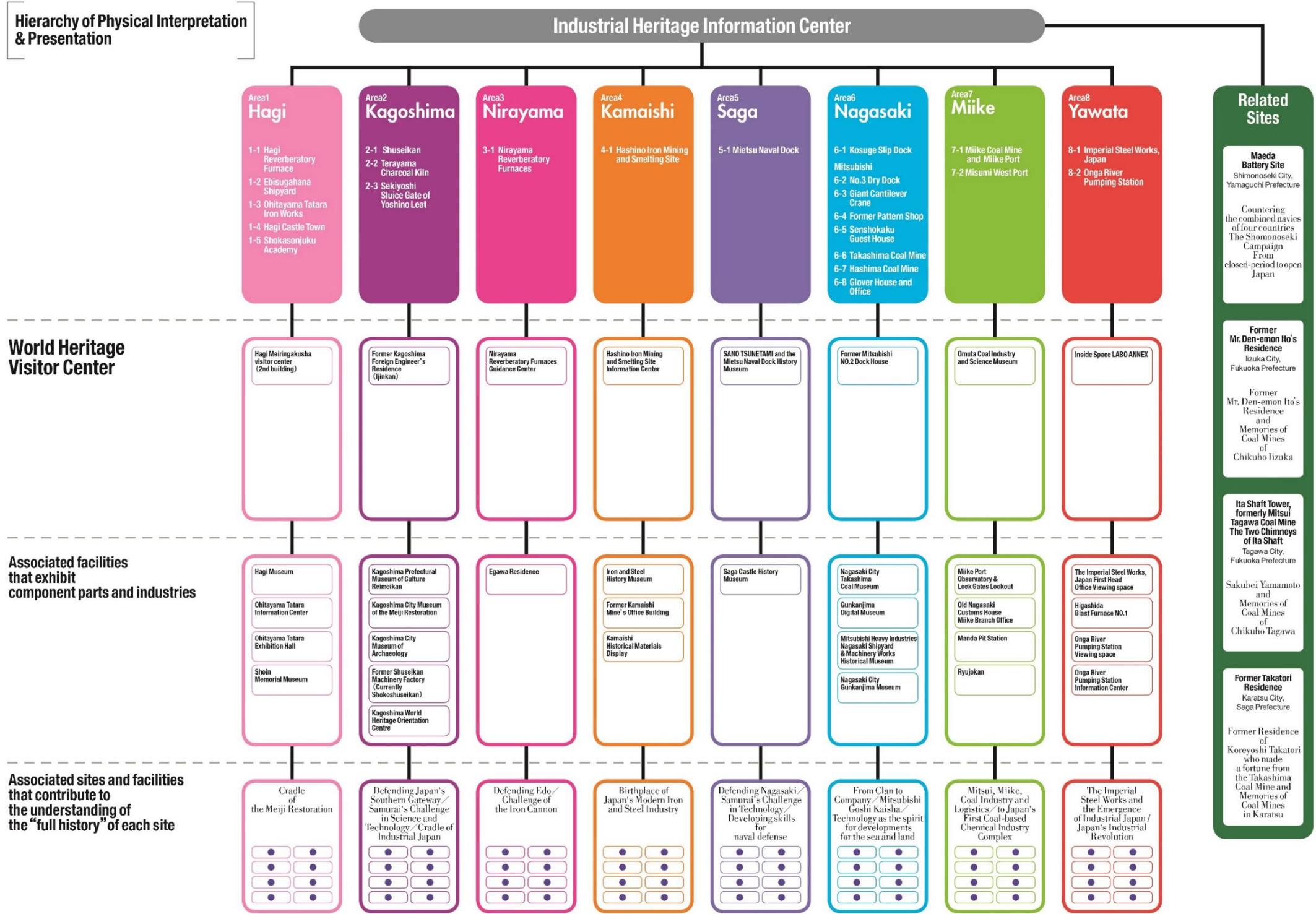
Appendix 1-5



Local Conservation Council meeting

Hierarchy of Physical Interpretation and Presentation

The Industrial Heritage Information Centre and the various local visitor centres will work together to build a system enabling the effective communication of the OUV of the Sites of Japan’s Meiji Industrial Revolution.

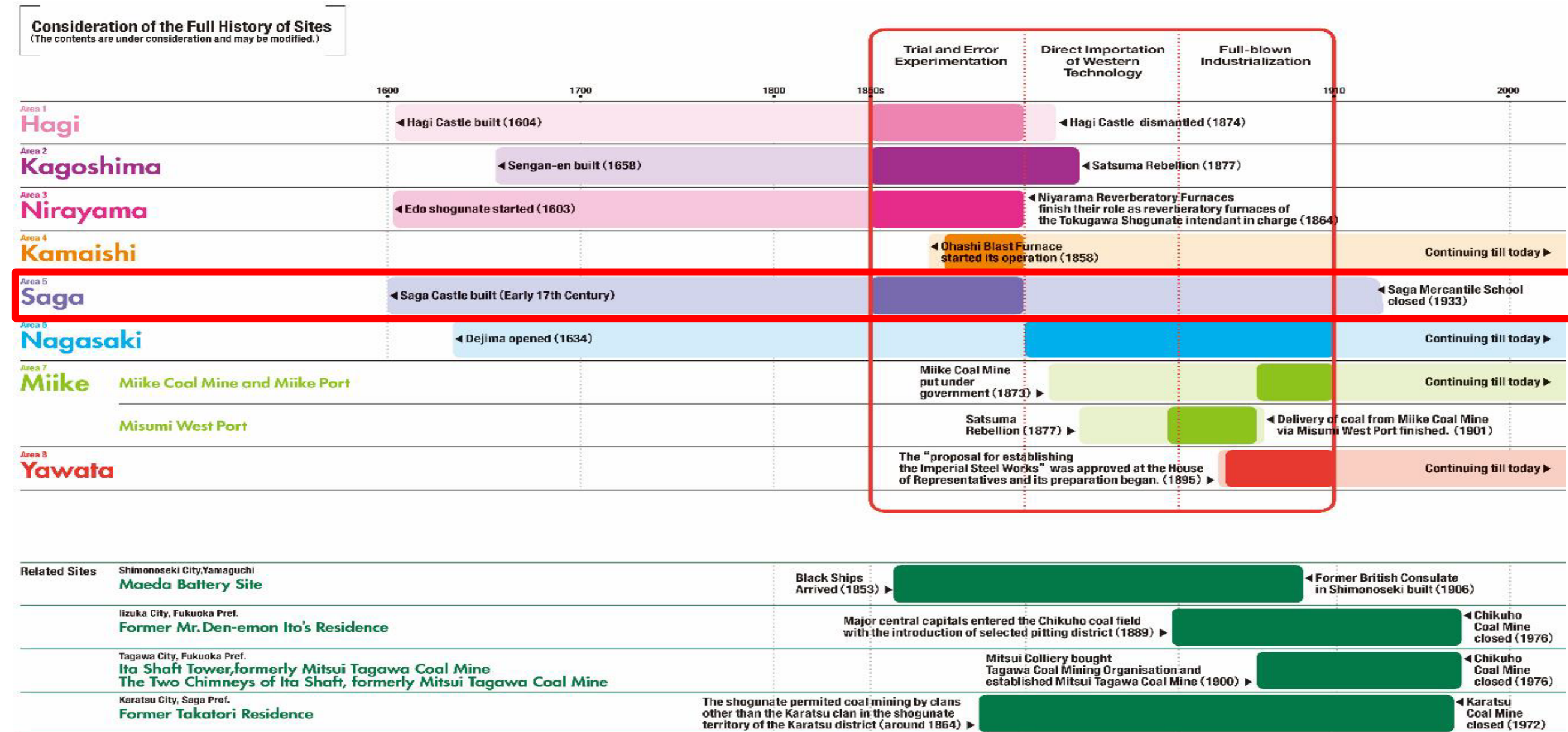


Related sites: Sites that were component part candidates in the provisional UNESCO World Heritage listing on the January 5, 2009, and that comprise industrial heritage (valuable assets that provide insight into the historical background and social situation of the time) that will be utilized in an integrated manner with the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution.”

Appendix 1-5

Consideration of the Full History of Sites

The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO in 2017, addressed consideration of the full history of sites as shown in the figure below.



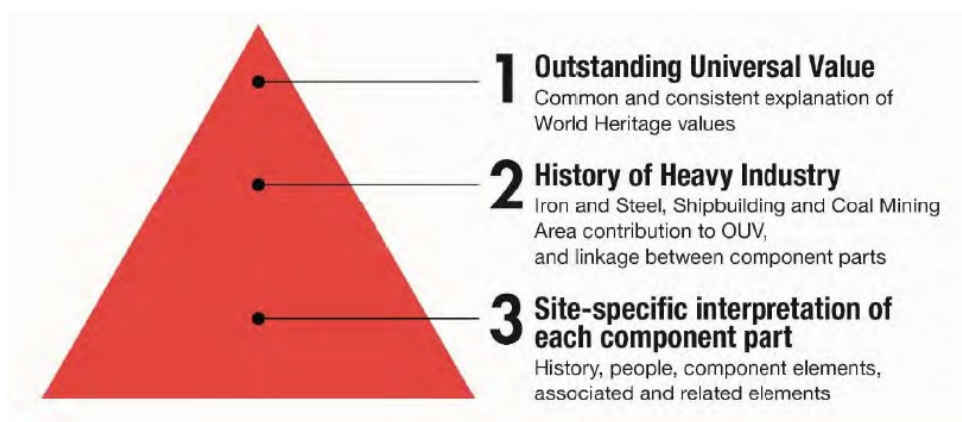
Interpretation in the Saga Area

Approach of the Interpretation Strategy

The Interpretation Strategy provides the following schematic in relation to concepts for interpretation and presentation.

Interpretation for the Saga area too will be approached in line with this in order to resolve the issues identified in interpretation audits.

Interpretation and presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of value and themes

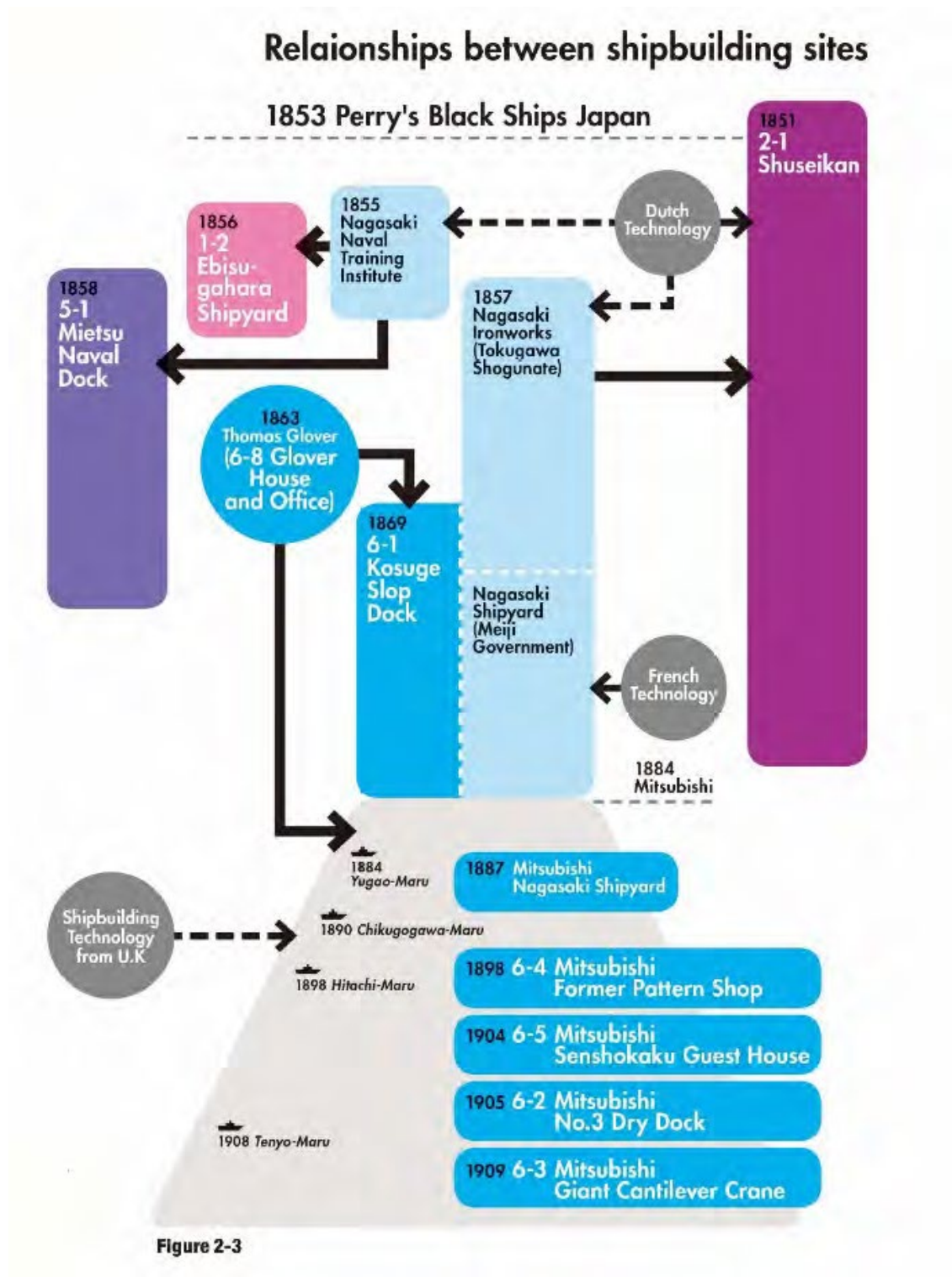


OUV stands at the top of the interpretation pyramid at the Industrial Heritage Information Centre and the various regions' visitor centres and is therefore the top-priority theme over the interpretation and presentation of individual regions and industries, such as history specific to an area or component part. Addressing interpretation in the order of (1) OUV, (2) the history of heavy industry, and (3) site-specific interpretation of each component part, as shown above, will ensure consistent presentation across the property

Interpretation flow at each local visitor centre

Hierarchy of Interpretation






Presentation Using “Liquid Galaxy,” Etc.

The Industrial Heritage Information Centre, which was established in March 2020 pursuant to the Interpretation Strategy, uses an immersive video multi-display that draws on the World Heritage OUV period (1850s-1910), as well as the Consideration of the Full History of Sites schematic. It explains through images the history and transformation of component parts in the various areas, as well as the way that people lived, etc., presenting these in a way that enables visitors to experience in a very real way the evolution of the property, the contribution to OUV, and the full history. This area will also establish a digital archive of documents gathered by the Industrial Heritage Information Centre and the visitor centre in the area, which will be gradually reflected into interpretation tools.



Appendix 1-5

Saga Area Component Parts

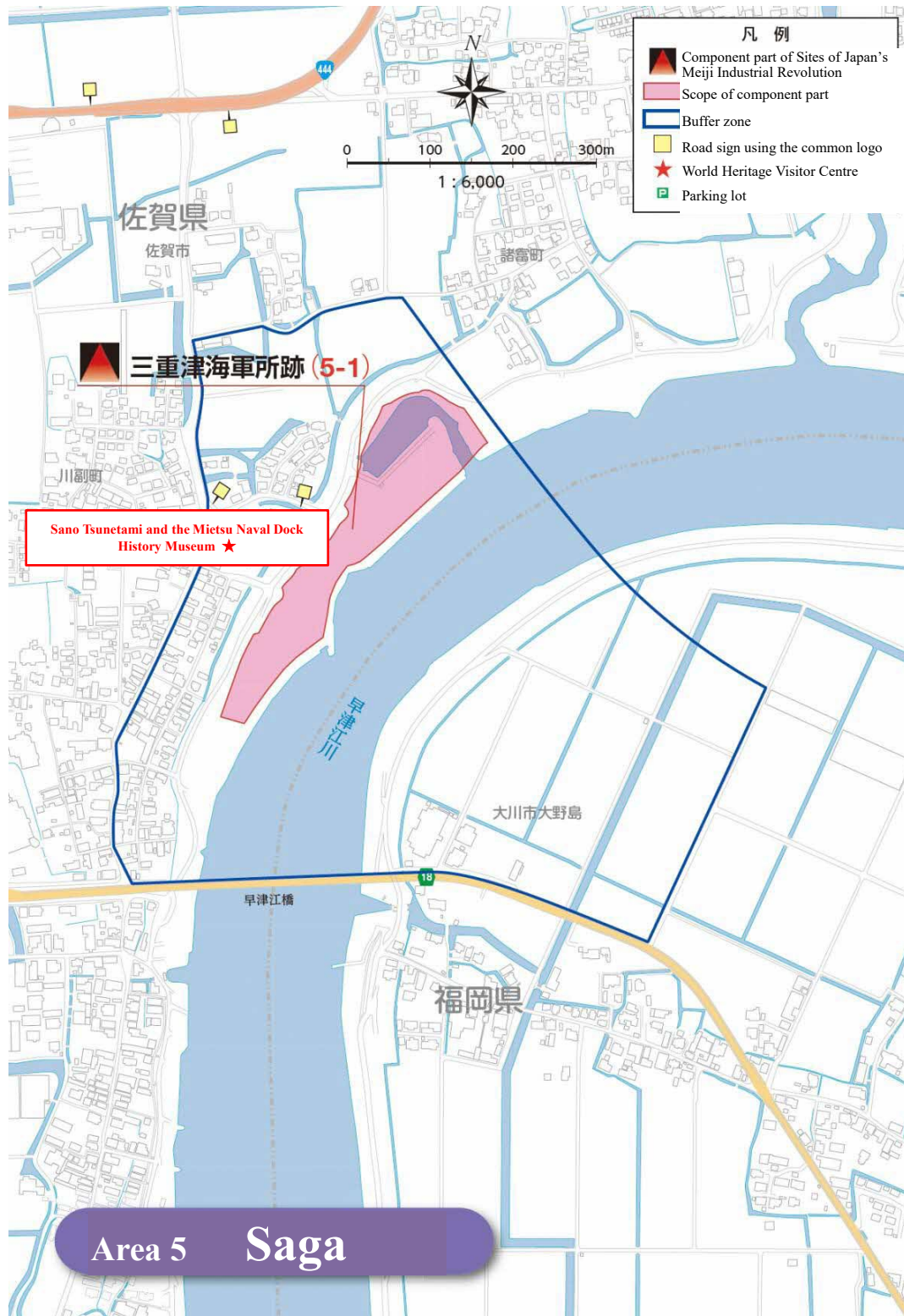
Relevant industries: Shipbuilding	
Name of component part: Mietsu Naval Dock	
(Overview of component part) The Saga Domain, entrusted by the Shogunate with defending Nagasaki, sent samurai to the Nagasaki Naval Training Institute for training and built a dry dock based on the Western technological information gained there. The site was used to repair Western steamships purchased overseas and became the base for acquiring and practicing Western-style ship-related technology.	

World Heritage Plaques

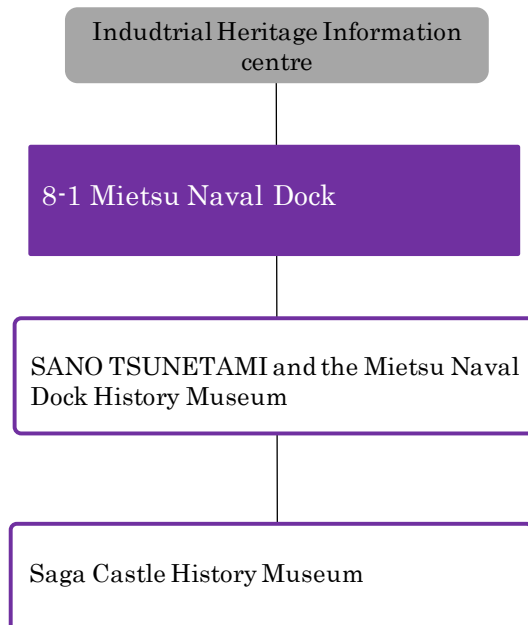
In line with the UNESCO Guidelines, World Heritage plaques have been installed at the various component parts to inform visitors properly about the OUV of the property.



Saga Area: Distribution of Interpretation Facilities



Saga Area: Hierarchy of Physical Interpretation and Presentation



Access Guide Maps

Access guide maps for the component parts in each area have been produced in both Japanese and English and are distributed free to visitors. The access maps are designed to help tourists orient themselves in relation to the component parts of the various areas and enable them to visit as many component parts as possible within each area.

By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites.



Information Counters

These are set up in administrative institutions and airports to distribute access guide maps and other information.



Saga City Hall



Kyushu-Saga International Airport

Appendix 1-5

Guide Map Distribution Points and Number of Maps Distributed

Guide map distribution points and the number of maps distributed are as follows.

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Hotels	50	Hotels	0
Car rental agencies	100	Car rental agencies	100
JR (Railway)	600	JR (Railway)	700
Tourist information centers	700	Tourist information centers	600
Michi-no-eki roadside stations	4,400	Michi-no-eki roadside stations	1,600
NEXCO	168,500	NEXCO	9,300
Public interest corporation/foundation/ incorporated association	550	Public interest corporation/foundation/ incorporated association	3,380
Other	2,012	Other	4,550
JR Kyushu Hakata Station General Information		Kitakyushu Museum of Natural History & Human History	
West Nippon Expressway Retail Co., Ltd.		Nakama City Regional Exchange Center – Nakama gaido no kai (guide group)	
West Nippon Expressway Service Holdings Company Limited		Fukuoka International Airport Co., Ltd.	
Fugetsu Foods Co., Ltd.		Satoyama wo Kangaerukai Nonprofit Organisation (NPO Satoyama)	
Fukuoka International Airport Co., Ltd.		Japan Automobile Federation (JAF)	
Nagasaki Airport		Fukuoka City Tourist Information Center	
Kagoshima Prefectural Library		Koransha Co., Ltd.	
JR Kagoshima Chuo Station Tourist Information Center		The Cooperative of Arita Ceramics Wholesale Commercial Park	
Kitakyushu Convention & Visitors Association		Fukuoka Airport	
Omura City Hall Industrial Promotion Dept.		Saga Prefectural Tourism Federation	
JR Miyazaki Station Tourist Information Center		Karatsu-Genkai Tourism Exchange	

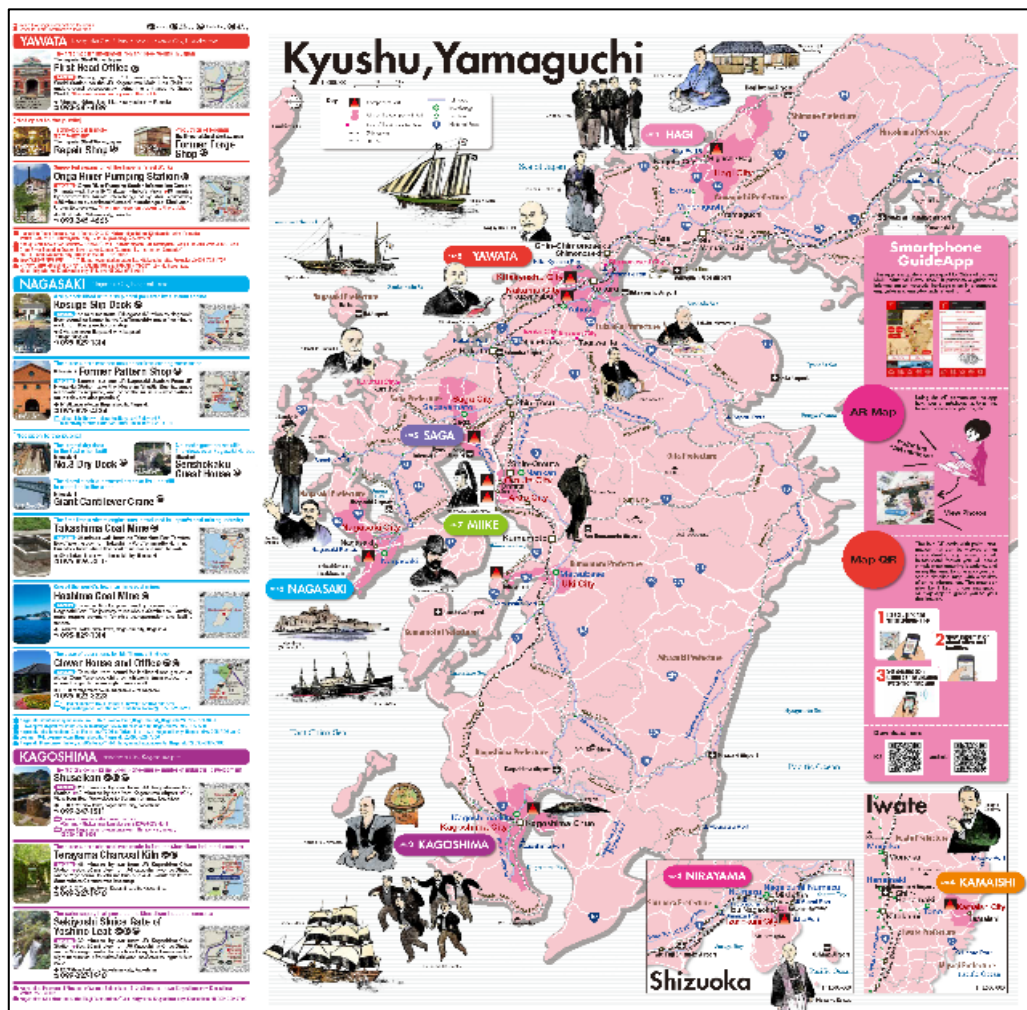
Total no. distributed
for the entire area

464,025

World Heritage Route

In accordance with the Interpretation Strategy, and also as noted in pages 395–396 of the Nomination Document, the World Heritage Route Promotion Council was founded to provide guidance and tourism infrastructure for understanding World Heritage as a whole. The Council attracts visitors to all component parts and related sites by producing maps, apps, and GPS navigation and by installing road signs and other signage using the common logo to promote the Sites of Japan's Meiji Industrial Revolution so that visitors are able to understand the World Heritage value constituted by the 23 component parts.

Work will continue to be undertaken steadily pursuant to the Nomination Document and the Interpretation Plan.



Appendix 1-5



Map on p. 396 of the Nomination Document



World Heritage Route Promotion Council meeting

Installation of Road Signage, Etc., Using the Common Logo

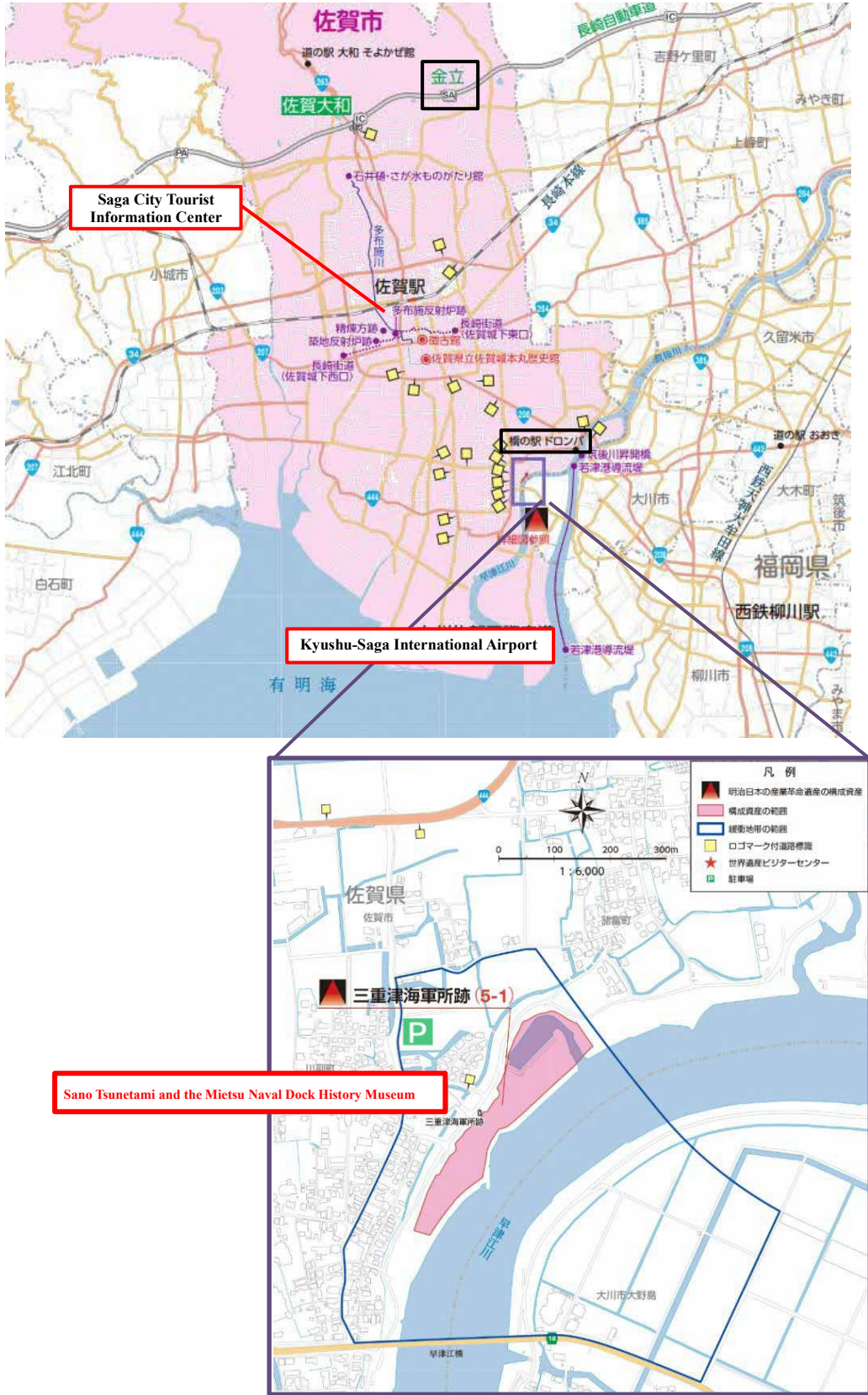
Status of installation of road signage

Place	No. of signs installed
Saga City	26

Photos of road signage



Locations of Road Signs Using the Common Logo



Linkage with Car Navigation (Denso Car Navigation)

Example of linkage with smartphone app so that the target destination can be sent to a car navigation system



Appendix 1-5

The destination can be sent directly from a smartphone to the car navigation system.



A video on how to use the application has been put up on YouTube.



App Utilization

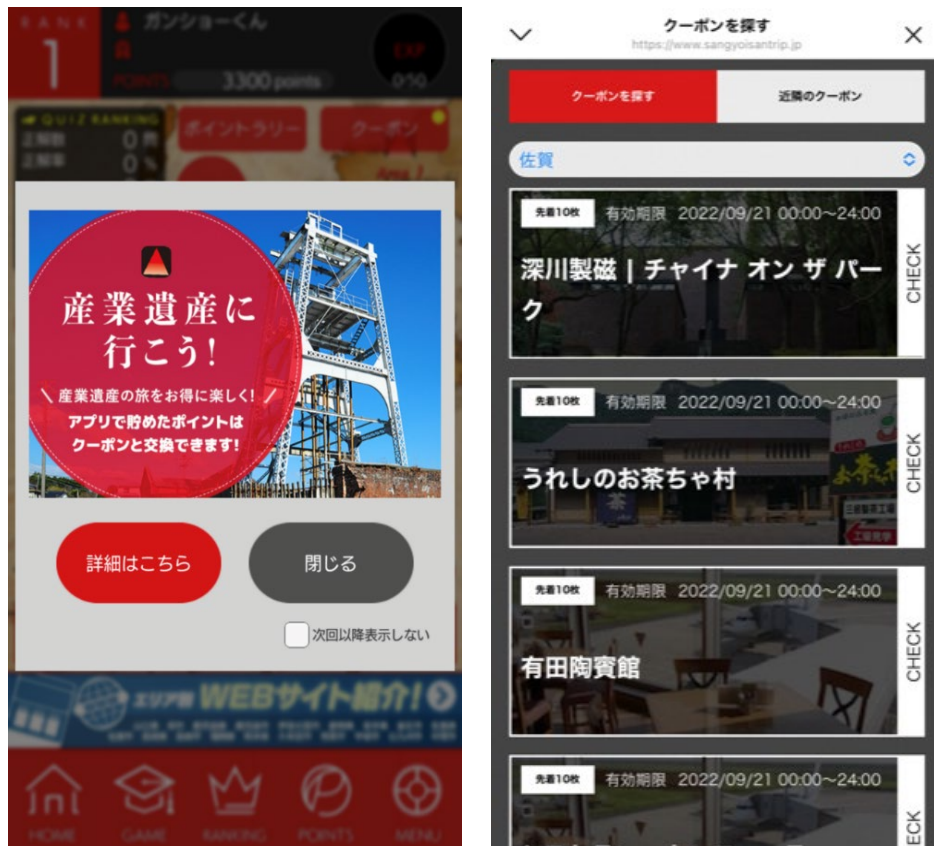
The app introduces the Sites of Japan's Meiji Industrial Revolution, including detailed stories and explanations, as well as the historical background, using video and computer graphics, etc. Users can earn points by playing games and using the AR camera on the app and use them as coupons for souvenirs and other prizes. As such, it serves as a mechanism for both deepening understanding of World Heritage value and feeding back into World Heritage Route tours. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.



Appendix 1-5

Use of Line App

Points acquired on the app can be exchanged for coupons.



Point-of-purchase advertising has been created and placed in stations and information centres, etc., to encourage people to sign up to the LINE app.



LINE is used as a runway for achieving two-way communication geared to the circumstances of the user based on locational information, such as the use of existing guide apps and communication about coupons that can be used in shops at the area visited. The service is provided in multiple languages so as to support international visitors.

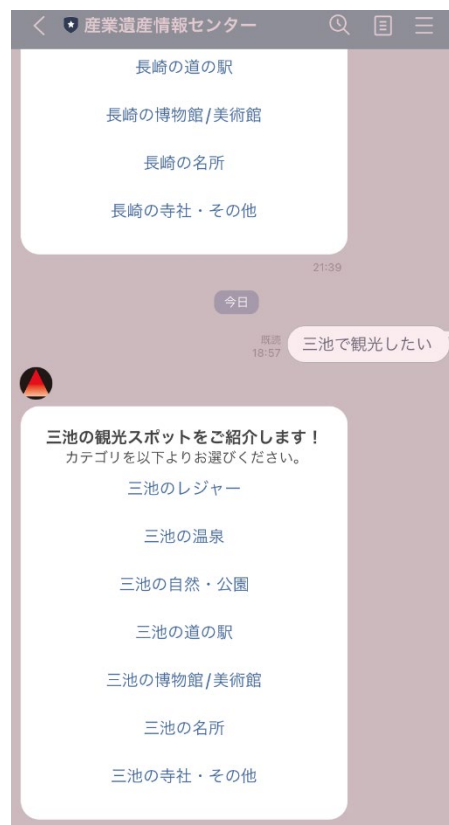


Appendix 1-5

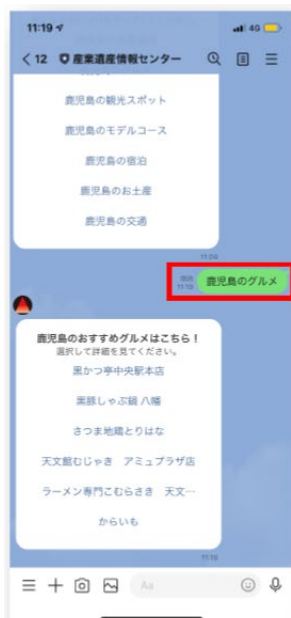
LINE functions (examples)



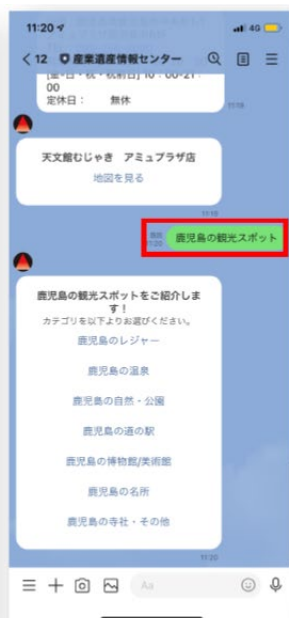
Introduction to model courses



AI chatbot function



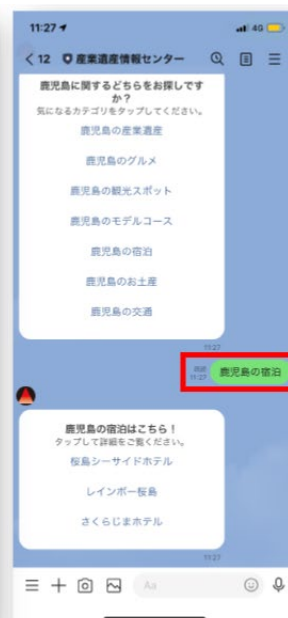
Gourmet information



Tourist spots



Traffic information



Accommodation information

Digital Signage Functions

Digital signage has been installed in the Industrial Heritage Information Centre as a mechanism for encouraging multi-destination tourism by displaying local guide maps and information on multi-destination industrial heritage routes. AI chatbots have also been installed to respond to a wide range of multi-destination routes and tourism questions in real time.

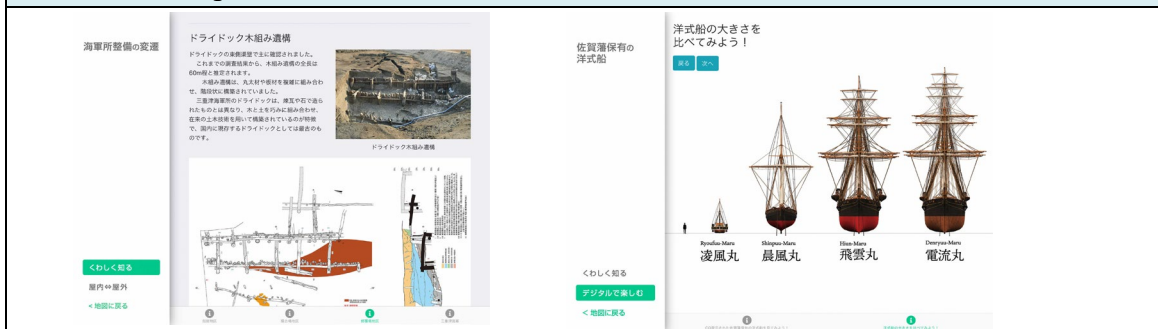


Appendix 1-5

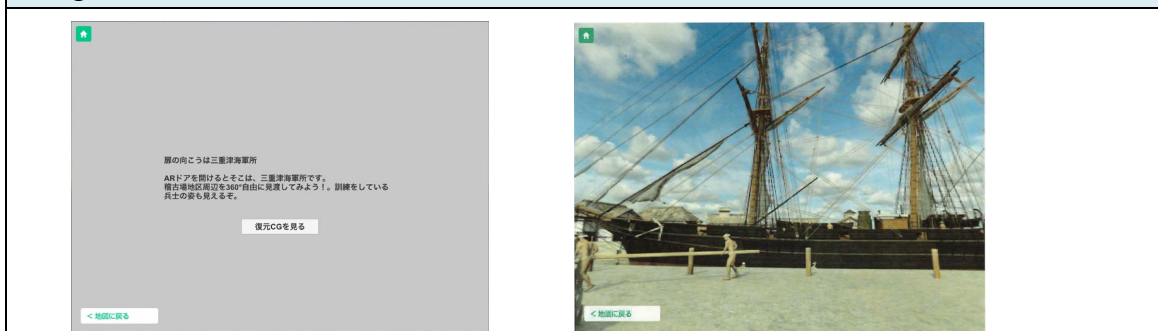
Enhancement of digital content

An official guide app, Reki Navi, which applies digital technology, is available at the visitor centre and on-site. The app provides detailed interpretations of the items on display with images, videos, 3D computer graphics, text, etc. and links the exhibits by providing complementary information at the visitor centre and onsite.

○Detailed interpretation function



○Digital content



○Linkage between the center and external locations



○Commemorative photo function



Visitor Centres

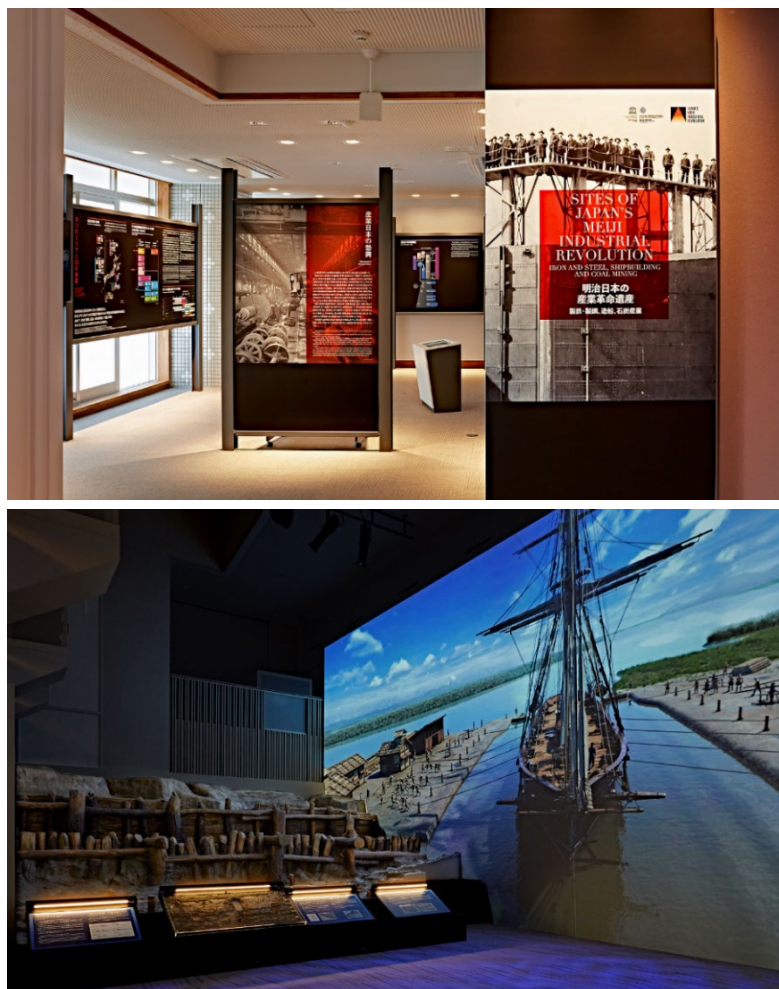
The Saga Area is equipped with one visitor centre and one auxiliary facility with exhibits of component parts and the industrial sector in line with the interpretation strategy. Each facility cooperates with the local community to prepare exhibits that best bring out the true World Heritage values in harmony with the historical and cultural values of the region. They aim to create exhibits that allow visitors to understand the value of the components easily.

Based on points raised in interpretation audits, local visitor centres will work with the Industrial Heritage Information Centre to digitize a huge volume of primary historic materials and use digital tools to enhance exhibits.

[Sano Tsunetami and the Mietsu Naval Dock History Museum]

This is the Mietsu Naval Dock guidance facility which reopened on September 25, 2021, after renovations. It is equipped with a common exhibition that provides an overview of the World Heritage as a whole, its values, and the Mietsu Naval Dock as a component part. The facility also recreates a full-scale model of a portion of the dry dock in the underground area of the Mietsu Naval Dock and a large screen that introduces the atmosphere back in the times.

(Official website) <https://sano-mietsu-historymuseum.city.saga.lg.jp/>



Appendix 1-5

[Saga Castle History Museum]

(Official website) <https://saga-museum.jp/sagajou/>



Area6 Nagasaki

Appendix 1-6

AREA-SPECIFIC INTERPRETATION PLAN



【Area List】

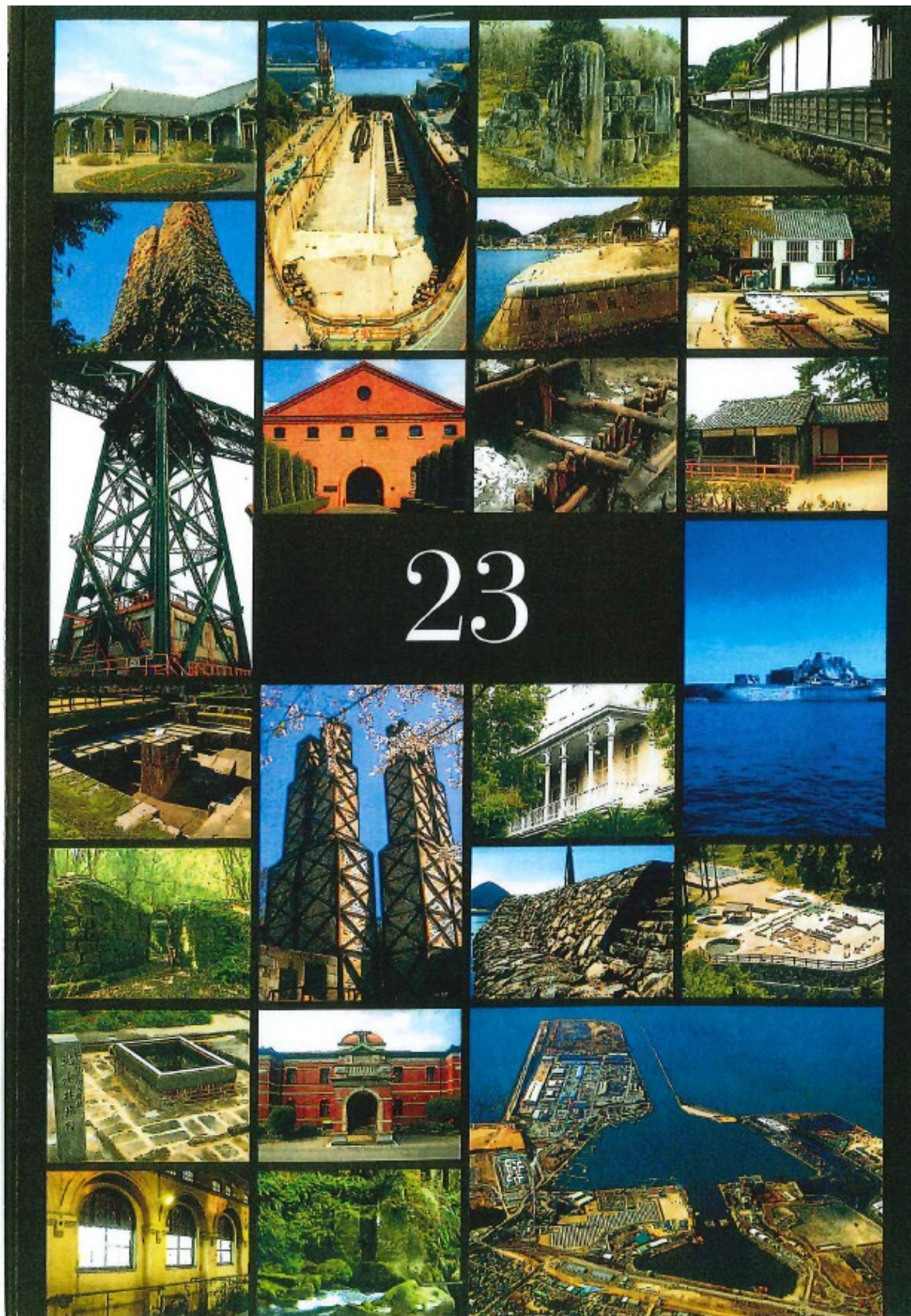


【Component Name】

List of the Component Parts

Area	Site	ID	Component Part
A1 Hagi	1 Hagi Proto-industrial Heritage	1-1	Hagi Reverberatory Furnace
		1-2	Ebisugahana Shipyard
		1-3	Ohitayama Tataru Iron Works
		1-4	Hagi Castle Town
		1-5	Shokasonjuku Academy
A2 Kagoshima	2 Shuseikan	2-1	Shuseikan
		2-2	Terayama Charcoal Kiln
		2-3	Sekiyoshi Sluice Gate of Yoshino Leat
A3 Nirayama	3 Nirayama Reverberatory Furnaces	3-1	Nirayama Reverberatory Furnaces
A4 Kamaishi	4 Hashino Iron Mining and Smelting Site	4-1	Hashino Iron Mining and Smelting Site
A5 Saga	5 Mietsu Naval Dock	5-1	Mietsu Naval Dock
A6 Nagasaki	6 Nagasaki Shipyard	6-1	Kosuge Slip Dock
		6-2	Mitsubishi No.3 Dry Dock
		6-3	Mitsubishi Giant Cantilever Crane
		6-4	Mitsubishi Former Pattern Shop
		6-5	Mitsubishi Senshokaku Guest House
	7 Takashima Coal Mine	6-6	Takashima Coal Mine
		6-7	Hashima Coal Mine
	8 Glover House and Office	6-8	Glover House and Office
A7 Miike	9 Miike Coal Mine and Miike Port	7-1	Miike Coal Mine and Miike Port
	10 Misumi West Port	7-2	Misumi West Port
A8 Yawata	11 The Imperial Steel Works, Japan	8-1	The Imperial Steel Works, Japan
		8-2	Onga River Pumping Station

Table1



SITES OF
JAPAN'S
MEIJI INDUSTRIAL
REVOLUTION
IRON & STEEL, SHIPBUILDING
AND COAL MINING

Executive Summary

Brief Synthesis

“Sites of Japan’s Meiji Industrial Revolution: : Iron and Steel, Shipbuilding and Coal Mining” comprise a singular ensemble of industrial heritage sites that represent the first successful transfer of industrialization from the West to a non-Western nation.

From the middle of the 19th century to the early 20th century, Japan achieved rapid industrialization that was founded on the key industrial sectors of shipbuilding, iron and steel, and coal mining. The initial phase was one of trial and error experimentation in iron making and shipbuilding, based mostly on Western textbooks, and by copying examples of Western ships. This was followed by the more successful importation of Western technology and the expertise to operate it and, by the late Meiji period, full-blown industrialization through newly acquired domestic expertise and the active adaptation of Western technology to best suit Japanese needs and social traditions. This successful industrialization was achieved in just a little over 50 years without colonization, and on Japan’s own terms. The property is testimony to this unique phase in world history.

Justification for Criteria

Criterion (ii)

The property is a series of heritage sites that, together, uniquely illustrate the process by which feudal Japan sought technology transfer from Western Europe and America from the middle of the 19th century. This technology was adopted and progressively adapted to satisfy specific domestic needs and social traditions, thus enabling Japan to become a world-ranking industrial nation by the early 20th century.

Criterion (iv)

The technological ensemble of key industrial sites of shipbuilding, iron and steel, and coal mining is testimony to Japan's unique achievement in world history as the first non-Western country to successfully industrialize. Viewed as an Asian cultural response to Western industrial values, the ensemble had no counterpart elsewhere in the world.

Statement of Integrity

The 23 component parts are the best, and often the only, surviving examples of the key attributes that represent shipbuilding, the iron and steel, and coal mining industries and that are necessary to express Outstanding Universal Value. In each case, the boundary of the component part has been drawn to include the essential features that, overall, contribute to Outstanding Universal Value.

Component parts are in good condition and have mechanisms in place to control deterioration and keep sites free from the adverse effects of development. They have been variously affected by continued use, re-use or lengthy periods of abandonment, and their physical integrity varies between well preserved and fragmentary, the latter being sufficiently intact to be able to represent the former whole. In some cases, where the evidence is primarily archaeological, sufficient investigation has been carried out to verify that a substantial archaeological site survives in good condition for further study and presentation. In other cases, in particular those that remain in operational industrial use, ongoing use and maintenance have resulted in an extraordinarily high level of integrity of working industrial elements.

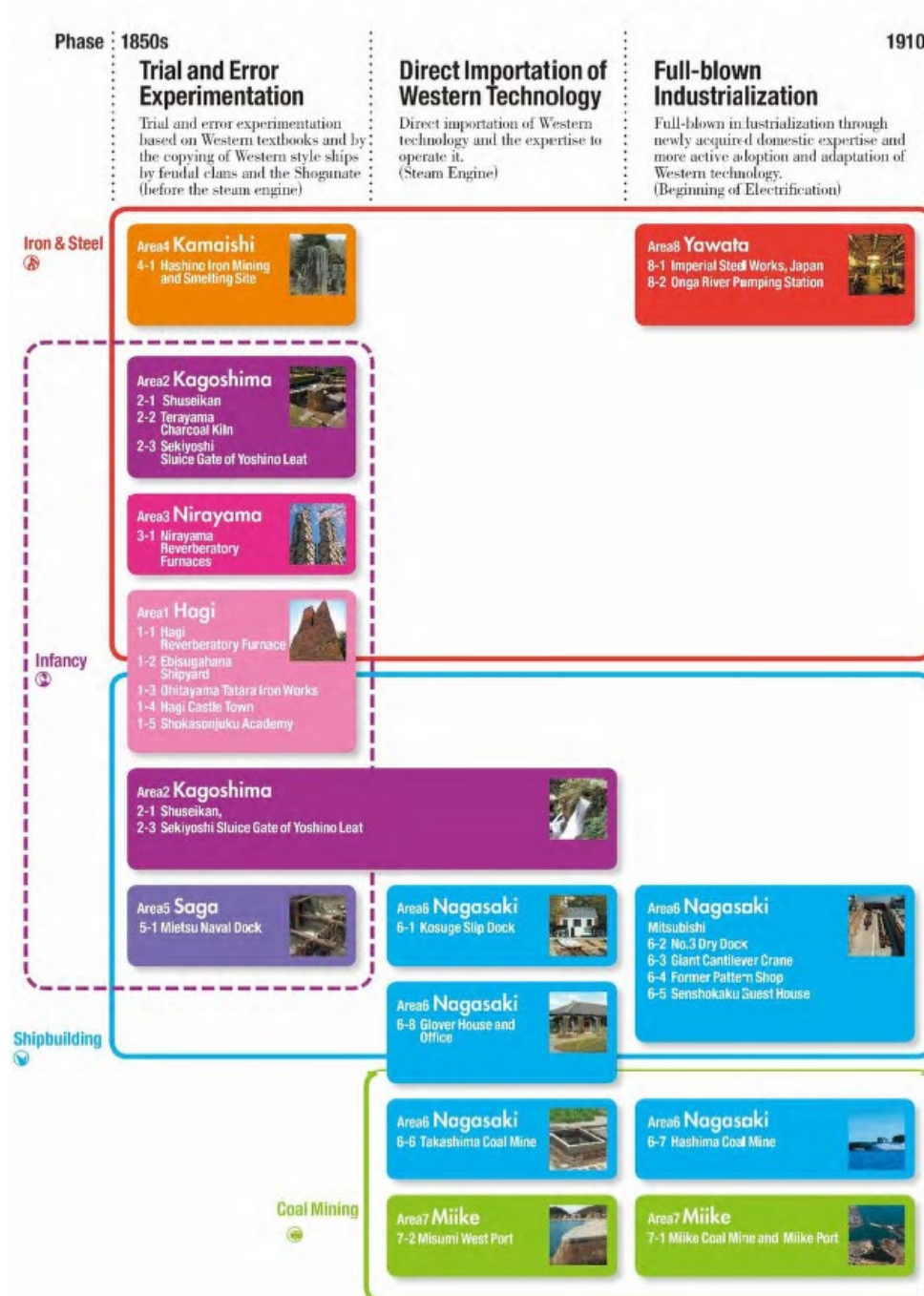
Statement of Authenticity

The property as a whole as well as at the level of each component part meets the conditions of authenticity in relation to Outstanding Universal Value. It has a high degree of authenticity as the best surviving group of industrial remains that represent, and demonstrate, the first, and rapid, transfer of industrialization from the West to a non-Western nation.

With regard to 'form and design' and 'materials and substance', the component parts constitute the original forms and materials of the range of industrial components necessary to represent the transfer of heavy industry from the West to Japan. Some contain sites that range from fragmentary or archaeological, that are nonetheless authentic relics of important industrial components of the series, to those that comprise substantially intact authentic physical remains that have been managed for many years as historic sites which display these characteristics. Others possess an extremely complete survival not only of form, design and materials but also of continuing use and function.

Industrial History Related to the Nagasaki Area

The Nagasaki area contains multiple component parts chronicling the second and third phases (respectively, direct importation of western technology and full-blown industrialization) of the shipbuilding and coal mining aspects of the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”



The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO on November 30, 2017, as an appendix to the State of Conservation Report noted the following:

11. Interpretation Plan (extract)**(1) Consistent OUV rollout across all component parts**

Based on the Interpretation Strategy, the consistent interpretation of OUV should be presented across all component parts. This will be agreed by all stakeholders, and coordinated and implemented commonly in a branded World Heritage style.

(2) and (3) Progress in dealing with the “full history” of each site, including information gathering related to workers

Advice from international experts who are members of the Expert Committee on the Industrial Heritage including Operational Properties (Cabinet Secretariat of Japan), from the international heritage expert who was the ICOMOS technical evaluation field assessor of the World Heritage nomination of the “Sites of Japan’s Meiji Industrial Revolution”, and from the President of the ICOMOS International Scientific Committee on Interpretation and Presentation, comprises the following four key policies:

1) Focus on the interpretation of Outstanding Universal Value; in conformity with the primary purpose of the World Heritage, OUV of the inscribed property should be presented clearly at each site, not confusing with other, albeit related, issues. Based on this, Recommendation g)* should be implemented.

2) The scope of the “full history” of each site, except for the OUV period (from 1850s to 1910) as described on page 78, falls into two parts: prior to 1850s, and from 1910 to the present. The target of the full history should be narrowed down, considering the local values that supplement the understanding of the background of each component part. Where relevant, with regard to the interpretation of the full history on the location of each component part, high quality research such as collecting primary historical documents and recording oral testimonies should be carried out, and the result of this research should, at some stage, be made publicly available through appropriate media.

* Recommendation g)

“Preparing an interpretive strategy for the presentation of the nominated property, which gives particular emphasis to the way each of the sites contributes to OUV and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.”

Based on the Interpretation Strategy, we have had multiple audits of the current status of interpretation at the component parts and visitor centres, etc., in the various areas undertaken by international experts familiar with industrial assets and the interpretation thereof in countries around the world.

As a result, auditor Barry Gamble identified the following issues in relation to the Nagasaki area.

- It is appropriate for the proposed ‘Nagasaki Area Centre’ to be located in the Former Mitsubishi No 2 Dock House in Glover Park to present the “common exhibition”. This facility will optimize the existing catchment of over one million annual visitors. Together with other buildings and the spacious grounds in the park adjacent to Glover House, it is easily able to accommodate large numbers.
- An interpretation plan for the Glover House should be being developed in parallel with the current conservation works which are due to be completed within two years. We look forward to providing ongoing advice for the design and interpretive development of these two places.
- There is some merit in considering parallel planning with the proposed developments in Nagasaki and Saga as their content and timescales are to a degree overlapping.
- The Nagasaki Shipyard Museum clearly interprets and presents the history of the shipyard and its role as part of the overall WHS. There is the opportunity to increase the visitation to the facility. However, as the site is still operational, access will need to be managed by the company.
- The Takashima Coal Mining Museum should further embrace its association with the WHS by introducing greater visibility in branding, including further relevant interpretive content and raising its profile and visitor numbers through networking with other Component Parts in the Nagasaki Area. The World Cultural Heritage Division could provide advice to achieve this.

In the Nagasaki area, the Local Conservation Council has been discussing the Interpretation Plan.

Going forward, drawing also on those issues noted above, the council will work with the Industrial Heritage Information Centre to install the “common exhibition” in the former Mitsubishi No. 2 Dock House to ensure that the exhibition better reflects the value of the World Heritage while also aligning with the local historical and cultural values.

At the Glover House, conservation works have been completed and interpretation has been enhanced. In response to issues raised by international experts in relation to the Nagasaki Shipyard Museum and the Takashima Coal Mining Museum, interpretation will be approached based on an awareness of the relationship with other component parts.

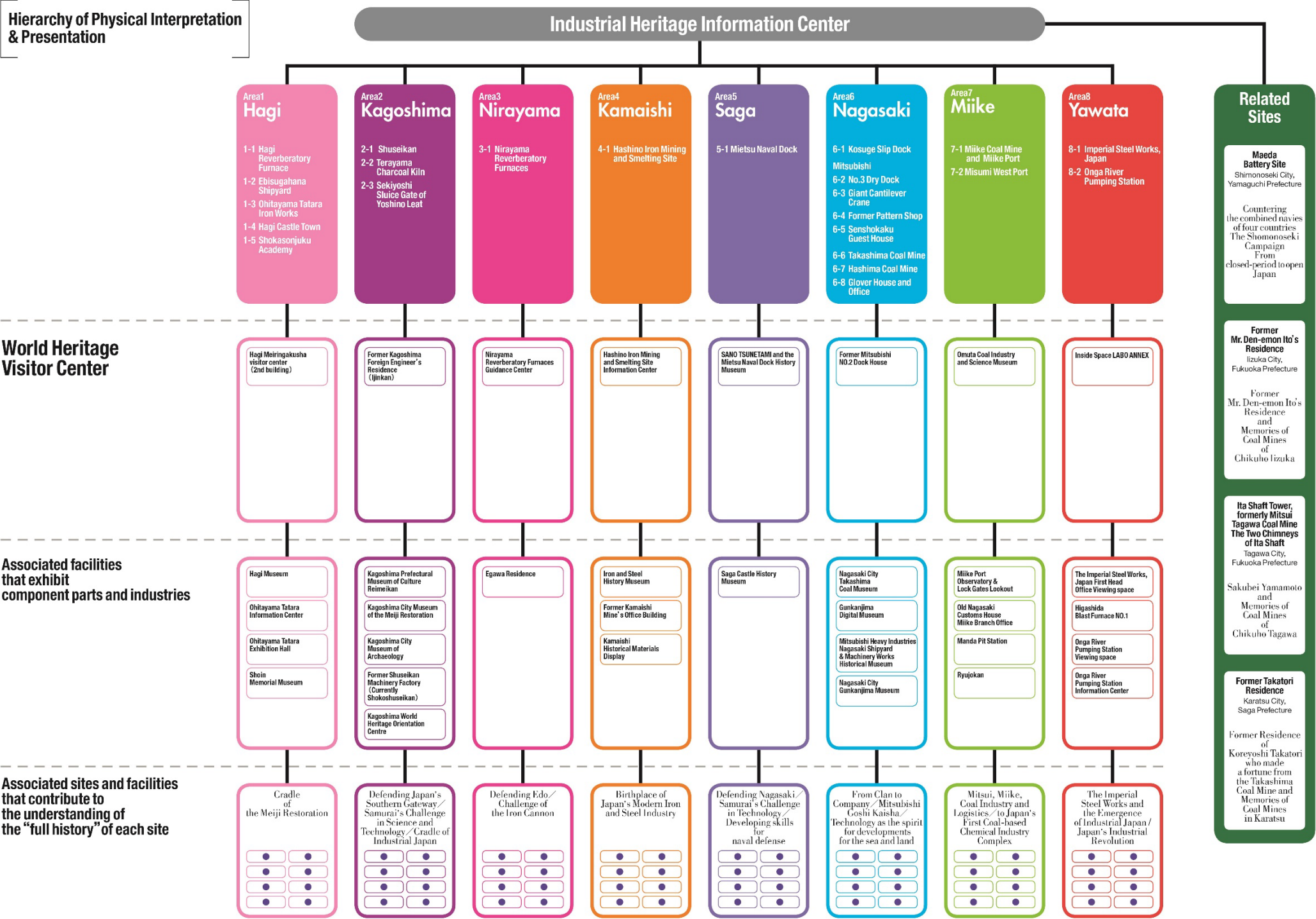
The implementation status of the Interpretation Plan will be regularly checked by the Local Conservation Council, which will engage in considerations toward making improvements as necessary.



Local Conservation Council meeting

Hierarchy of Physical Interpretation and Presentation

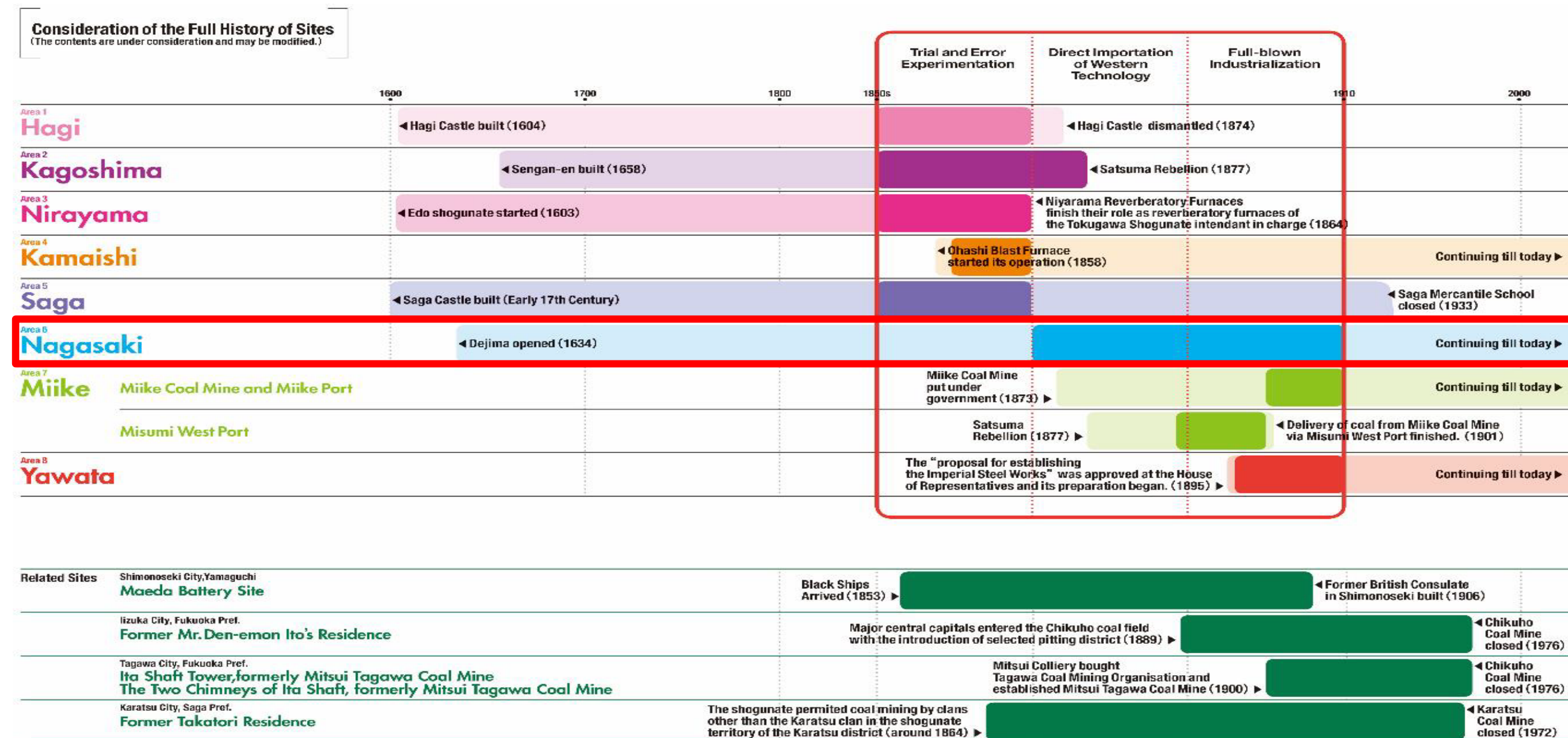
The Industrial Heritage Information Centre and the various local visitor centres will work together to build a system enabling the effective communication of the OUV of the Sites of Japan’s Meiji Industrial Revolution.



Related sites: Sites that were component part candidates in the provisional UNESCO World Heritage listing on the January 5, 2009, and that comprise industrial heritage (valuable assets that provide insight into the historical background and social situation of the time) that will be utilized in an integrated manner with the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution.”

Consideration of the Full History of Sites

The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO in 2017, addressed consideration of the full history of sites as shown in the figure below.



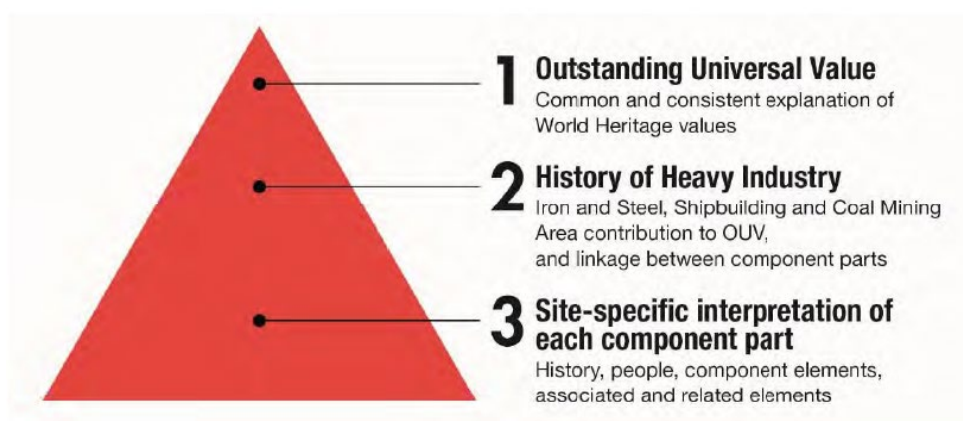
Interpretation in the Nagasaki Area

Approach of the Interpretation Strategy

The Interpretation Strategy provides the following schematic in relation to concepts for interpretation and presentation.

Interpretation for the Nagasaki area too will be approached in line with this in order to resolve the issues identified in interpretation audits.

Interpretation and presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of value and themes

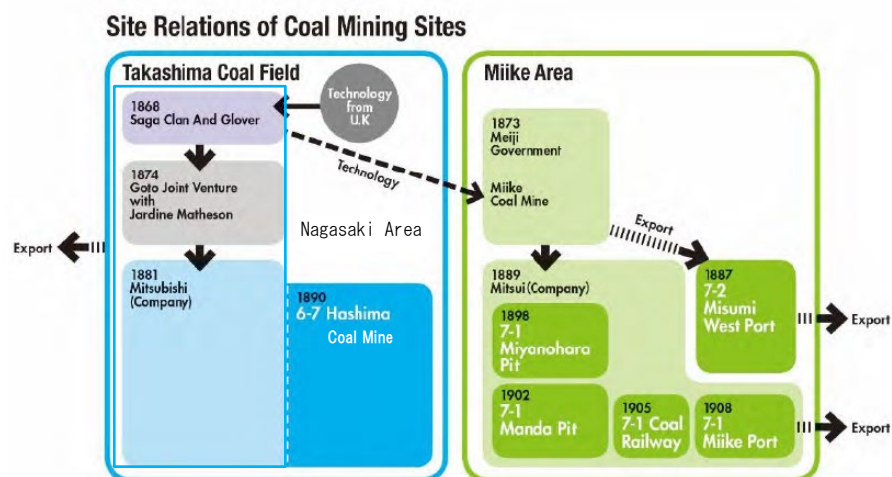
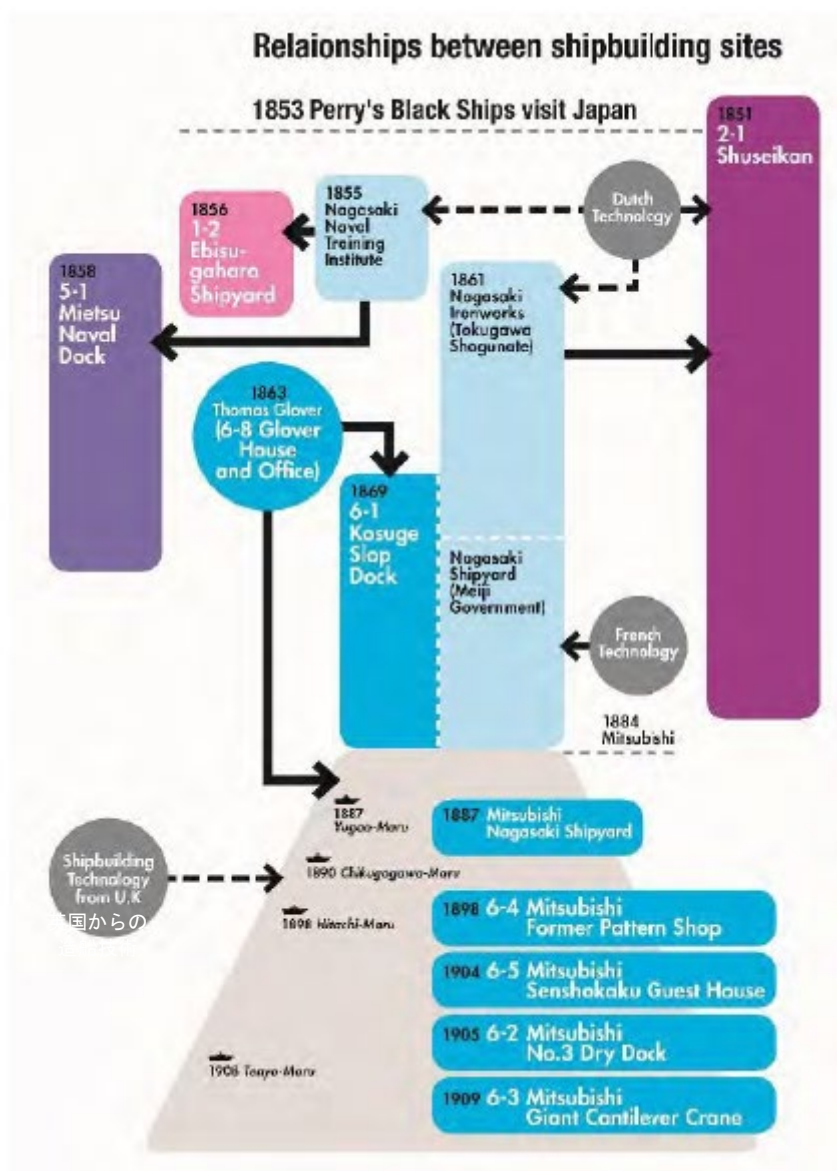


OUV stands at the top of the interpretation pyramid at the Industrial Heritage Information Centre and the various regions' visitor centres and is therefore the top-priority theme over the interpretation and presentation of individual regions and industries, such as history specific to an area or component part. Addressing interpretation in the order of (1) OUV, (2) the history of heavy industry, and (3) site-specific interpretation of each component part, as shown above, will ensure consistent presentation across the property

Interpretation flow at each local visitor centre

Hierarchy of Interpretation





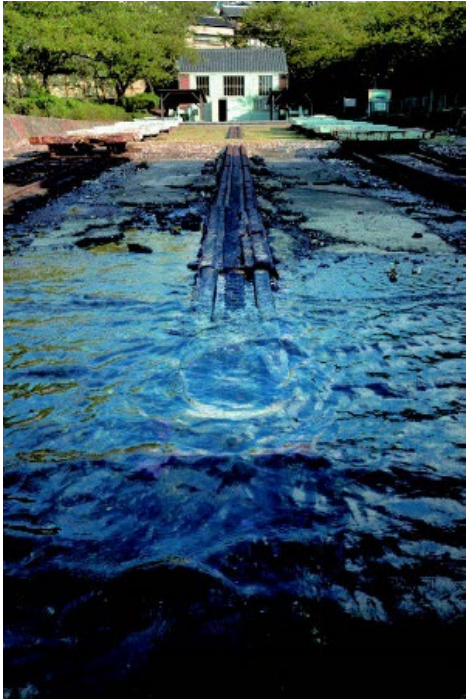

Presentation Using “Liquid Galaxy,” Etc.




The Industrial Heritage Information Centre, which was established in March 2020 pursuant to the Interpretation Strategy, uses an immersive video multi-display that draws on the World Heritage OUV period (1850s-1910), as well as the Consideration of the Full History of Sites schematic. It explains through images the history and transformation of component parts in the various areas, as well as the way that people lived, etc., presenting these in a way that enables visitors to experience in a very real way the evolution of the property, the contribution to OUV, and the full history. The Nagasaki area too will work with the Industrial Heritage Information Centre to enhance interpretation by, for example, in future enabling a range of content to be viewed via an immersive multi-display. In addition, consideration will be given to creating a digital archive of materials gathered by the IHIC and the Nagasaki area visitor centres, with these materials progressively reflected in interpretation tools.






Nagasaki Area Component Parts

The Nagasaki area has a total of eight component parts, comprising sites related to shipbuilding and coal mining after the ban on the construction of large ships was lifted. They all have a connection to Thomas Glover and to Yataro Iwasaki, who worked in the Kaiseikan organization operated by the Tosa clan, which was extremely influential during the Meiji Restoration.

Relevant industries: Shipbuilding	
Name of component part: Kosuge Slip Dock	
<p>(Overview of component part)</p> <p>Built in Nagasaki Port as a joint venture between Glover and the Satsuma clan, this was a Western-style slip dock equipped with a winch powered by Japan's oldest steam engine. The Slip Dock was bought up by the Meiji Government, and then acquired by Mitsubishi. The winch house was built using Japan's oldest existing "konnyaku" bricks (long, thin bricks).</p>	
Relevant industries: Shipbuilding	
Name of component part: No. 3 Dry Dock	
<p>(Overview of component part)</p> <p>A large-scale dry dock built during the Mitsubishi Goshi Kaisha years by cutting away the cliff behind the site and reclaiming the sea in front. The drain pump, powered by an electric motor from UK-based Siemens that was installed when the dock opened, is still in operation today. It is a precious asset that remains as it was in the Mitsubishi Goshi Kaisha days.</p>	

Relevant industries: Shipbuilding	
Name of component part: Giant Cantilever Crane	
<p>(Overview of component part)</p> <p>Japan's first electric crane of this type was produced by UK-based company Appleby for Mitsubishi Goshi Kaisha when the shipyard was electrified. Powered by an electric motor and able to lift fittings for large ships and other such heavy loads, the crane was then state of the art machinery. It is still used today to load products on to ships.</p>	
Relevant industries: Shipbuilding	
Name of component part: Former Pattern Shop	
<p>(Overview of component part)</p> <p>The Pattern Shop was built during the Mitsubishi Goshi Kaisha years in response to the increasing demand for cast products. A two-story brick building with a wooden roof truss, it made wooden molds for casting production. The building was reborn in 1985 as a museum showcasing the history of the Nagasaki Shipyard, and today it is the only facility in the shipyard that is open to the public.</p>	
Relevant industries: Shipbuilding	
Name of component part: Senshokaku Guest House	
<p>(Overview of component part)</p> <p>A wooden two-story Western-style building constructed on a hill overlooking the No. 3 Dry Dock during the Mitsubishi Goshi Kaisha years. Originally designed as a residence for Nagasaki Shipyard director Heigoro Shoda, it was turned into a guesthouse. The year after its completion, it was named "Senshokaku" (from the Japanese characters meaning "to command a view of picturesque natural scenery") in appreciation of the magnificent view. It is still used by the shipyard as a guesthouse.</p>	

Relevant industries: Coal mining	
Name of component part: Takashima Coal Mine	
<p>(Overview of component part)</p> <p>Thomas Glover developed the Takashima Coal Mine at the Nishisonogi coalfield as a joint venture with the Saga clan, introducing Japan's first steam engine. In 1881, the mine came under the control of Mitsubishi, which reemployed Glover and placed mine operations on a solid trajectory.</p>	
Relevant industries: Coal mining	
Name of component part: Hashima Coal Mine	
<p>(Overview of component part)</p> <p>Owned by Mitsubishi Goshi Kaisha, which covered coal demand with the Takashima Coal Mine as its main pit. All that is left today is the remains of the pit mouth and other production facilities, the old revetments revealing the multiple expansions of the coastline, and the ruins of the high-rise concrete apartment buildings which have value as cultural property.</p>	
Relevant industries: Shipbuilding, Coal mining	
Name of component part: Glover House and Office	
<p>(Overview of component part)</p> <p>The center of operations for Scottish-born merchant Thomas Glover, who associated with the leading spirits of the Meiji Restoration and became a catalyst for that movement. As a businessman too, he was a pioneer in Japan's modernization in the areas of coal mining and shipbuilding, turning the Kosuge Slip Dock and the Takashima Coal Mine into commercial operations and contributing to industrial development.</p>	

World Heritage Plaques

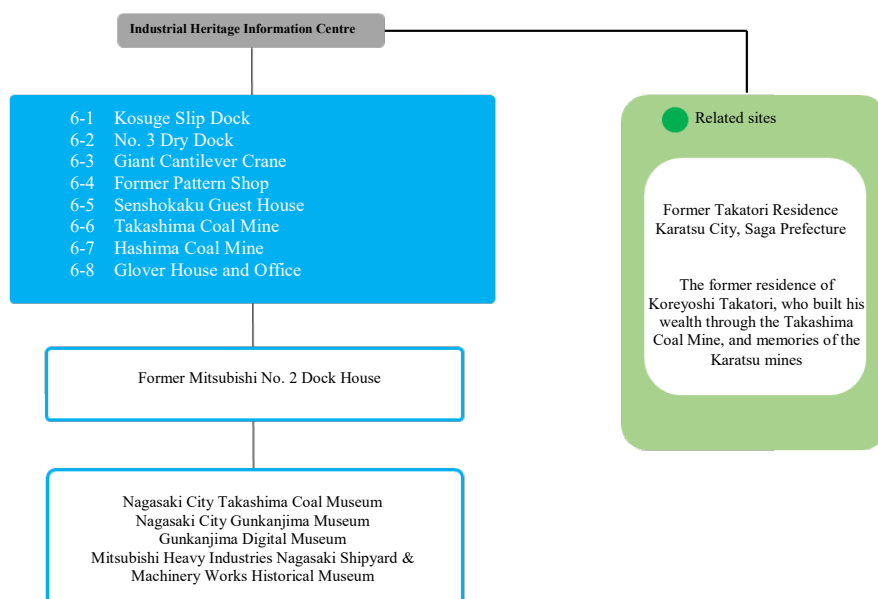
In line with the UNESCO Guidelines, World Heritage plaques have been installed at the various component parts to inform visitors properly about the OUV of the property.



Nagasaki Area: Distribution of Interpretation Facilities



Nagasaki Area: Hierarchy of Physical Interpretation and Presentation



Access Guide Maps

Access guide maps for the component parts in each area have been produced in both Japanese and English and are distributed free to visitors. The Nagasaki area map will also be available in Chinese and Korean as of early December. The access maps are designed to help tourists orient themselves in relation to the component parts of the various areas and enable them to visit as many component parts as possible within each area.

By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites.



Information Counters

These are set up in administrative institutions and airports to distribute access guide maps and other information.



Nagasaki City Hall



Nagasaki Airport

Guide Map Distribution Points and Number of Maps Distributed

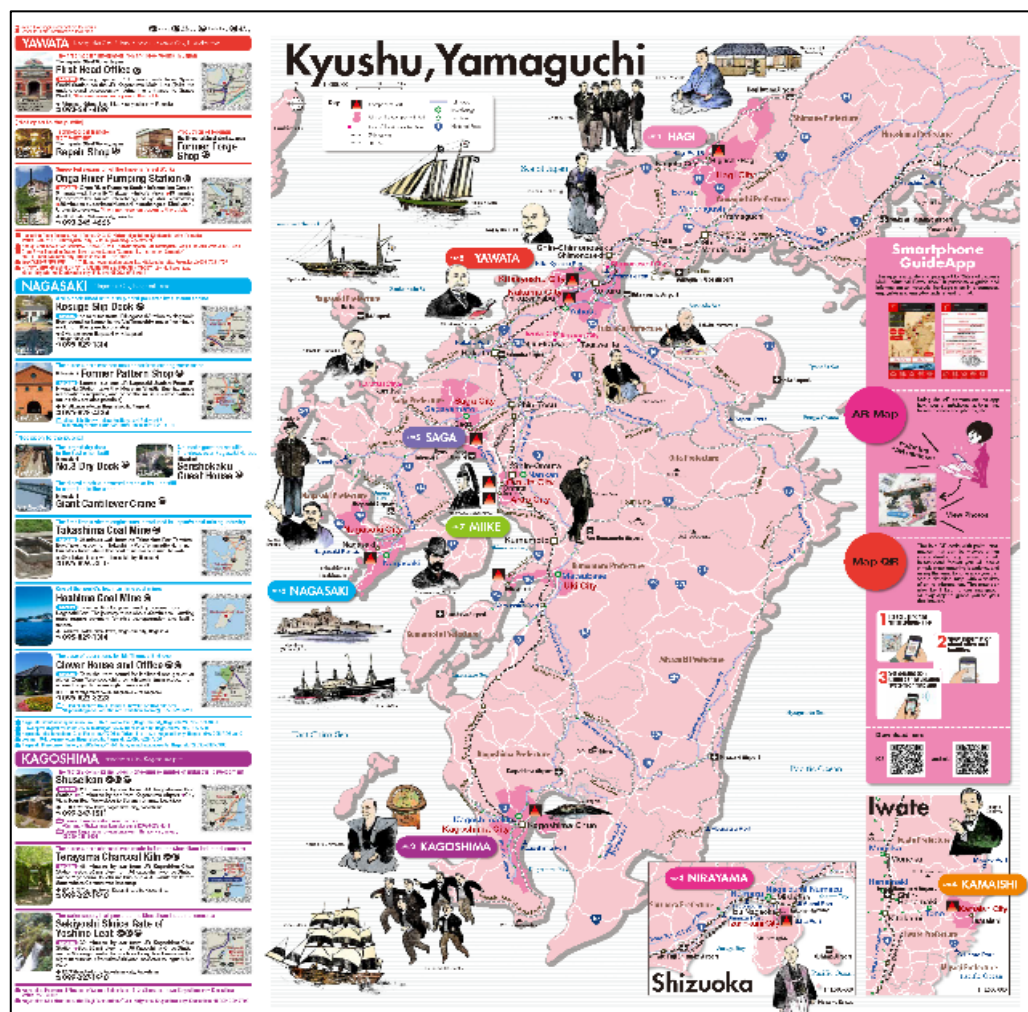
Guide map distribution points and the number of maps distributed are as follows.

PROPERTY MAP		NAGASAKI MAP		Cumulative total distributed across all areas
Total distributed	177,762	Total distributed	43,820	
Japanese & English	177,762	Japanese	43,820	464,025
Main distribution points	No. distributed	Main distribution points	No. distributed	
Administrative institutions	300	Administrative institutions	14,605	
Airports	550	Airports	1,300	
Hotels	50	Hotels	1,600	
Rental cars	100	Rental cars	100	
JR (Rail)	600	JR (Rail)	800	
Tourist information offices	700	Tourist information offices	731	
Rest stops	4,400	Rest stops	700	
NEXCO	168,500	NEXCO	6,800	
Public interest corporations, foundations, incorporated associations	550	Public interest corporations, foundations, incorporated associations	850	
Other	2,012	Other	16,334	
JR Kyushu Hakata Station Information Center		Glover Garden		
West Nippon Expressway retail Company Ltd.		Yamasa Shipping Co., Ltd.		
West Nippon Expressway Service Holdings Co., Ltd.		Gunkanjima Digital Museum		
Fugetsu Foods Co., Ltd.		Mitsubishi Heavy Industries, Ltd.		
Fukuoka International Airport Co., Ltd.		JTB Corporation		
Nagasaki Airport		Nakama City Community Center “Nakama Gaido no Kai”		
Kagoshima Prefectural Library		Seaman Company		
JR Kagoshima-Chuo Station Tourist Information Center		Nagasaki Museum of History and Culture		
Kitakyushu Convention & Visitors Association		Fukuoka City Tourist Information Center		
Industrial Promotion Department, Omura City Office		Hakata Station Tourist Information Center		
JR Miyazaki Station Tourist Information Center		Fukuoka Airport		
		Nagasaki Airport		

World Heritage Route

In accordance with the Interpretation Strategy, and also as noted in pages 395–396 of the Nomination Document, the World Heritage Route Promotion Council was founded to provide guidance and tourism infrastructure for understanding World Heritage as a whole. The Council attracts visitors to all component parts and related sites by producing maps, apps, and GPS navigation and by installing road signs and other signage using the common logo to promote the Sites of Japan's Meiji Industrial Revolution so that visitors are able to understand the World Heritage value constituted by the 23 component parts.

Work will continue to be undertaken steadily pursuant to the Nomination Document and the Interpretation Plan.





Map on p. 396 of the Nomination Document



World Heritage Route Promotion Council meeting

Installation of Road Signage, Etc., Using the Common Logo

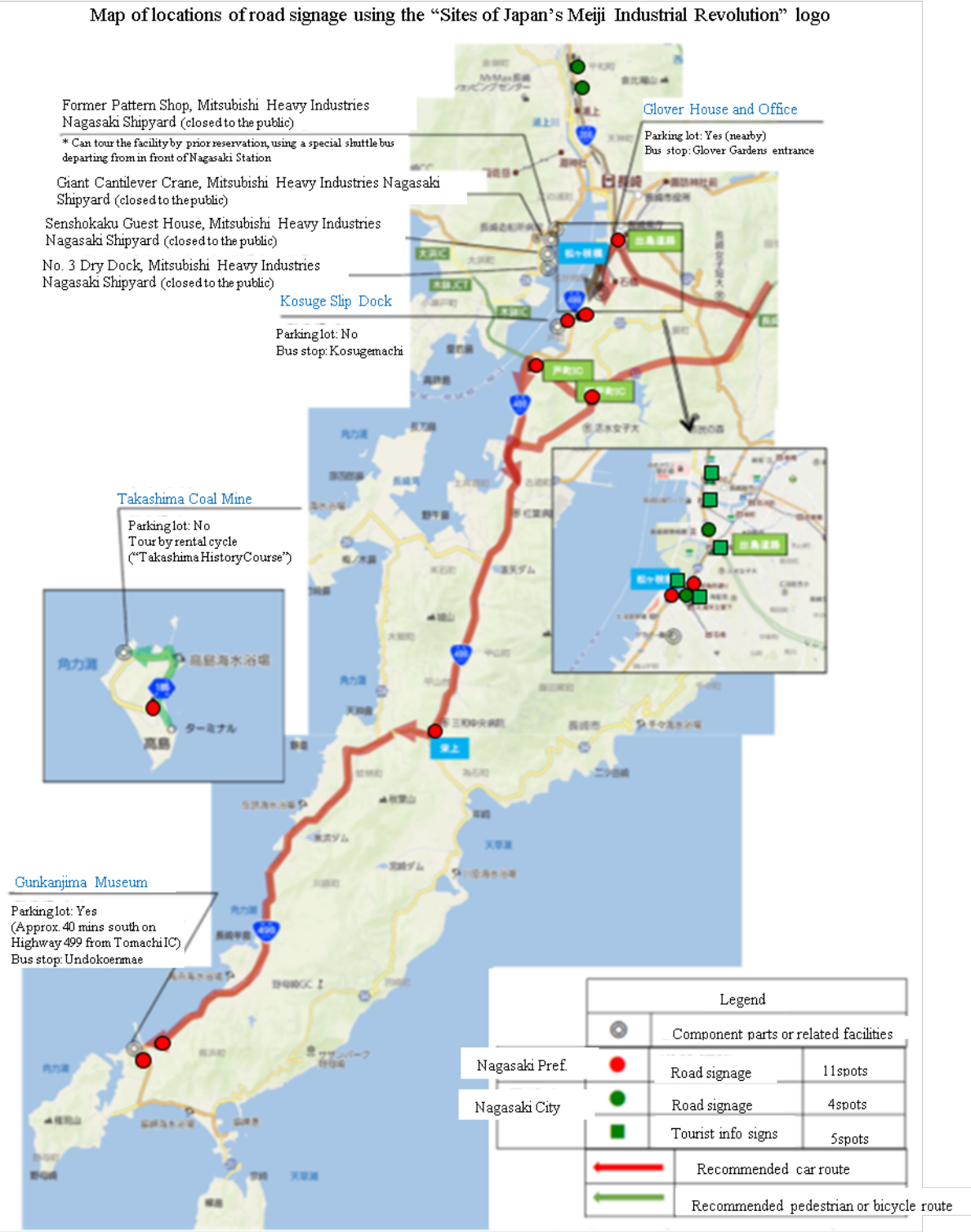
Status of installation of road signage

Place	No. of signs installed
Nagasaki City	20

Photos of road signage



Locations of Road Signs Using the Common Logo



Linkage with Car Navigation (Denso Car Navigation)

Example of linkage with smartphone app so that the target destination can be sent to a car navigation system



The destination can be sent directly from a smartphone to the car navigation system.



A video on how to use the application has been put up on YouTube.



App Utilization

The app introduces the Sites of Japan's Meiji Industrial Revolution, including detailed stories and explanations, as well as the historical background, using video and computer graphics, etc. Users can earn points by playing games and using the AR camera on the app and use them as coupons for souvenirs and other prizes. As such, it serves as a mechanism for both deepening understanding of World Heritage value and feeding back into World Heritage Route tours. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.



Onsite camera (CG)



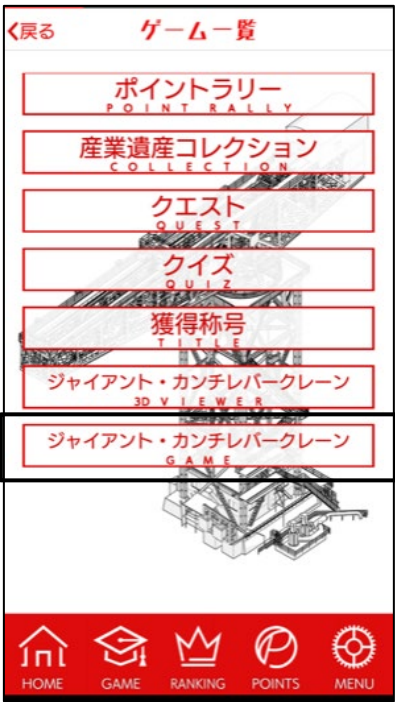
Nagasaki Shipyard Conservation and Management Plan

In addition to physical inspection of the Former Pattern Shop and via harbour cruises, MHI will, provided that there are no commercial issues, cooperate with a proposal presented by the Scottish Government and Japanese Government in a Joint Venture which will: 1) digitally document, using laser scanning technology, the Giant Cantilever Crane, producing a 3D model of the structure which can be used as an accurate baseline record; 2) through the production of the 3D model, enable the monitoring and analysis of the fabric of the crane as it continues to operate within the shipyard, thereby supporting its long-term conservation; 3) increase public awareness, interest and education through visual presentation, including the provision of virtual public access using the 3D model; and 4) build capacity through sharing experience and expertise in digital documentation and conservation technologies.

While some component parts are not open to the public because they are working facilities, visitors can view them via the app. In the Nagasaki area too, while the Giant Cantilever Crane and No. 3 Dry Dock at the Mitsubishi Heavy Industries Nagasaki Shipyard are closed to the public, video created from scanned data enables visitors to deepen their understanding by examining the sites right down to the fine details. This app-based presentation strategy is being advanced based on the Conservation and Management Plan (CMP) submitted to UNESCO and could also be used to communicate information about other component parts which are similarly closed to the public.

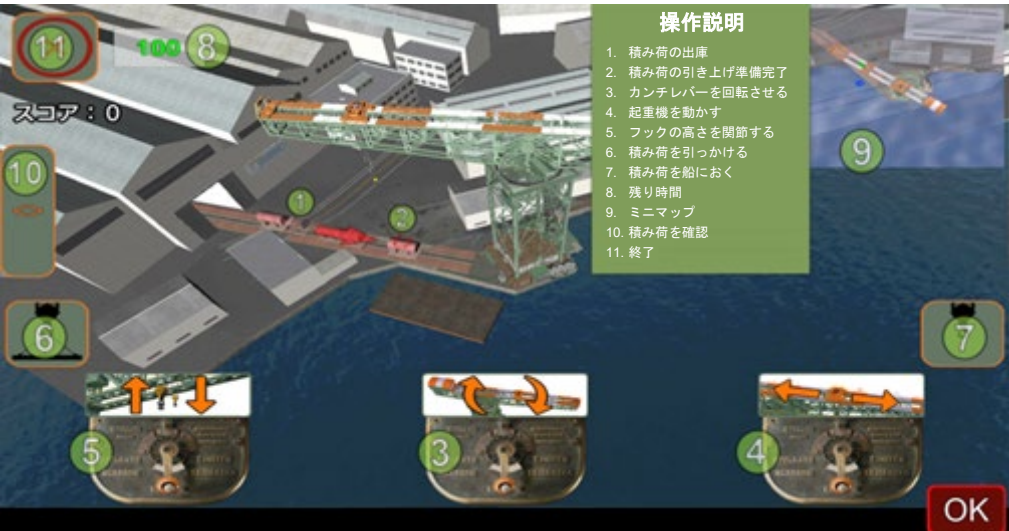
Example of an Initiative to Increase Digital Access Noted in the CMP

■ Giant Cantilever Crane Simulation Game



Choose from easy and difficult levels

Easy level



Difficult level

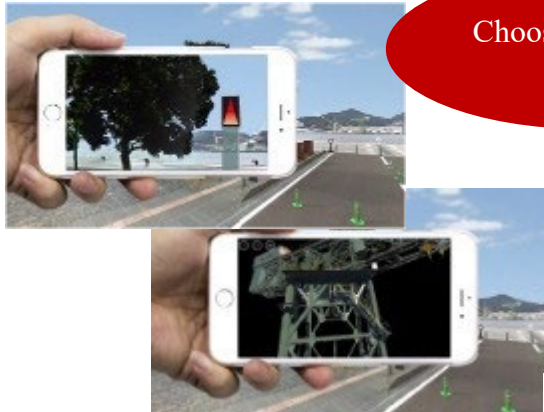


Visitors can look across at the Giant Cantilever Crane from the Nagasaki Seaside Park and watch a video by activating the AR camera while onsite.



■ Giant Cantilever Crane Simulator

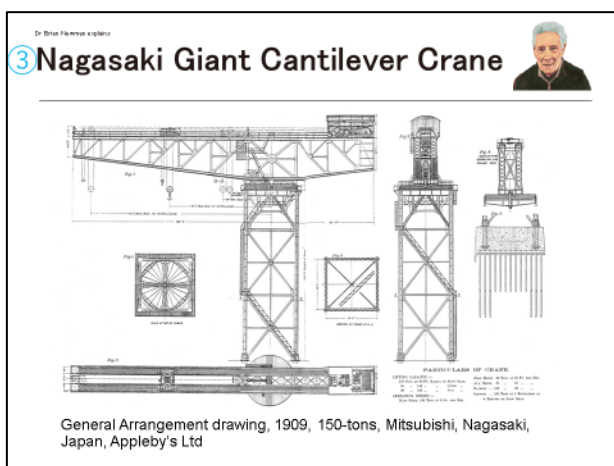
The app uses 3D measurement data to provide visitors with a detailed and immersive experience of the crane's structure, etc. Linking the app to GPS encourages people to visit World Heritage sites by limiting simulation use to the vicinity of the component parts.



Choose a viewing point

Viewing points set up at inaccessible sites and linked to 3D models to boost understanding

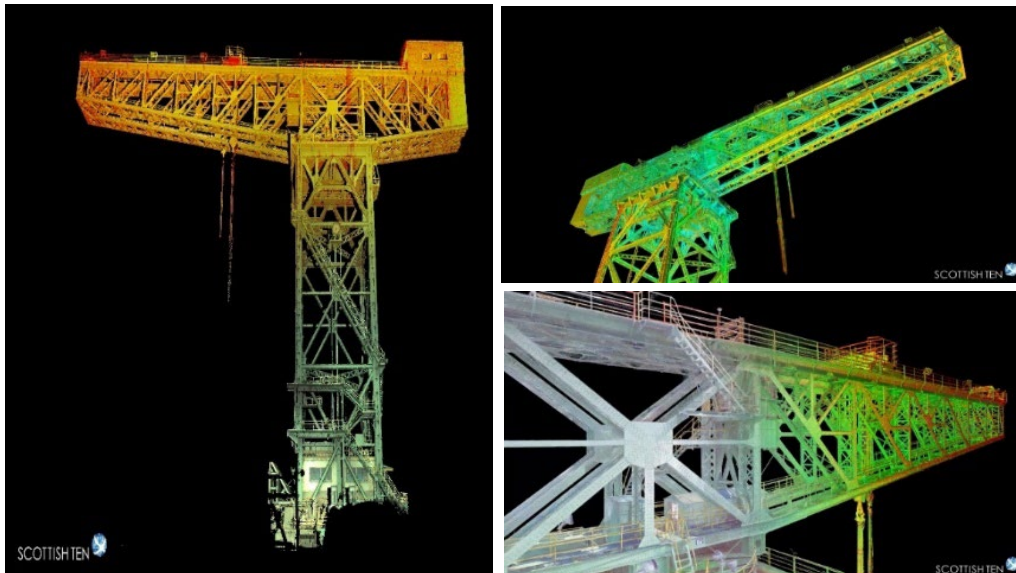
The Industrial Heritage Information Centre offers a commentary by Dr. Brian Newman on the Giant Cantilever Crane. This, together with the Giant Cantilever Crane exhibits in the Nagasaki area, is part of a comprehensive approach designed to realize interpretation that meets international best practices.



Use of Scottish Ten Laser Scan Data

This project set out in late 2009 to digitally document Scotland's then five World Heritage Sites and a further five international heritage sites to create accurate 3D data to help with their conservation and management, their interpretation and virtual access. As part of the Scottish Ten 3D digital documentation, laser scans were made of Nagasaki's Giant Cantilever Crane, the Nagasaki Shipyard No. 3 Dry Dock, the Kosuge Slip Dock, and Hashima Island. The data was uploaded as official World Heritage app content and is used to provide virtual site visits. The plan is also to use it for conservation, management, and repair work in future.

Laser scan images of the Giant Cantilever Crane



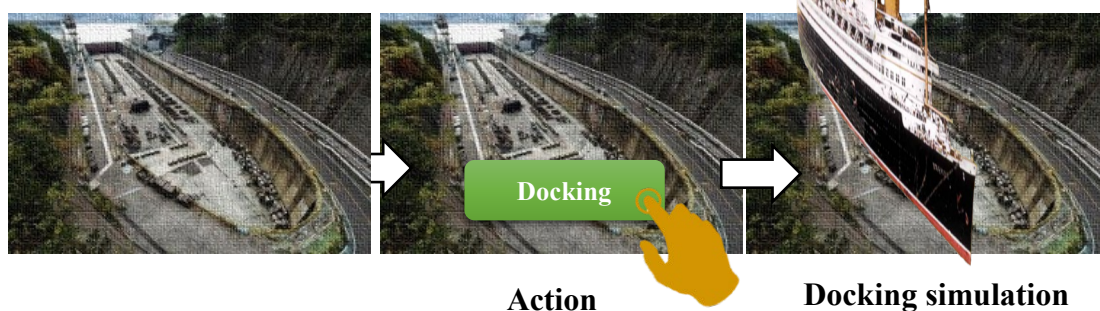
Laser scan image of Hashima Island



- Use of a 3D model of the Nagasaki Shipyard No. 3 Dry Dock (planned)
Visitors will be able to use the app to experience a ship coming into dock at the No. 3 Dry Dock, which is closed to the public. The idea is to communicate information about the functions of this component part and promote understanding.

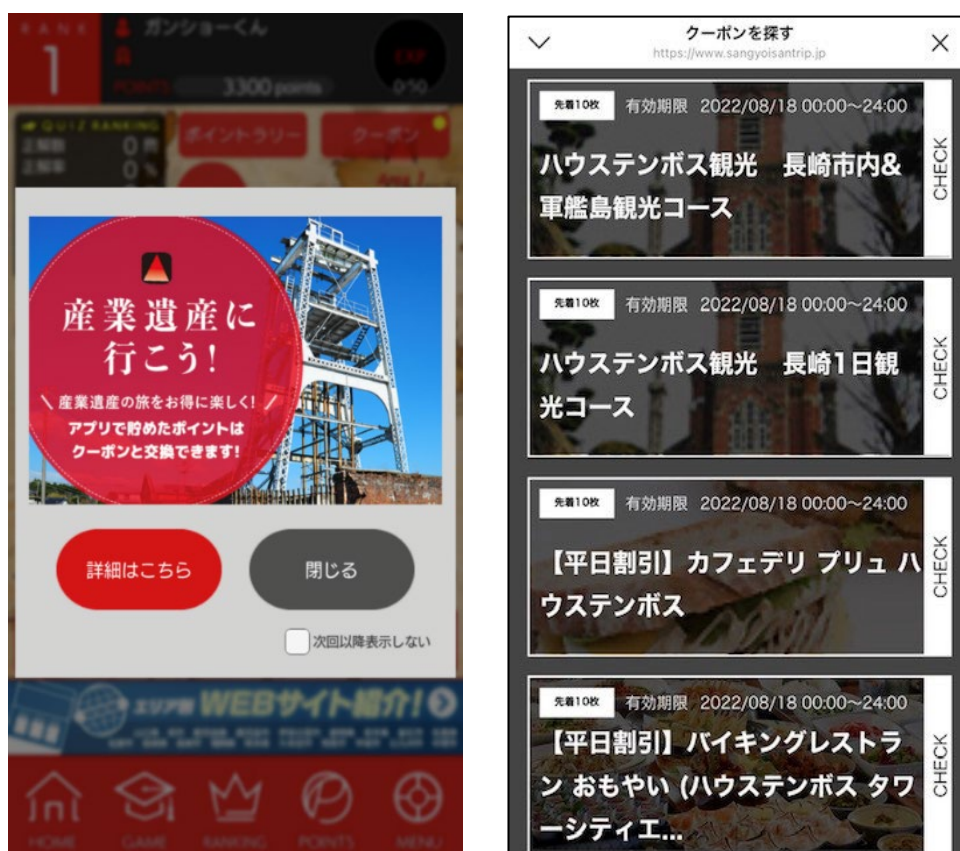
(A similar system will also be built for the Kosuge Slip Dock.)

3D view of the whole dock



Use of Line App

Points acquired on the app can be exchanged for coupons.



Point-of-purchase advertising has been created and placed in stations and information centres, etc., to encourage people to sign up to the LINE app.



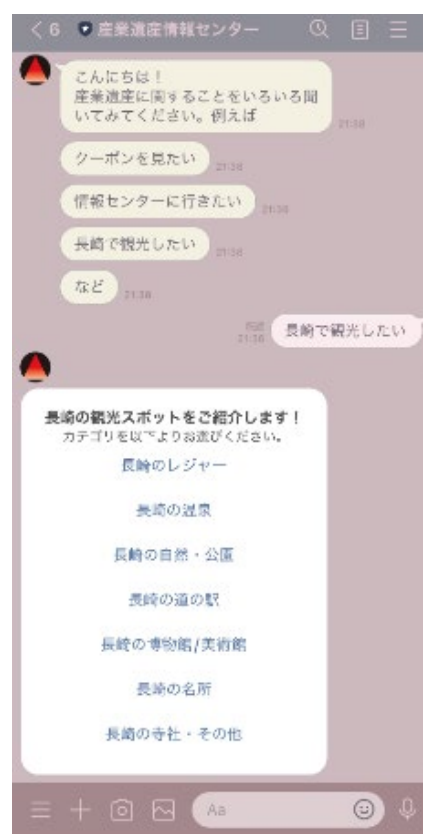
LINE is used as a runway for achieving two-way communication geared to the circumstances of the user based on locational information, such as the use of existing guide apps and communication about coupons that can be used in shops at the area visited. The service is provided in multiple languages so as to support international visitors.



LINE functions (examples)



Introduction to model courses



AI chatbot function



Gourmet information

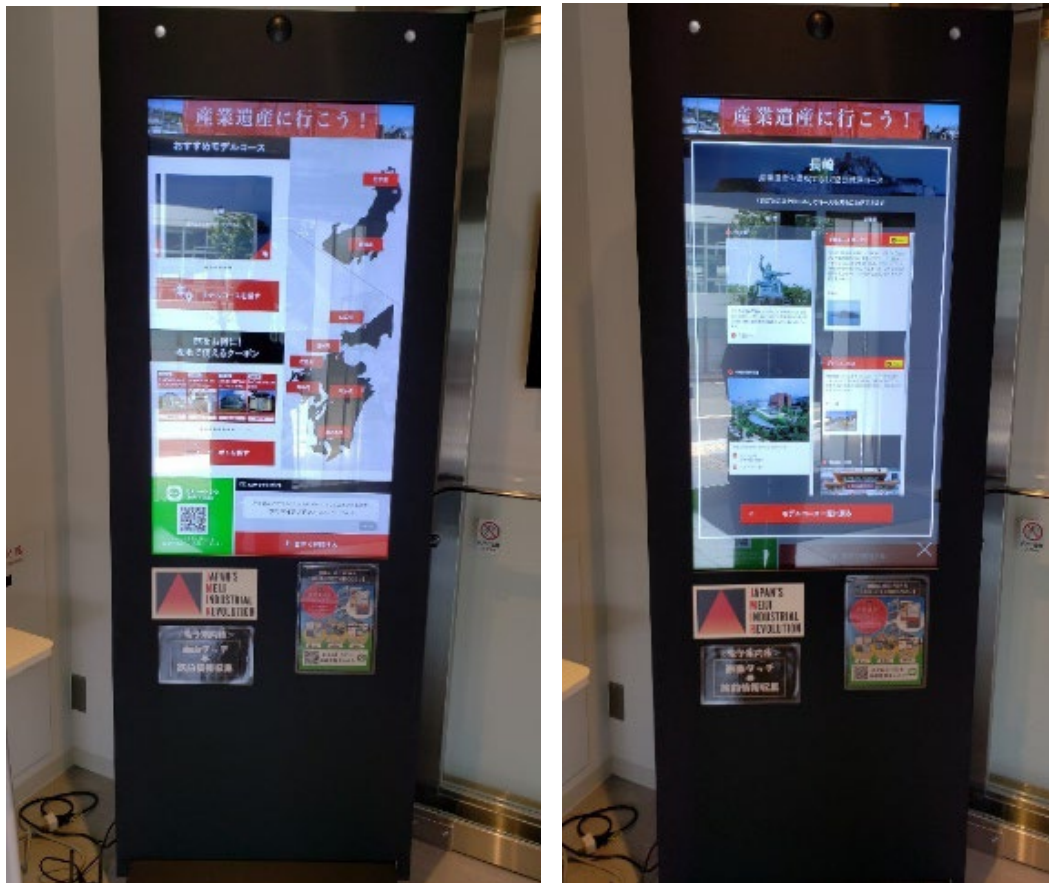
Tourist spots

Traffic information

Accommodation information

Digital Signage Functions

Digital signage has been installed in the Industrial Heritage Information Centre as a mechanism for encouraging multi-destination tourism by displaying local guide maps and information on multi-destination industrial heritage routes. AI chatbots have also been installed to respond to a wide range of multi-destination routes and tourism questions in real time.



Visitor Centres

In line with the Interpretation Strategy, the Nagasaki area has created five interpretation facilities, one of which is a visitor centre located in the former Mitsubishi No. 2 Dock House. Each centre aims to work with the local community to provide exhibits that facilitate visitor understanding of the value of the property, foregrounding the presentation of the intrinsic value of the World Heritage while also ensuring alignment with local historical and cultural values. Based on points raised in interpretation audits, local visitor centres will work with the Industrial Heritage Information Centre to digitize a huge volume of primary historic materials and use digital tools to enhance exhibits.

Reference: Projection mapping at Hashima Island at the time of World Heritage listing



[Gunkanjima Digital Museum]

This facility offers a range of exhibits that use projection mapping on giant screens and VR based on the latest digital technologies, etc., to provide an experience of parts of the island closed to island tours, as well as the lifestyles of long-ago island residents.

Projection mapping on giant screens



Video content by theme (“Unknown Gunkanjima” series)

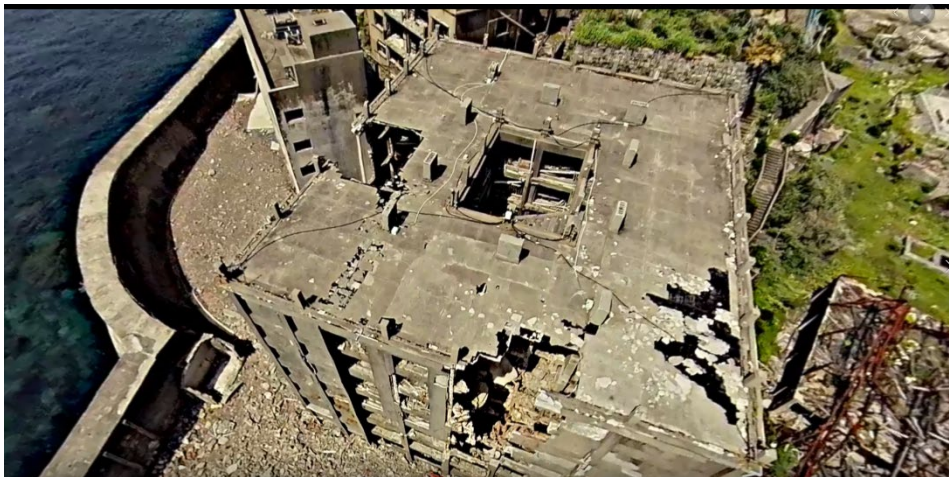


Working with the local community to use digital data from photographs of Hashima Island primary materials and present it as digital content that can only be viewed at the museum



VR videos

Drone footage of the apartment blocks and other off-limit areas goes right inside buildings, providing viewers with a VR experience of those areas.



Aerial photo



Photo of Building No.30 interior

Digital Museum website



[Former Mitsubishi No. 2 Dock House]

This facility is a visitor centre for the Nagasaki area, and is located in Glover Garden, where Glover House and Office are located, which is one of the components of the Nagasaki area that is easily accessible to tourists. The content of the exhibits will be reviewed in FY2022, and the facility will be developed in phases from FY2023 onward, including exhibits on the entire history of the area.



[Nagasaki City Takashima Coal Museum]

Displays trams, coal tubs, and mining machinery used inside and outside the mine back when the Takashima Coal Mine was operational



[Nagasaki City Gunkanjima Museum]

Panels and videos, etc., depict the history and culture of “Hashima Coal Mine (also known as Gunkanjima),” as well as its contribution to Japan’s modernization.



Appendix 1-6

[Mitsubishi Heavy Industries Nagasaki Shipyard and Machinery Works Historical Museum]
The museum was established in October 1985 so as to leave a permanent record for later generations of the role played by the Nagasaki Shipyard in Japan's modernization. The historical evolution of the shipyard is depicted via photos, etc., along with numerous rare items telling the tale of technological advance, including Japan's oldest machine tools, a diving bell (a submersible for seafloor surveying), and the first domestically-produced steam turbine.



Monitor tour



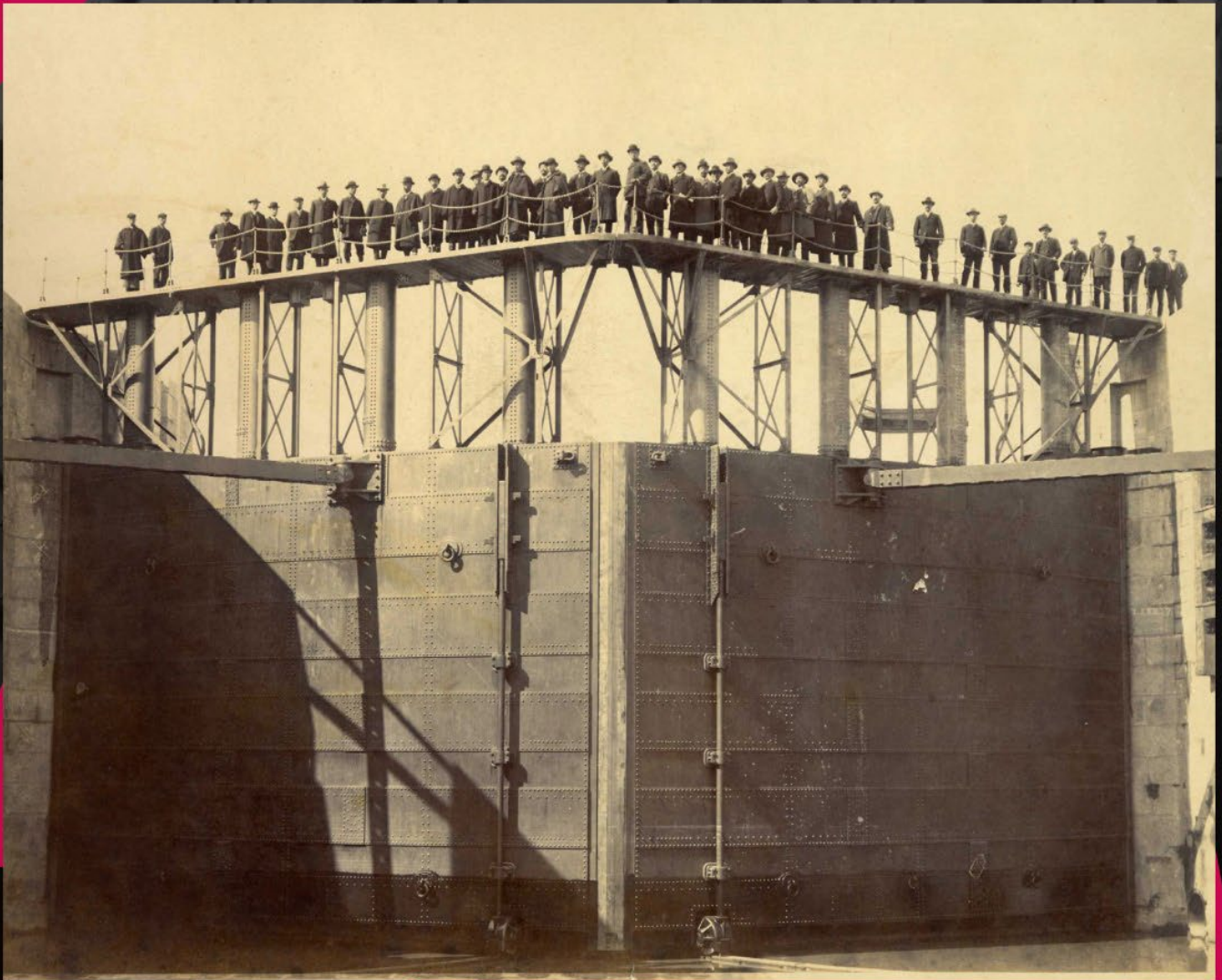
Learning Program for Children

Kosuge Slip Dock

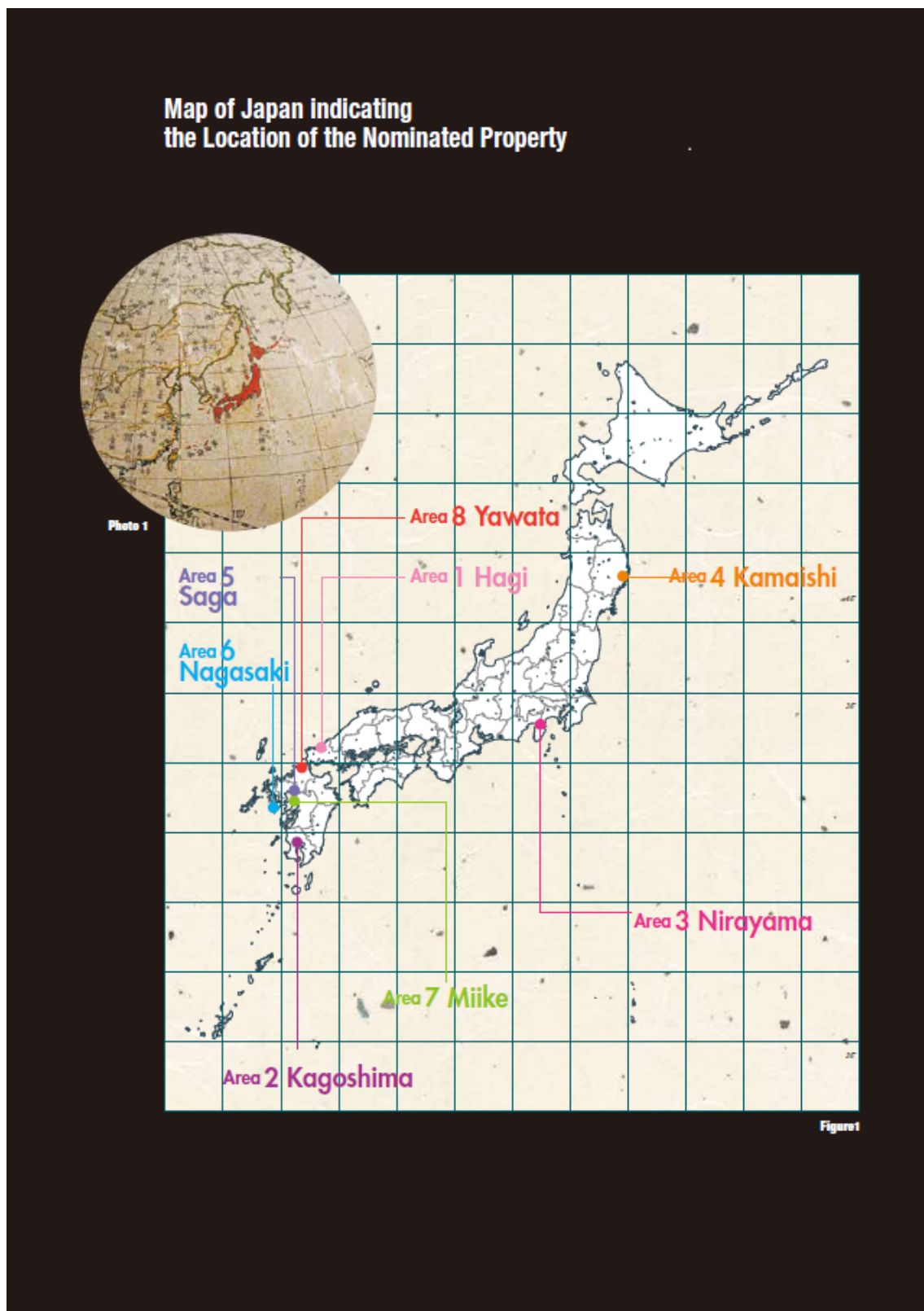


Area 7 Miike

AREA-SPECIFIC INTERPRETATION PLAN



【Area List】

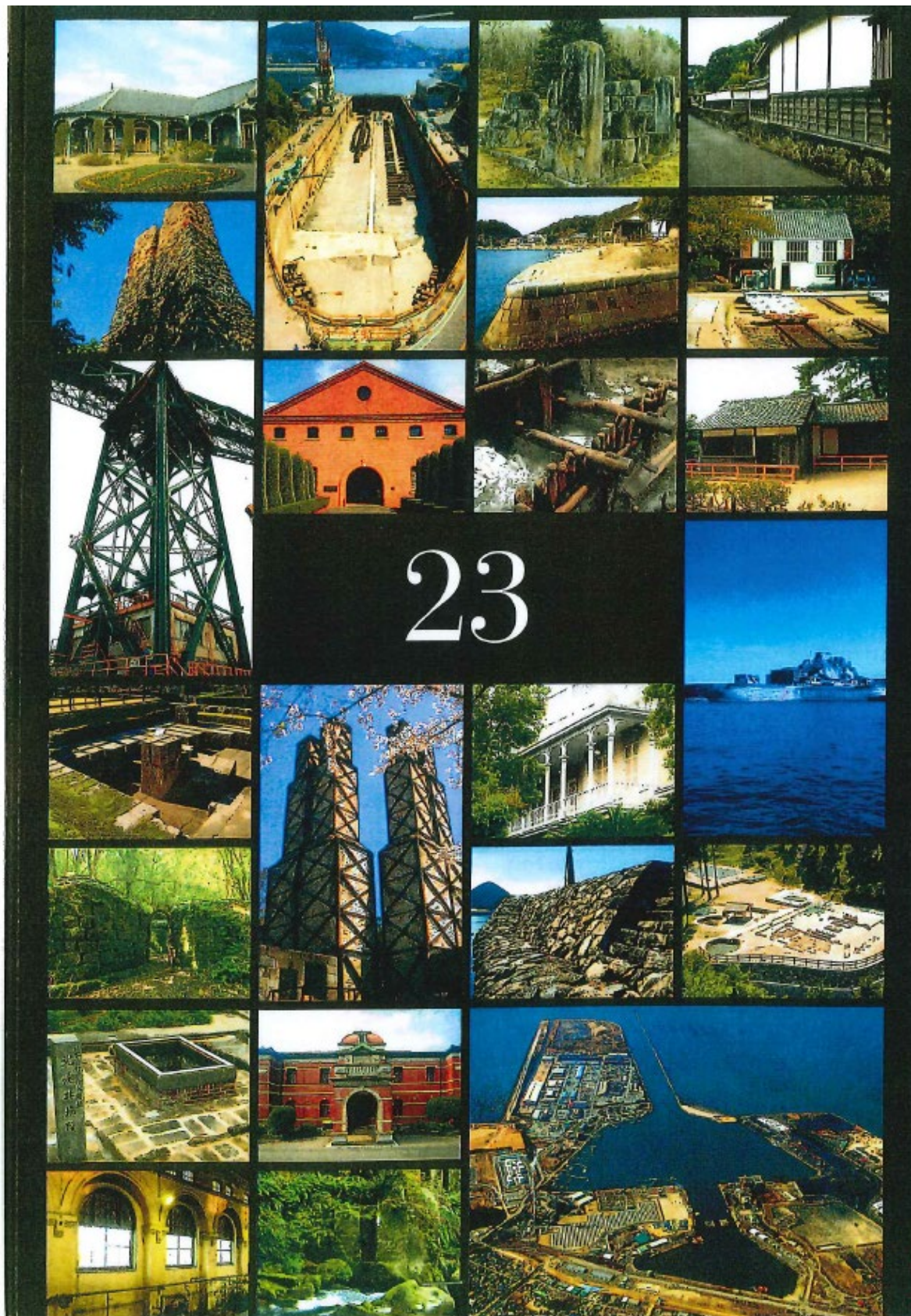


【Component Name】

List of the Component Parts

Area	Site	ID	Component Part
A1 Hagi	1 Hagi Proto-industrial Heritage	1-1	Hagi Reverberatory Furnace
		1-2	Ebisugahana Shipyard
		1-3	Ohitayama Tataro Iron Works
		1-4	Hagi Castle Town
		1-5	Shokasonjuku Academy
A2 Kagoshima	2 Shuseikan	2-1	Shuseikan
		2-2	Terayama Charcoal Kiln
		2-3	Sekiyoshi Sluice Gate of Yoshino Leat
A3 Nirayama	3 Nirayama Reverberatory Furnaces	3-1	Nirayama Reverberatory Furnaces
A4 Kamaishi	4 Hashino Iron Mining and Smelting Site	4-1	Hashino Iron Mining and Smelting Site
A5 Saga	5 Mietsu Naval Dock	5-1	Mietsu Naval Dock
A6 Nagasaki	6 Nagasaki Shipyard	6-1	Kosuge Slip Dock
		6-2	Mitsubishi No.3 Dry Dock
		6-3	Mitsubishi Giant Cantilever Crane
		6-4	Mitsubishi Former Pattern Shop
		6-5	Mitsubishi Senshokaku Guest House
	7 Takashima Coal Mine	6-6	Takashima Coal Mine
		6-7	Hashima Coal Mine
	8 Glover House and Office	6-8	Glover House and Office
A7 Miike	9 Miike Coal Mine and Miike Port	7-1	Miike Coal Mine and Miike Port
	10 Misumi West Port	7-2	Misumi West Port
A8 Yawata	11 The Imperial Steel Works, Japan	8-1	The Imperial Steel Works, Japan
		8-2	Onga River Pumping Station

Table1



SITES OF
JAPAN'S
MEIJI INDUSTRIAL
REVOLUTION
IRON & STEEL, SHIPBUILDING
AND COAL MINING

Executive Summary

Brief Synthesis

“Sites of Japan’s Meiji Industrial Revolution: : Iron and Steel, Shipbuilding and Coal Mining” comprise a singular ensemble of industrial heritage sites that represent the first successful transfer of industrialization from the West to a non-Western nation.

From the middle of the 19th century to the early 20th century, Japan achieved rapid industrialization that was founded on the key industrial sectors of shipbuilding, iron and steel, and coal mining. The initial phase was one of trial and error experimentation in iron making and shipbuilding, based mostly on Western textbooks, and by copying examples of Western ships. This was followed by the more successful importation of Western technology and the expertise to operate it and, by the late Meiji period, full-blown industrialization through newly acquired domestic expertise and the active adaptation of Western technology to best suit Japanese needs and social traditions. This successful industrialization was achieved in just a little over 50 years without colonization, and on Japan’s own terms. The property is testimony to this unique phase in world history.

Justification for Criteria

Criterion (ii)

The property is a series of heritage sites that, together, uniquely illustrate the process by which feudal Japan sought technology transfer from Western Europe and America from the middle of the 19th century. This technology was adopted and progressively adapted to satisfy specific domestic needs and social traditions, thus enabling Japan to become a world-ranking industrial nation by the early 20th century.

Criterion (iv)

The technological ensemble of key industrial sites of shipbuilding, iron and steel, and coal mining is testimony to Japan's unique achievement in world history as the first non-Western country to successfully industrialize. Viewed as an Asian cultural response to Western industrial values, the ensemble had no counterpart elsewhere in the world.

Statement of Integrity

The 23 component parts are the best, and often the only, surviving examples of the key attributes that represent shipbuilding, the iron and steel, and coal mining industries and that are necessary to express Outstanding Universal Value. In each case, the boundary of the component part has been drawn to include the essential features that, overall, contribute to Outstanding Universal Value.

Component parts are in good condition and have mechanisms in place to control deterioration and keep sites free from the adverse effects of development. They have been variously affected by continued use, re-use or lengthy periods of abandonment, and their physical integrity varies between well preserved and fragmentary, the latter being sufficiently intact to be able to represent the former whole. In some cases, where the evidence is primarily archaeological, sufficient investigation has been carried out to verify that a substantial archaeological site survives in good condition for further study and presentation. In other cases, in particular those that remain in operational industrial use, ongoing use and maintenance have resulted in an extraordinarily high level of integrity of working industrial elements.

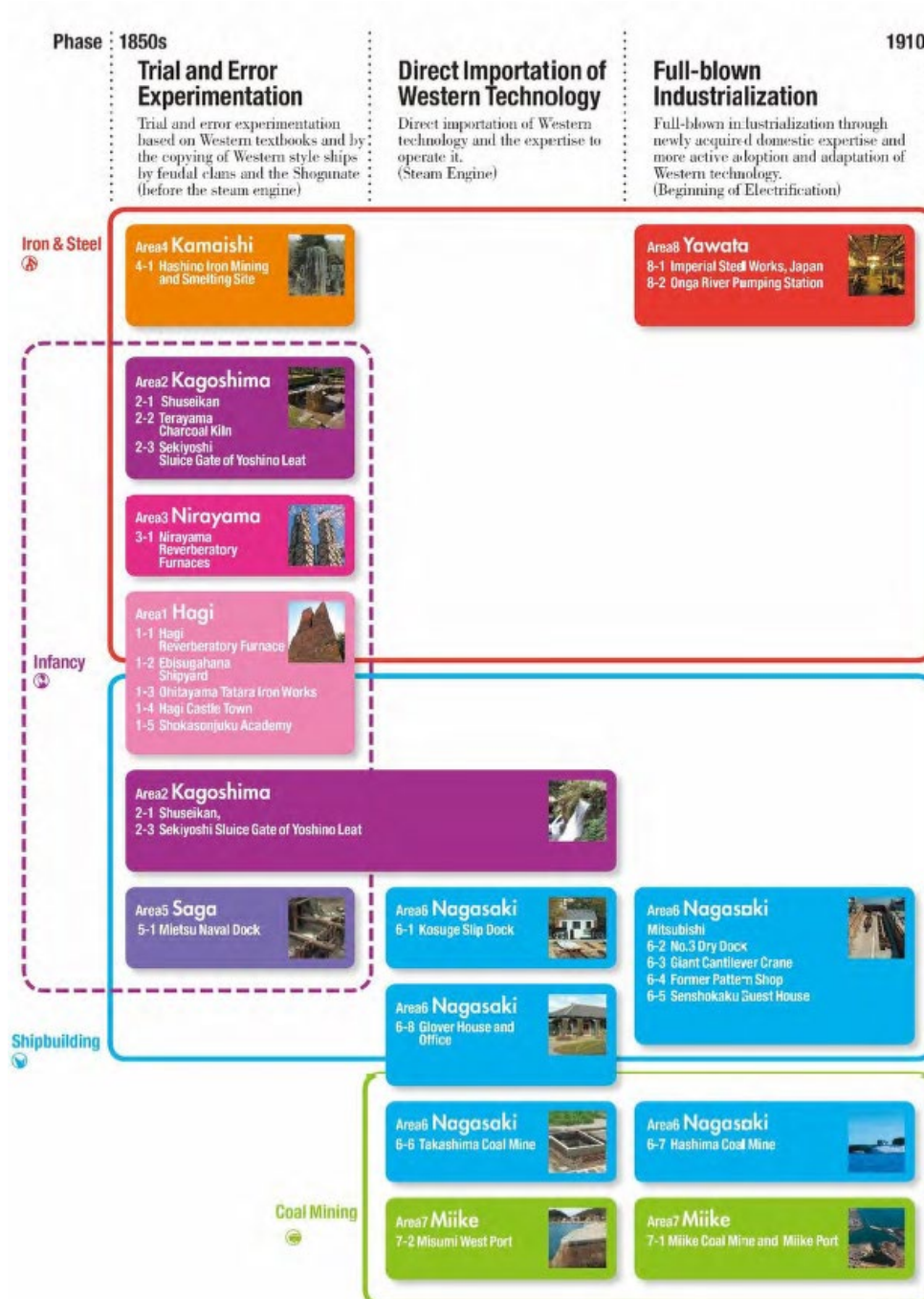
Statement of Authenticity

The property as a whole as well as at the level of each component part meets the conditions of authenticity in relation to Outstanding Universal Value. It has a high degree of authenticity as the best surviving group of industrial remains that represent, and demonstrate, the first, and rapid, transfer of industrialization from the West to a non-Western nation.

With regard to 'form and design' and 'materials and substance', the component parts constitute the original forms and materials of the range of industrial components necessary to represent the transfer of heavy industry from the West to Japan. Some contain sites that range from fragmentary or archaeological, that are nonetheless authentic relics of important industrial components of the series, to those that comprise substantially intact authentic physical remains that have been managed for many years as historic sites which display these characteristics. Others possess an extremely complete survival not only of form, design and materials but also of continuing use and function.

Industrial History Related to the Miike Area

The Miike Area encompasses component parts that retain records related to coal mining in the second phase, Direct Importation of Western Technology, and the third phase, Full-blown Industrialization, in the World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining,” a World Heritage site.



The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO on November 30, 2017, as an appendix to the State of Conservation Report noted the following:

11. Interpretation Plan (extract)

(1) Consistent OUV rollout across all component parts

Based on the Interpretation Strategy, the consistent interpretation of OUV should be presented across all component parts. This will be agreed by all stakeholders, and coordinated and implemented commonly in a branded World Heritage style.

(2) and (3) Progress in dealing with the “full history” of each site, including information gathering related to workers

Advice from international experts who are members of the Expert Committee on the Industrial Heritage including Operational Properties (Cabinet Secretariat of Japan), from the international heritage expert who was the ICOMOS technical evaluation field assessor of the World Heritage nomination of the “Sites of Japan’s Meiji Industrial Revolution”, and from the President of the ICOMOS International Scientific Committee on Interpretation and Presentation, comprises the following four key policies:

1) Focus on the interpretation of Outstanding Universal Value; in conformity with the primary purpose of the World Heritage, OUV of the inscribed property should be presented clearly at each site, not confusing with other, albeit related, issues. Based on this, Recommendation g)* should be implemented.

2) The scope of the “full history” of each site, except for the OUV period (from 1850s to 1910) as described on page 78, falls into two parts: prior to 1850s, and from 1910 to the present. The target of the full history should be narrowed down, considering the local values that supplement the understanding of the background of each component part. Where relevant, with regard to the interpretation of the full history on the location of each component part, high quality research such as collecting primary historical documents and recording oral testimonies should be carried out, and the result of this research should, at some stage, be made publicly available through appropriate media.

* Recommendation g)

“Preparing an interpretive strategy for the presentation of the nominated property, which gives particular emphasis to the way each of the sites contributes to OUV and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.”

Based on the Interpretation Strategy, we have had multiple audits of the current status of interpretation at the component parts and visitor centres, etc., in the various areas undertaken by international experts familiar with industrial assets and the interpretation thereof in countries around the world.

As a result, auditor Barry Gamble identified the following issues in relation to the Nagasaki area.

- The principal interpretation centre, Omuta Coal industry and Science Museum, is currently redeveloping its exhibitions. The proposed location for the “common exhibition” within the entrance area is appropriate. From here, it will be a straightforward task of interpretation planning to reorganize and re-present the first section of the galleries to introduce Miike’s contribution to OUV, and that of its Component Parts and various elements. There are already good exhibits on a number of these that will require little modification.
- The museum has the opportunity to become a world class coal mining interpretive centre as, not only is it located next to a key coal mining Component Part of a WHS, it contains innovatively displayed and highly impressive working exhibits of large-scale coal mining equipment (albeit more recent technology). To achieve this goal, it is recommended that a study tour is undertaken of some European coal mines such as the recently inscribed World Heritage sites in France and Belgium, Big Pit in Wales (part of Blaenavon WHS in the UK), and the German Mining Museum in Bochum (Germany) that has just had a major redevelopment of its galleries.
- The Nagasaki Customs House is awaiting further interpretive developments. A word of advice given on site was that the installation of facilities or structures close to the building should be given greater consideration as to their location (e.g. new visitor toilet).
- Mikawa Pit is the last production section to exploit the Miike Coalfield (from 1945), even mining under the Ariake Sea. Presentation of this associated site enhances the ‘full history’ of the Component Part by its focus on the social theme with the labour strike, coalmine disaster, and labour issues including prisoners of war working in the mine. Along with the Mitsui Manato Club (dating from 1907; contemporary with Miike Port) with which it is connected by a short pathway, it provides the opportunity to enhance the visitor offering within the area and to create positive social and economic impacts.
- The opportunity to open up the railway line to connect the Pits to the Port offers both economic potential and the ability to fulfil a critical interpretive aspect on the how the Area functioned and why it is significant. It could also provide a critical attraction to

draw visitors to Miike and link its key elements in a single visitor experience that would further encourage perhaps an overnight stay.

- Misumi West Port is currently presenting out of date and poor quality interpretation and needs to address its presentation and exhibitions in relation to the WHS as soon as possible. There has been no significant change to this infrastructure since the 2017 audit. The exterior interpretation panels pre-date the WHS inscription and some of Ryujokan's exhibitions are in poor condition and quality and are presented with an unacceptable "temporary" appearance. The site visit discussed the WHS responsibility to engage with and to reveal to the community and visitors the OUV of the WHS and the contribution of Miike and Misumi West Port to this. There was an assurance that a permanent exhibition is currently being designed and developed, due to open in four years following earthquake strengthening of the building. However, there was also a financial commitment to update the exterior panels and to install a temporary exhibition within the Ryujokan of a more appropriate standard (both in content and design) within the next year.

Discussions have been held regarding this interpretation plan for the Miike Area thus far by the Local Conservation Council.

The Omuta Coal Industry and Science Museum mentioned in the evaluation above has completed redevelopment of its exhibits, has installed the common exhibition, and provides various other exhibits that help visitors better understand the component parts. Ryujokan in Misumi West Port renewed its interpretive panels in 2018, as had been pointed out in the audit. As of this time, renewed portions in Ryujokan have not been made multilingual, but the common exhibition installed at each of the visitor centres is scheduled to become so after 2024, and exhibits are undergoing systematic development. Additionally, in cooperation with the Industrial Heritage Information Centre, exhibits are planned to be steadily implemented in this area that better reflect the World Heritage values in harmony with the historical and cultural values of the region, keeping in mind improvements to the interpretation of the Old Nagasaki Customs House and matters pointed out regarding utilization of Mikawa Pit and the Coal Railway.

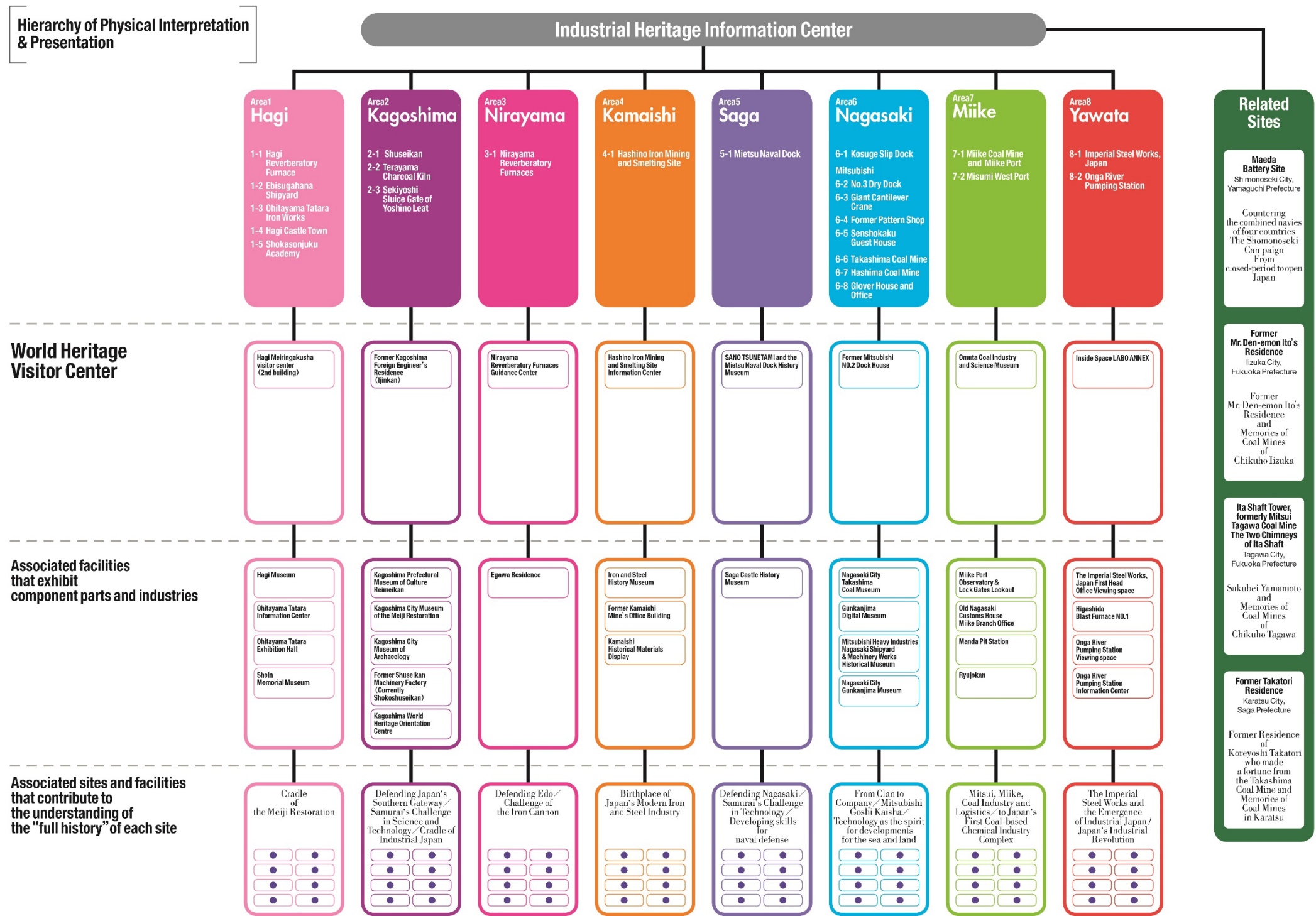
The local conservation council will review the implementation progress of this plan and consider ways to make improvements as appropriate.



Local Conservation Council meeting

Hierarchy of Physical Interpretation and Presentation

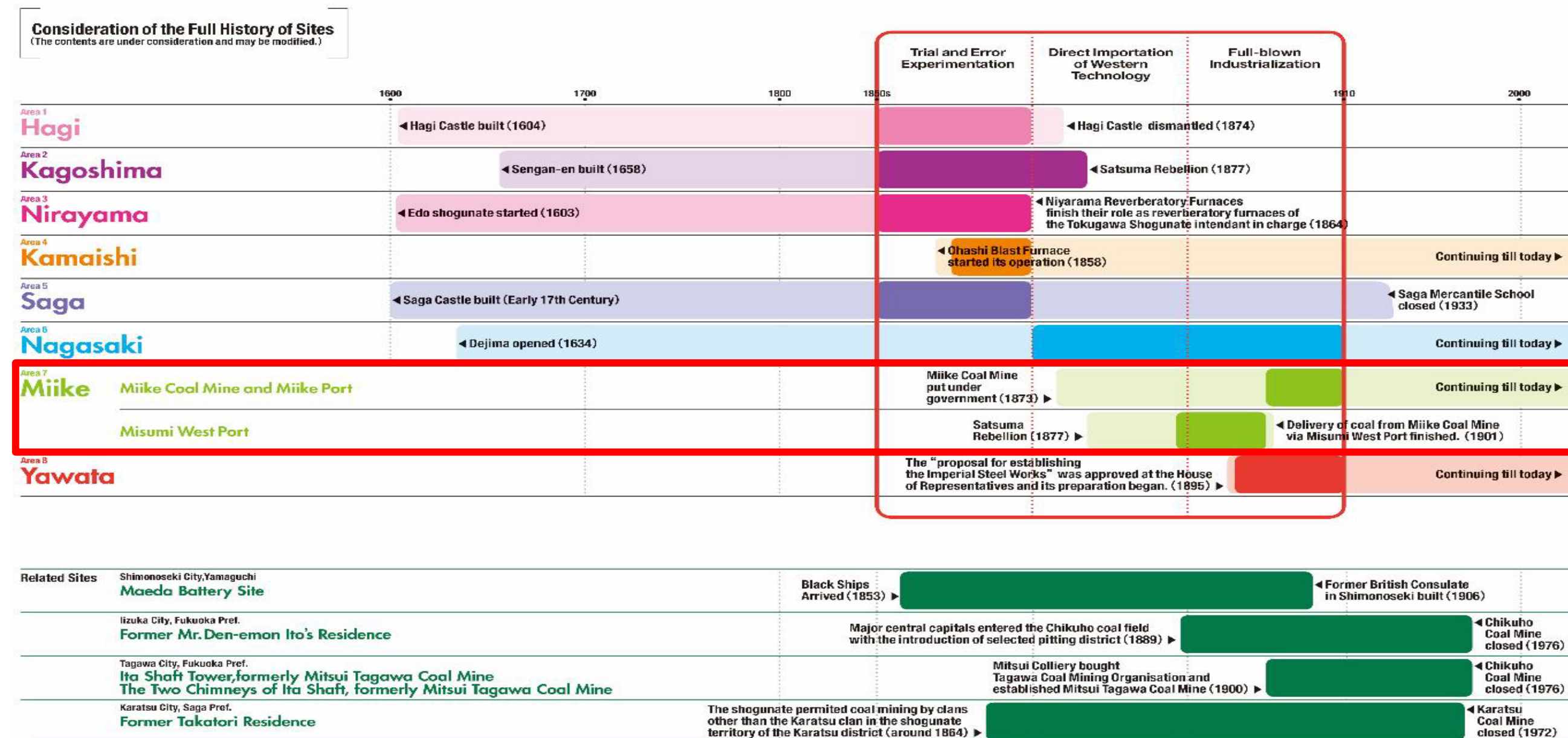
The Industrial Heritage Information Centre and the various local visitor centres will work together to build a system enabling the effective communication of the OUV of the Sites of Japan’s Meiji Industrial Revolution.



Related sites: Sites that were component part candidates in the provisional UNESCO World Heritage listing on the January 5, 2009, and that comprise industrial heritage (valuable assets that provide insight into the historical background and social situation of the time) that will be utilized in an integrated manner with the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution.”

Consideration of the Full History of Sites

The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO in 2017, addressed consideration of the full history of sites as shown in the figure below.



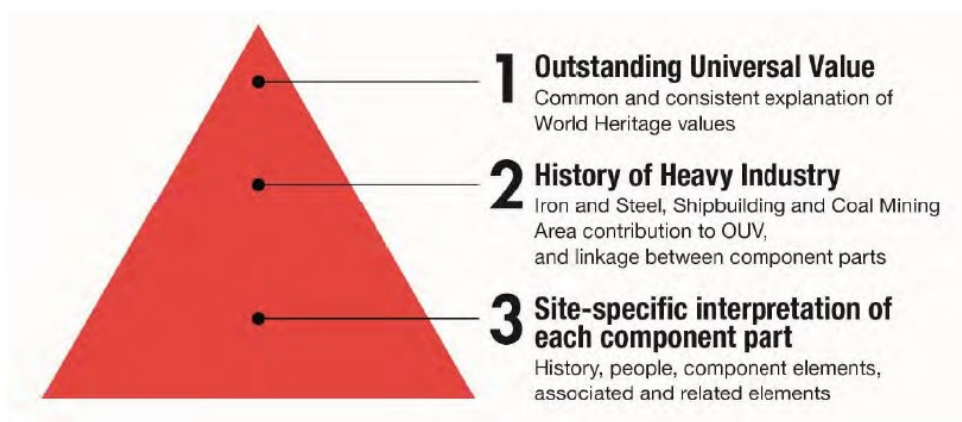
Interpretation in the Miike Area

Approach of the Interpretation Strategy

The Interpretation Strategy provides the following schematic in relation to concepts for interpretation and presentation.

Interpretation for the Miike area too will be approached in line with this in order to resolve the issues identified in interpretation audits.

Interpretation and presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of value and themes

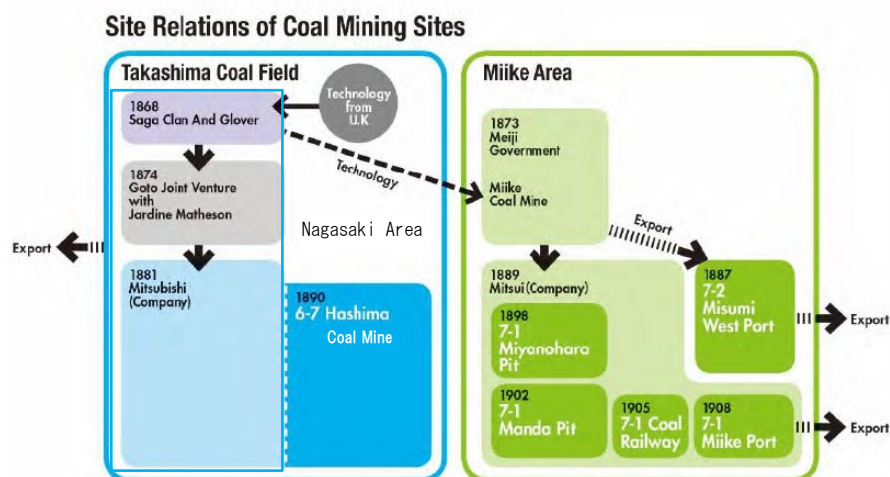
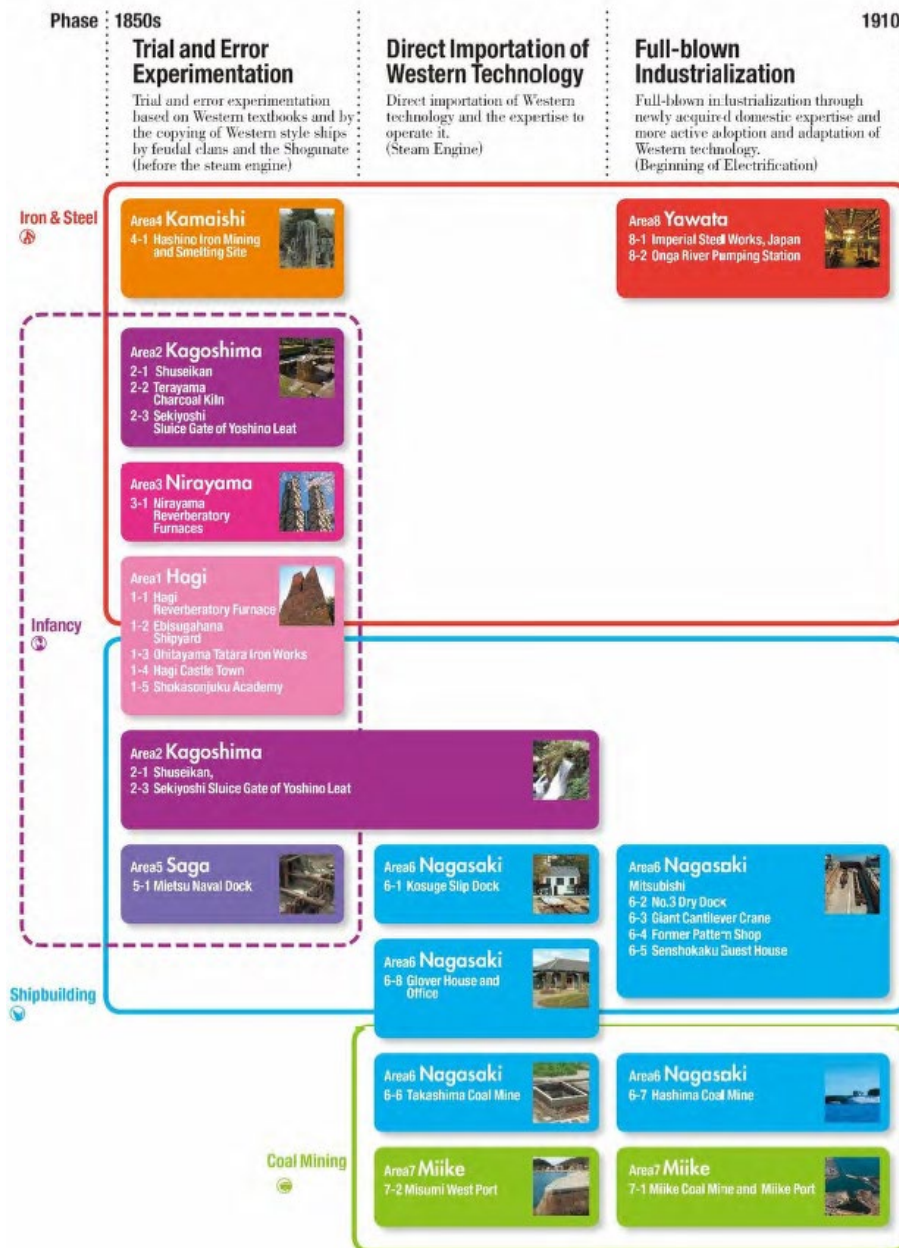


OUV stands at the top of the interpretation pyramid at the Industrial Heritage Information Centre and the various regions' visitor centres and is therefore the top-priority theme over the interpretation and presentation of individual regions and industries, such as history specific to an area or component part. Addressing interpretation in the order of (1) OUV, (2) the history of heavy industry, and (3) site-specific interpretation of each component part, as shown above, will ensure consistent presentation across the property

Interpretation flow at each local visitor centre

Hierarchy of Interpretation










Presentation Using “Liquid Galaxy,” Etc.

The Industrial Heritage Information Centre, which was established in March 2020 pursuant to the Interpretation Strategy, uses an immersive video multi-display that draws on the World Heritage OUV period (1850s-1910), as well as the Consideration of the Full History of Sites schematic. It explains through images the history and transformation of component parts in the various areas, as well as the way that people lived, etc., presenting these in a way that enables visitors to experience in a very real way the evolution of the property, the contribution to OUV, and the full history. This area will also establish a digital archive of documents gathered by the Industrial Heritage Information Centre and the visitor centres in the area, which will be gradually reflected in the interpretation tools.



Miike Area Component Parts

<p>Relevant industry: Coal industry</p> <p>Name of component part: Miyanohara Pit (1898) of Miike Coal Mine/ Miike Port</p> <p>(Overview of component part)</p> <p>First excavated after acquisition by Mitsui, it became a major mine shaft of Miike Coal Mine from the Meiji era to the beginning of the Showa era. The mine has closed, and no industrial activity is taking place. Structures including the second shaft tower and hoisting gear remain.</p>	
<p>Relevant industry: Coal industry</p> <p>Name of component part: Manda Pit (1902) of Miike Coal Mine/ Miike Port</p> <p>(Overview of component part)</p> <p>A major mine shaft, along with Miyanohara Pit, of the Miike Coal Mine from the Meiji era to the middle of the Showa era. Facilities of the coal industry of the Meiji era, including the second shaft tower, its hoisting gear room, and former fan room, remain to this day in good condition.</p>	
<p>Relevant industry: Coal industry</p> <p>Name of component part: Coal Railway (1905) of Miike Coal Mine/ Miike Port</p> <hr/> <p>(Overview of component part)</p> <p>After ownership of the property was transferred to the Mitsui <i>zaibatsu</i>, railroad tracks dedicated to connecting Miike Coal Mine and Miike Port were built, allowing transport of Miike coal and industrial material. Miike Coal Mine is already closed, but ruins remain of the cut and fill from the railroad construction. Historical space with reminiscence of railroads in action lingers.</p>	

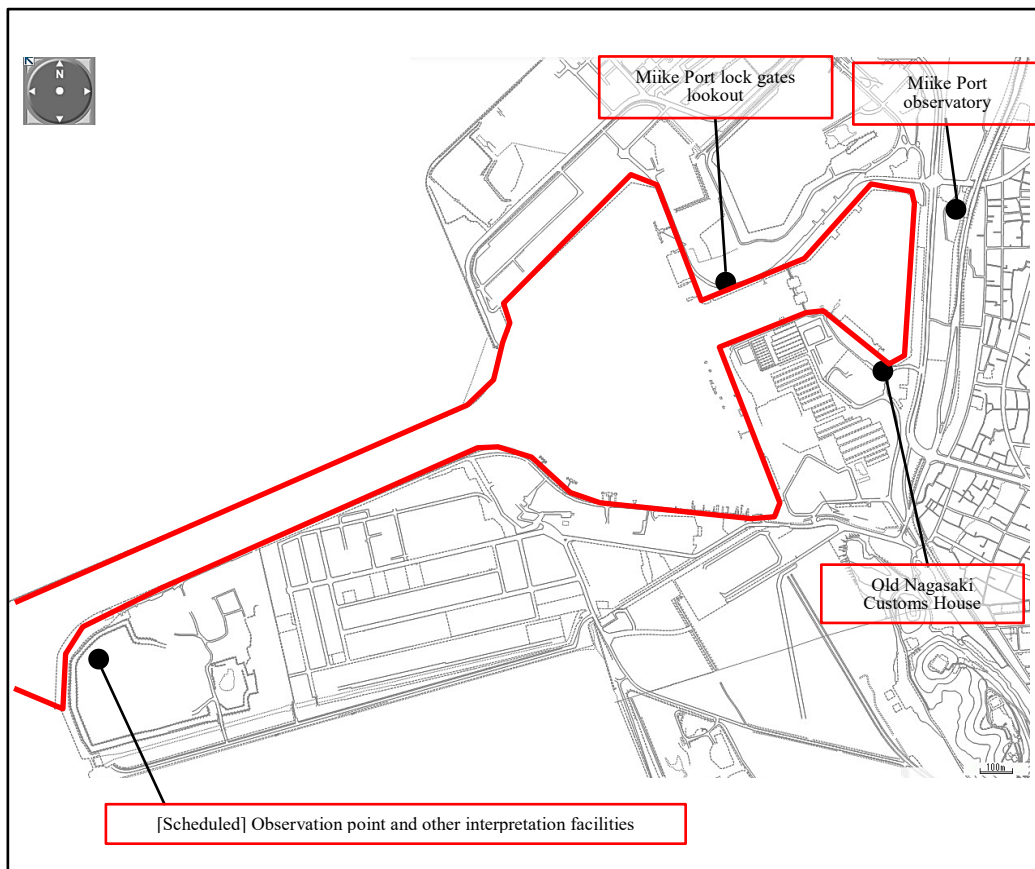
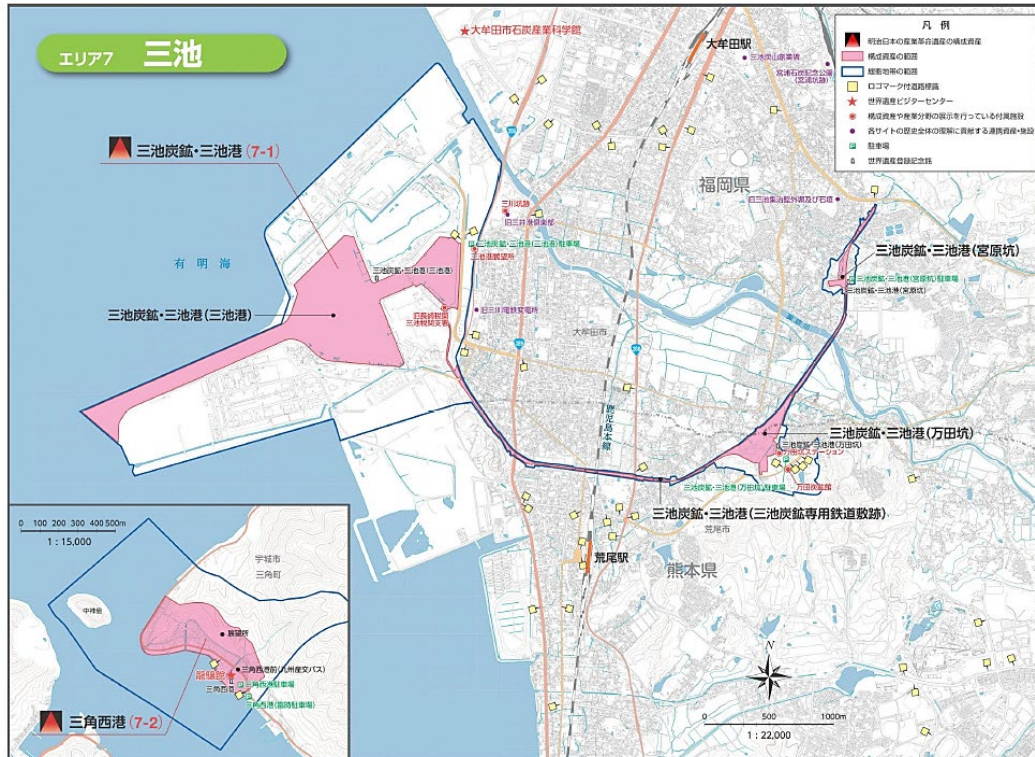
Relevant industry: Coal industry	
Name of component part: Miike Port (1908) of Miike Coal Mine/ Miike Port	
(Overview of component part) Designed in the shape of a hummingbird as a loading port for exporting Miike coal efficiently, it is adjacent to the shore for docking large vessels in the Ariake Sea in shallow waters when the tidal range greatly varies. Port facilities such as breakwater groins as measures against sand and mud, docks for waiting out tides, and lock gates for adjustments in tidal differences testify to logistical infrastructure at the time of port creation. It still serves as an industrial port.	
Relevant industry: Coal industry	
Name of component part: Misumi West Port (1887)	
(Overview of component part) One of three major ports constructed during the Meiji era as a state government-run project under the policy to promote new industries. Designed by Dutch hydraulic engineer Mulder. Until the opening of Miike Port, Miike coal was exported overseas passing through Misumi West Port that was operating as an auxiliary port for Kuchinotsu Port.	

World Heritage Plaques

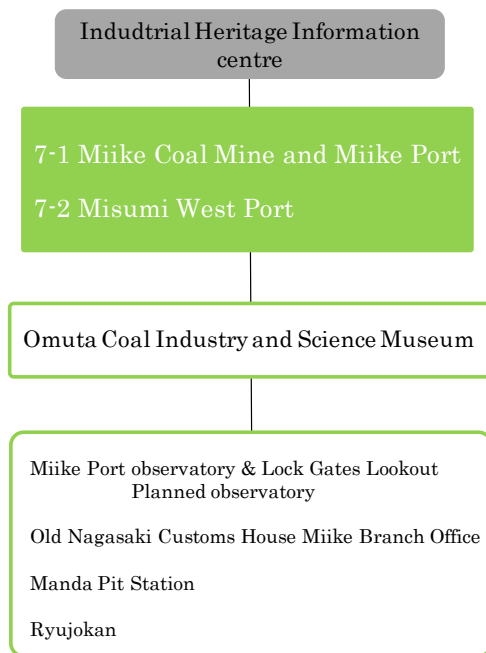
In line with the UNESCO Guidelines, World Heritage plaques have been installed at the various component parts to inform visitors properly about the OUV of the property.



Miike Area: Distribution of Interpretation Facilities



Miike Area: Hierarchy of Physical Interpretation and Presentation



Access Guide Maps

An English-version access map to guide visitors to component parts in each area has been created in addition to the Japanese version and is distributed free to visitors. This map gives an introduction to all component parts in the area and is structured to help visitors reach as many of them as possible.

By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites.



Information Counters

These are set up in administrative institutions and airports to distribute access guide maps and other information.



Omuta Coal Industry and Science Museum



Ryujokan, Miike West Port

Guide Map Distribution Points and Number of Maps Distributed

Guide map distribution points and the number of maps distributed are as follows.

Overall map		Miike Map	
No. distributed	177,762	No. distributed	57,341
Japanese & English	177,762	Japanese	55,881
Main distribution point	No. distributed	Main distribution point	No. distributed
Administrative organizations	300	Administrative organizations	14,870
Airports	550	Airports/ Airlines	1,250
Hotels	50	Hotels	2,800
Car rental agencies	100	Car rental agencies	1,300
JR (Railway)	600	JR (Railway)	400
Tourist information centers	700	Tourist information centers	3,800
Michi-no-eki roadside stations	4,400	Michi-no-eki roadside stations	5,600
NEXCO (Expressway)	168,500	NEXCO (Expressway)	17,750
Public interest corporation/foundation/ incorporated association	550	Public interest corporation/foundation/ incorporated association	1,484
Other	2,012	Other	8,087
JR Kyushu Hakata Station General Information		Omuta & Arao Coal Mine Town Fan Club	
West Nippon Expressway Retail Co., Ltd.		Nogata Municipal Coal Memorial Museum	
West Nippon Expressway Service Holdings Company Limited		Fukuoka International Airport Co., Ltd.	
Fugetsu Foods Co., Ltd.		Tagawa City Coal Mining Historical Museum	
Fukuoka International Airport Co., Ltd.		Kitakyushu Museum of Natural History & Human History	
Nagasaki Airport		Ryujokan, Misumi West Port	
Kagoshima Prefectural Library		Miyanojima Pit	
JR Kagoshima Chuo Station Tourist Information Center		Mitsui Minato Club	
Kitakyushu Convention & Visitors Association		Omuta Coal Industry and Science Museum	
Omura City Hall Industrial Promotion Dept.		Manda Pit Station	
JR Miyazaki Station Tourist Information Center			

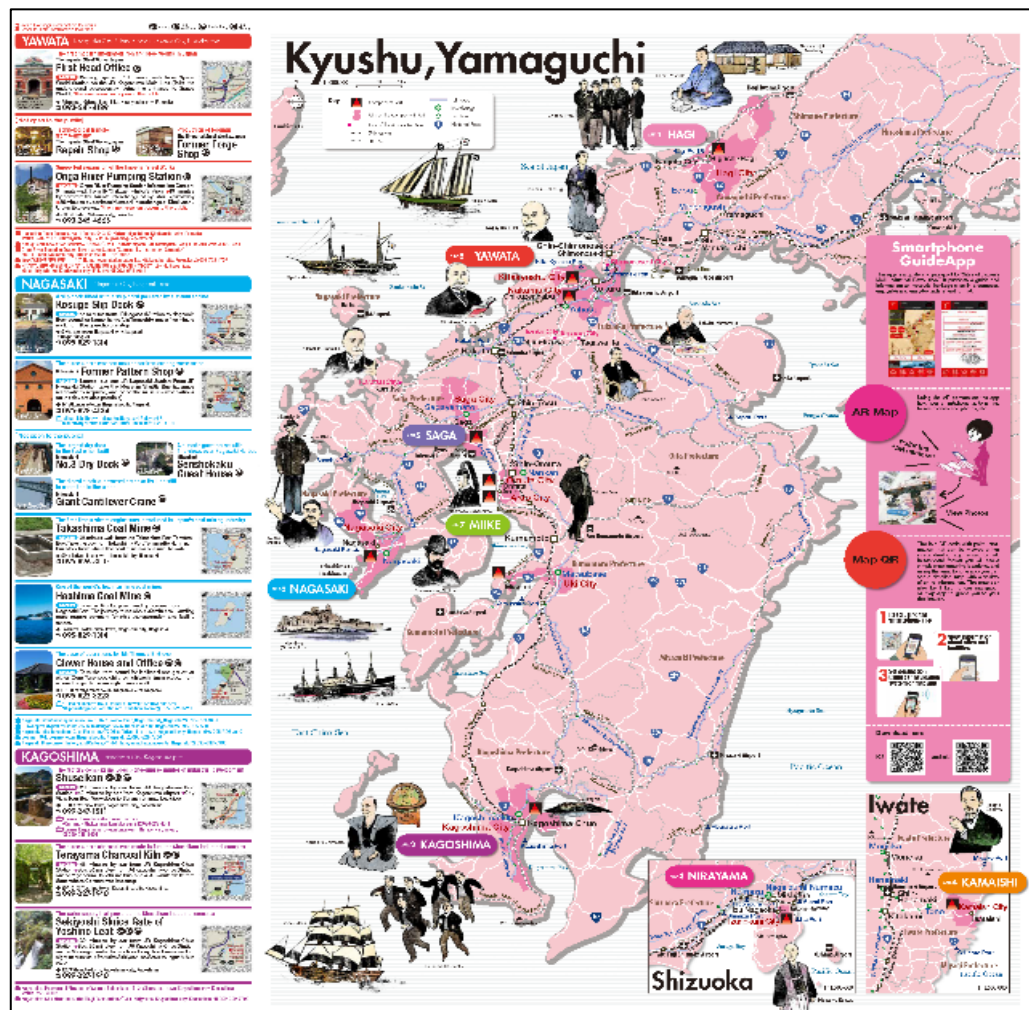
Total no. distributed
for the entire area

464,025

World Heritage Route

In accordance with the Interpretation Strategy, and also as noted in pages 395–396 of the Nomination Document, the World Heritage Route Promotion Council was founded to provide guidance and tourism infrastructure for understanding World Heritage as a whole. The Council attracts visitors to all component parts and related sites by producing maps, apps, and GPS navigation and by installing road signs and other signage using the common logo to promote the Sites of Japan's Meiji Industrial Revolution so that visitors are able to understand the World Heritage value constituted by the 23 component parts.

Work will continue to be undertaken steadily pursuant to the Nomination Document and the Interpretation Plan.





Map on p. 396 of the Nomination Document



World Heritage Route Promotion Council meeting

Installation of Road Signage, Etc., Using the Common Logo

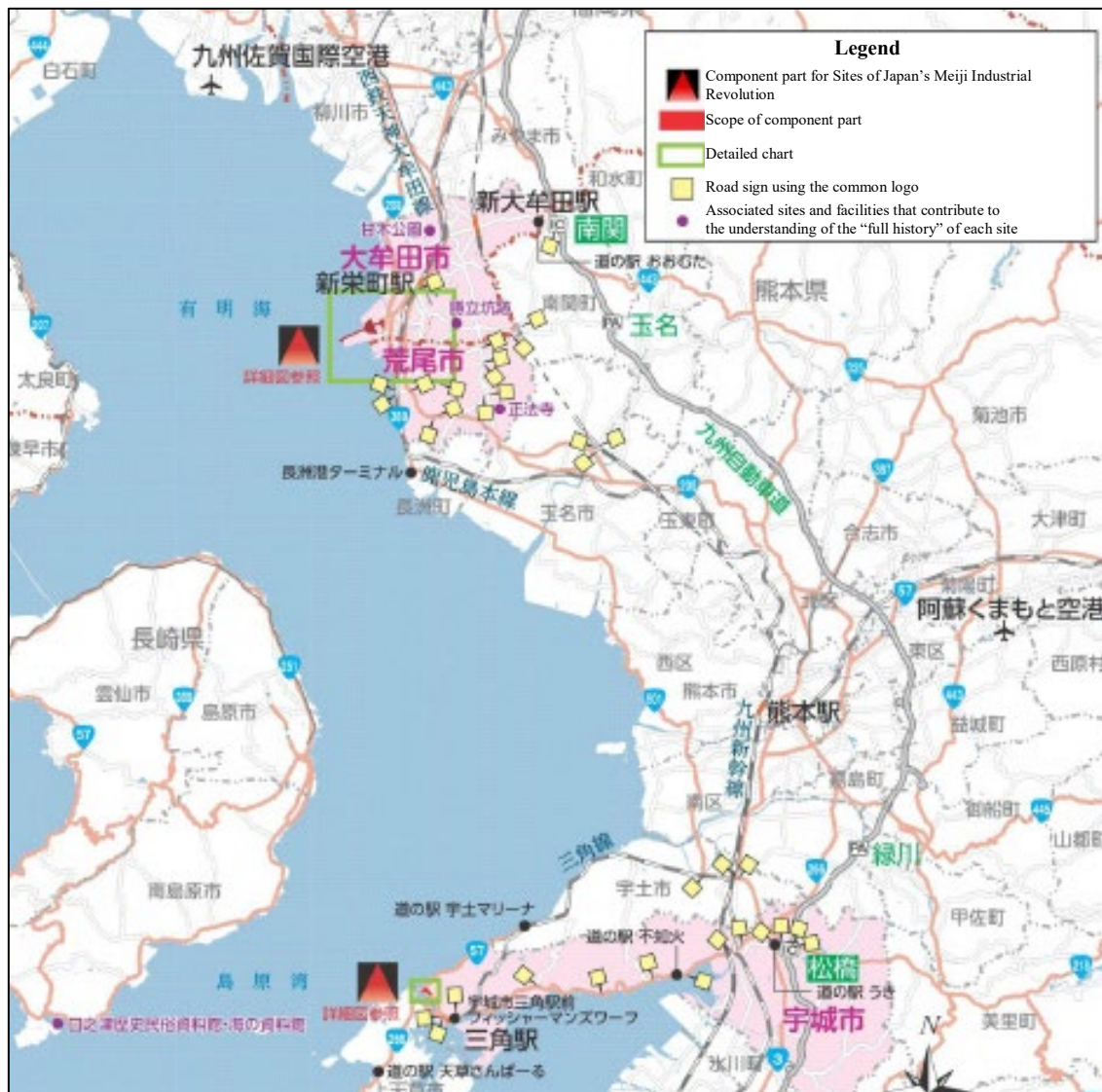
Status of installation of road signage

Place	No. of signs installed
Omuta City	20
Arao City	41
Uki City	18

Photos of road signage

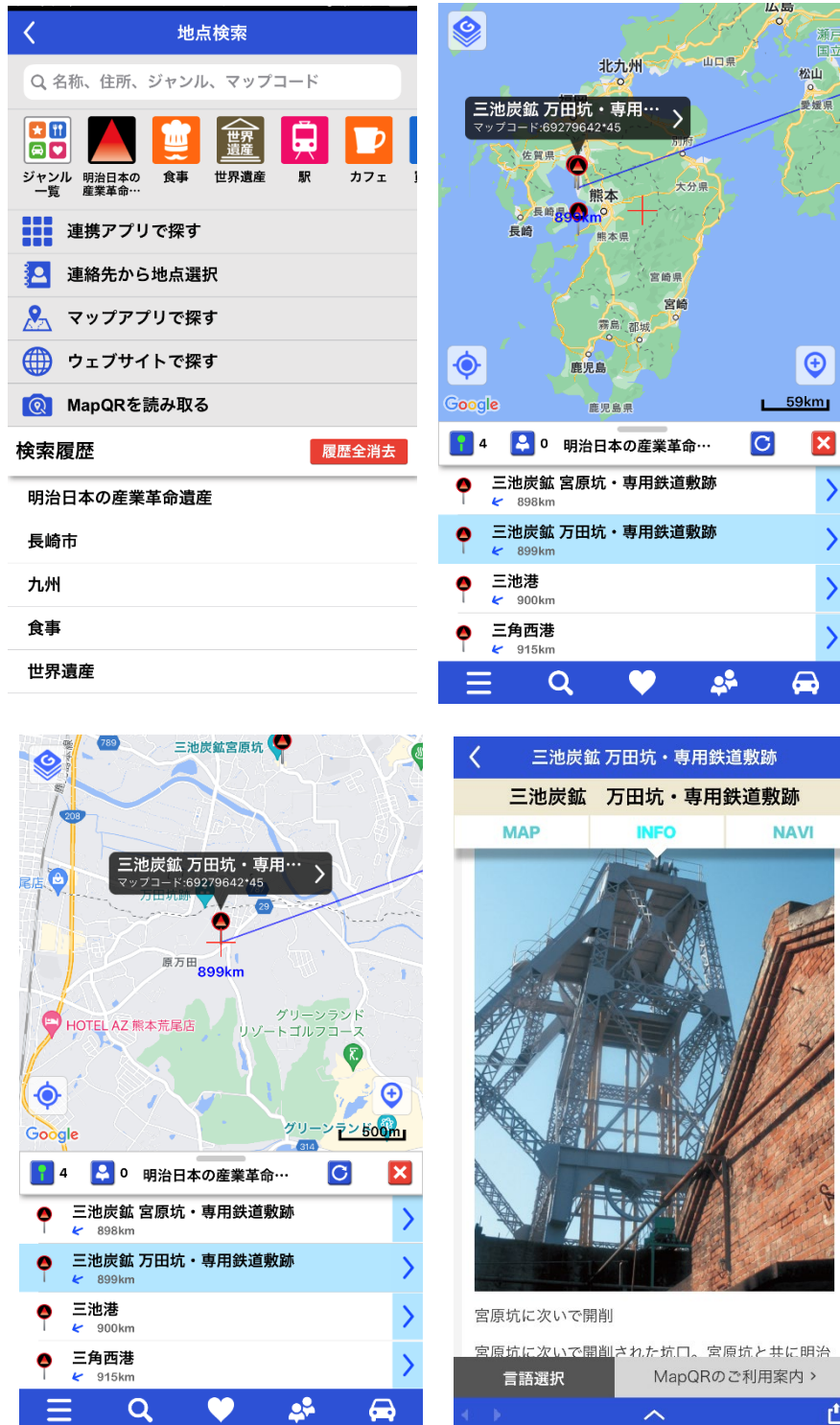


Locations of Road Signs Using the Common Logo

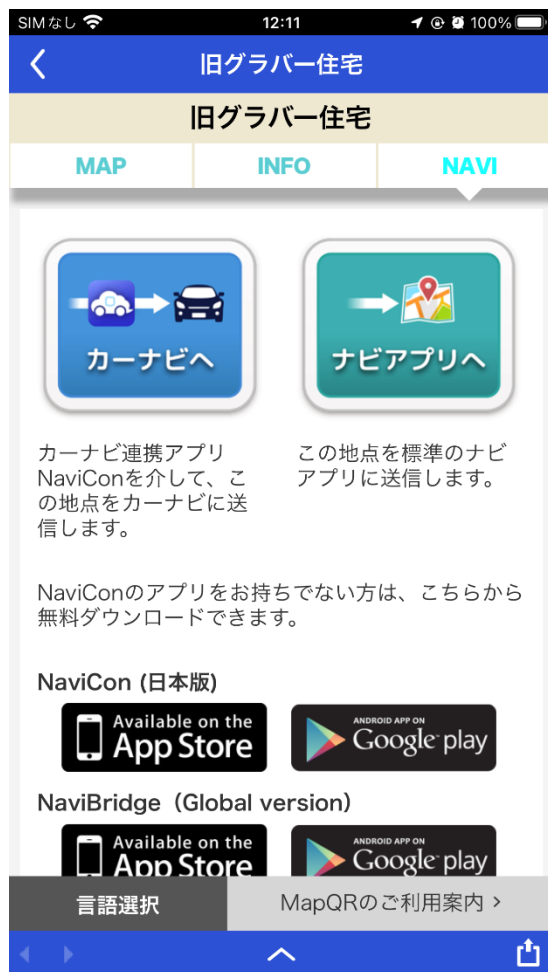


Linkage with Car Navigation (Denso Car Navigation)

Example of linkage with smartphone app so that the target destination can be sent to a car navigation system



The destination can be sent directly from a smartphone to the car navigation system.

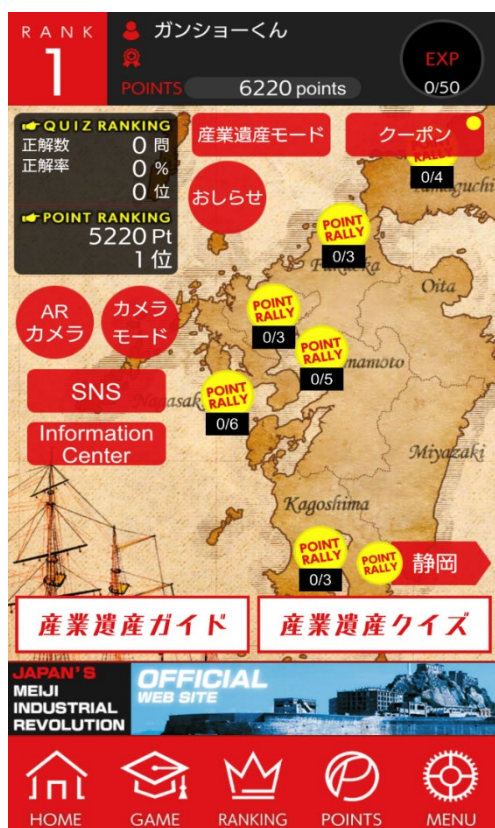


A video on how to use the application has been put up on YouTube.



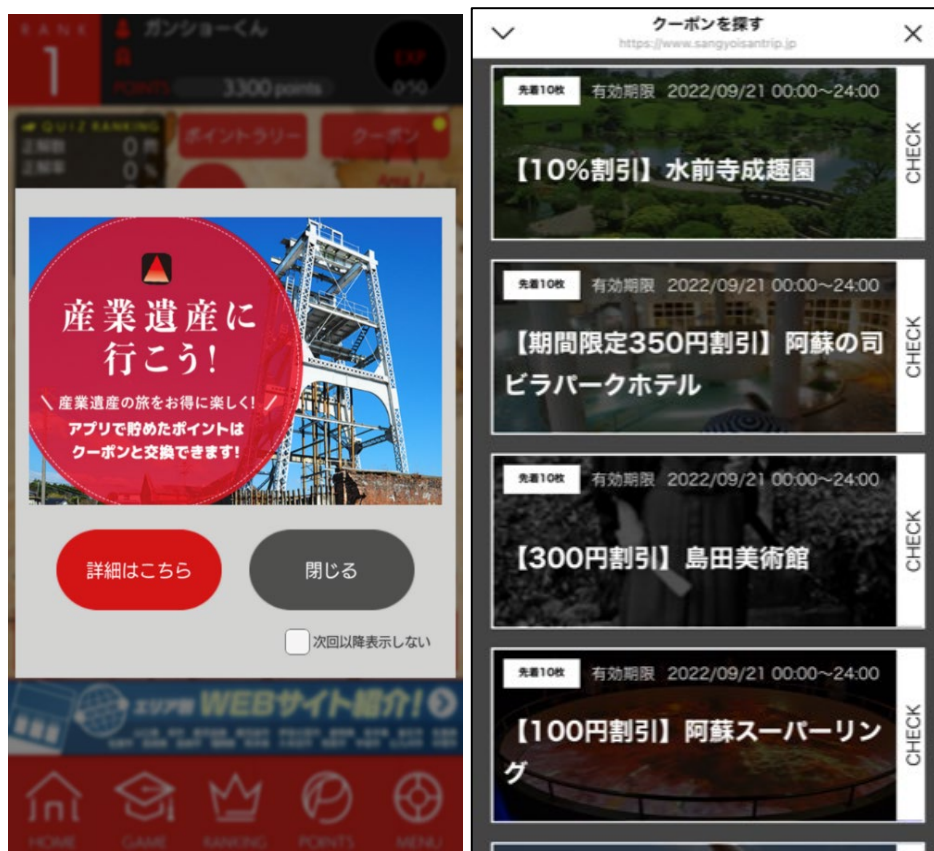
App Utilization

The app introduces the Sites of Japan's Meiji Industrial Revolution, including detailed stories and explanations, as well as the historical background, using video and computer graphics, etc. Users can earn points by playing games and using the AR camera on the app and use them as coupons for souvenirs and other prizes. As such, it serves as a mechanism for both deepening understanding of World Heritage value and feeding back into World Heritage Route tours. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.



Use of Line App

Points acquired on the app can be exchanged for coupons.



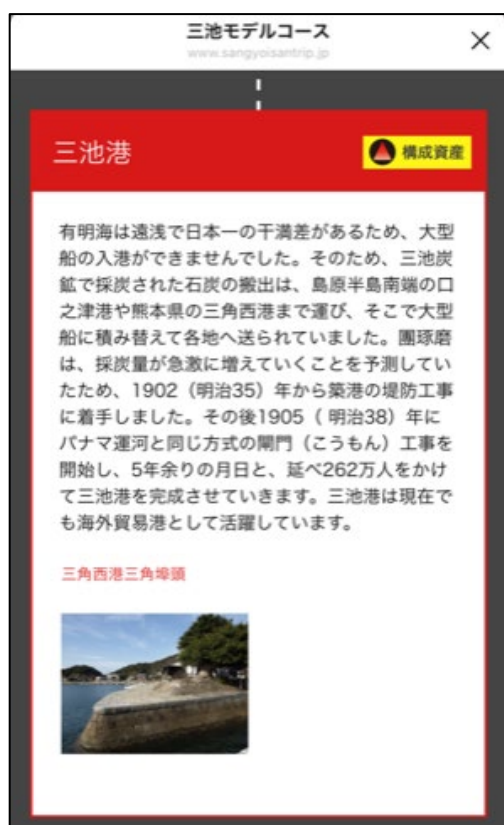
Point-of-purchase advertising has been created and placed in stations and information centres, etc., to encourage people to sign up to the LINE app.



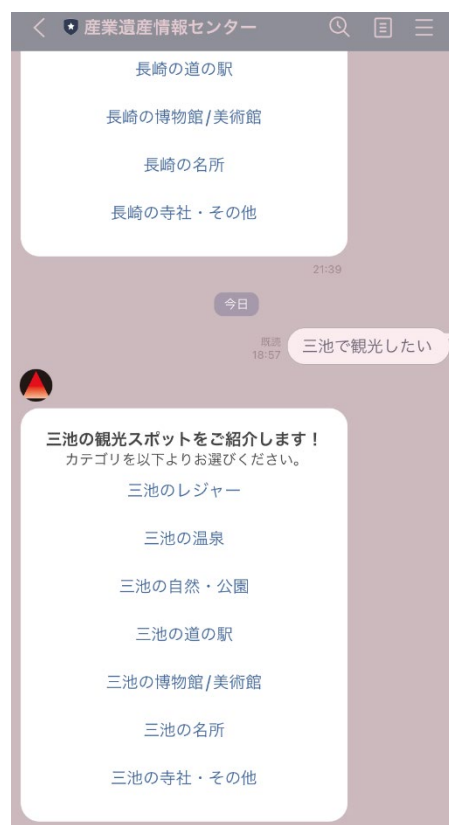
LINE is used as a runway for achieving two-way communication geared to the circumstances of the user based on locational information, such as the use of existing guide apps and communication about coupons that can be used in shops at the area visited. The service is provided in multiple languages so as to support international visitors.



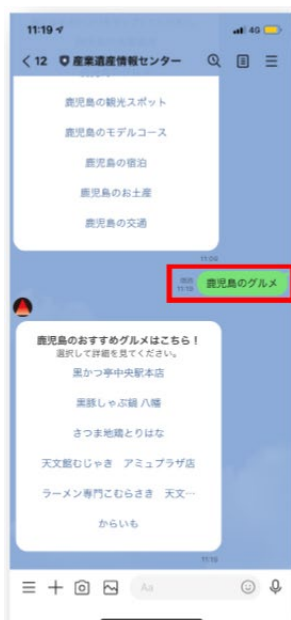
LINE functions (examples)



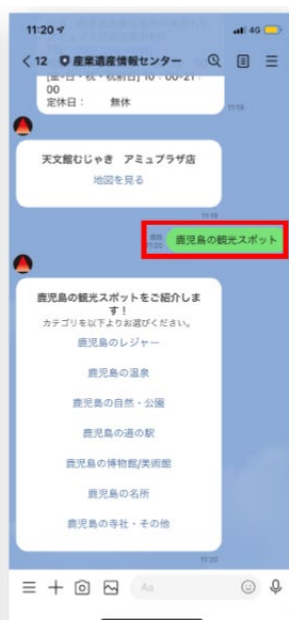
Introduction to model courses



AI chatbot function



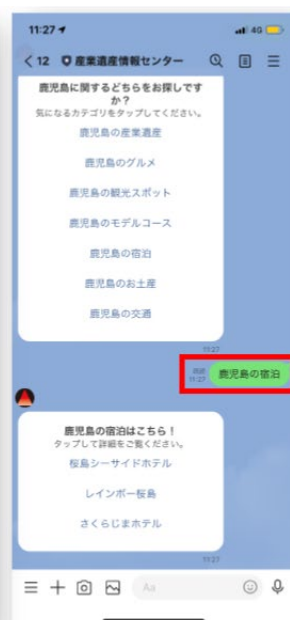
Gourmet information



Tourist spots



Traffic information



Accommodation information

Digital Signage Functions

Digital signage has been installed in the Industrial Heritage Information Centre as a mechanism for encouraging multi-destination tourism by displaying local guide maps and information on multi-destination industrial heritage routes. AI chatbots have also been installed to respond to a wide range of multi-destination routes and tourism questions in real time.



Enhancement of digital content

World Heritage values and other information regarding the Sites of Japan's Meiji Industrial Revolution is being centrally disseminated through the official website and smartphone application.

In addition, an information network utilizing four of the latest technologies (*) is used as "lin-KK-age" (linkage) to promote visits to neighboring component parts and to provide local travel support.

Interpretation will be performed with consideration given to initiatives that make use of the above with collaboration among areas.

Digital technology is being used to mainly undergo initiatives mentioned below through relevant websites and applications for the area.

(*) Refers to digital signage (electronic boards), smartphone application, LINE and maps equipped with AR/ MapQR.

Initiatives

Relevant Component(s)	Initiative Details	Schedule	Entity in Charge
Miike Coal Mine, Miike Port, Misumi West Port	Regional guide map equipped with AR functions and information provided on components through MapQR function	Completed	National Congress of Industrial Heritage
Miyanohara Pit	iPad app Miike Tanbou (Miike History Walk) The app enables users to view scenes of Miyanohara Pit around 1907 through AR as well as take quizzes and read descriptive information	Completed	Omuta City
	Miike Coal Mine Navigation using AirSignage Description of the component in four languages	Completed	Omuta City
Coal Railway	iPad app Miike Tanbou (Miike History Walk) The app enables users to view computer graphics of steam locomotives running along the Coal Railway as well as take quizzes and read descriptive information	Completed	Omuta City
	Miike Coal Mine Navigation using AirSignage Description of the component in four languages	Completed	Omuta City

Appendix 1-7

Miike Port	iPad app Miike Tanbou (Miike History Walk) App users are able to watch computer graphics of Miike Port lock gates opening and vessels entering, as well as trying quizzes and reading descriptive information	Completed	Omuta City
	Miike Coal Mine Navigation using AirSignage Explanation of the component in four languages	Completed	Omuta City
Manda Pit	Miike Coal Mine Navigation using AirSignage Explanation of the components in four languages	Completed	Arao City
Manda Pit	The Manda Pit VR enables users to see inside the pit. Experience in four languages	Completed	Arao City
Manda Pit	Digital archives Display in four languages	Completed	Arao City
Manda Pit	Manda Pit VR app	Completed	Private entity
Misumi West Port	VR app for the former Misumi shipping warehouse Display in three languages	Completed March 2022	Private entity
Misumi West Port	Animation app for descriptions of Misumi West Port-related facilities. Display in five languages	Completed March 2022	Uki City Tourism and Industry Association

* 'Completed' indicates initiatives completed as of February 1, 2022

Miike Coal Mine Navigation (AirSignage)

Sites of Japan's Meiji Industrial Revolution

三池炭訪

— 宮原坑 近代日本の原点へ —

受付にお申込みください

**超美麗CGアニメーション、
往時の姿を再現した360度ビュー。**

大人気御礼!

Mike Coal Mine Guide System

施設ガイドシステム

三池炭鉱ナビ

施設の案内音声ガイドを準備致しました。
お手持ちのスマートフォンやタブレットから Wi-Fi に接続することで、動画や当時の写真・音声ガイドを通じて三池炭鉱の歴史をお楽しみ頂けます。
どうぞ下記の手順でご利用下さい。

Step.1
Wi-Fi への接続 Connect to Wi-Fi.
SSID : Mike Coal Mine

Step.2
ブラウザの起動 Open your browser.

Step.3
見たい言語を選択して下さい Choose your language.

「三池炭訪」レンタルタブレットとスマホ用無料配布アプリのご案内

★三池炭訪-宮原坑 近代日本の原点へー (レンタルタブレット) 多言語対応 (日・英・中・韓) ~10月30日(金)より宮原坑でタブレットの貸し出し開始~

三池炭鉱発祥の立役者である「藤澤寛」が案内人となって宮原坑の各スポットをご案内。
宮原坑内の各スポットでタブレットをかざすと、藤澤寛や炭鉱夫による説明や、往時の姿を再現したVR(バーチャルリアリティ)を楽しむことができます。(ガイドツール料:300円)

「藤澤寛」の案内によって各スポットを巡ります
かつてのテレビやラジオの姿がアミューズメントで観る！
タブレットをかざすと、精緻な3D0度ビューで往時の姿が再現！
石炭を載せた汽車のムービーも楽しめる

★スマホ用無料アプリ「三池炭訪」(iOS版) ~ App Storeにて無料配信予定 ~
順次、iOS英語対応版・Android版の配信予定 ~

スマホ用無料配布アプリ「三池炭訪」は、三池炭鉱宮原坑や三池港を巡りながら、三池炭鉱の歴史やそこで働く人々の生活について、ゲーム感覚で楽しむことができるアプリです。
「三池炭訪」には、3つのコンテンツがあります。

1 三池ツバキの炭鉱クイズ 対象エリア: 宮原坑(現地利用)
三池炭鉱宮原坑の各スポットでスマホをかざすと、「三池ツバキ」が登場！「三池ツバキ」が出題するクイズ(全6問)に答えていけば、三池炭鉱の歴史を楽しく学んでいきます。

2 燃える石をさがせ! 対象エリア: 宮原坑・三池港(現地利用)
宮原坑から三池港まで巡りながら、隠れた「燃える石」を探し当てるゲームです。石を見つけると石炭にまつわるストーリーを見ることができ、かつ石を全て集めると、ボーナス映像を楽しむことができます。

3 三川坑ライブラリー 対象エリア: どこでも楽しめる
昭和時代の主力坑であった「三川坑」の画像ギャラリーです。探検の現場や、当時の暮らしがうかがえる写真を集めました！伊で「三川坑」で実際に働いていた炭鉱マンやその妻のインタビュー動画は必見です！

元炭鉱マンが解説。潤滑な環境下での喜びや仲間との絆…必見です！

[Reference material 1]

(Name) Animation Book (digital content with descriptions of cultural assets)

Information boards and pamphlets with QR codes, and interpretive panels inside the former Misumi Summary Court

(Entity in charge) Uki City Tourism and Industry Association

(Locations) Ryujokan, former Uto County Office, main building/ attorney antechamber/ archives of the former Misumi Summary Court



Multilingual description pages (Japanese/ English/ French/ Korean/ Chinese) and animation book (stories approx. two minutes long) appear on-screen when a QR code on information boards and pamphlets available in facilities within Misumi West Port is scanned with a smartphone or tablet.



*Interpretive panels inside the former Misumi Summary Court main building



*Information panel with QR code

[Reference material 2]

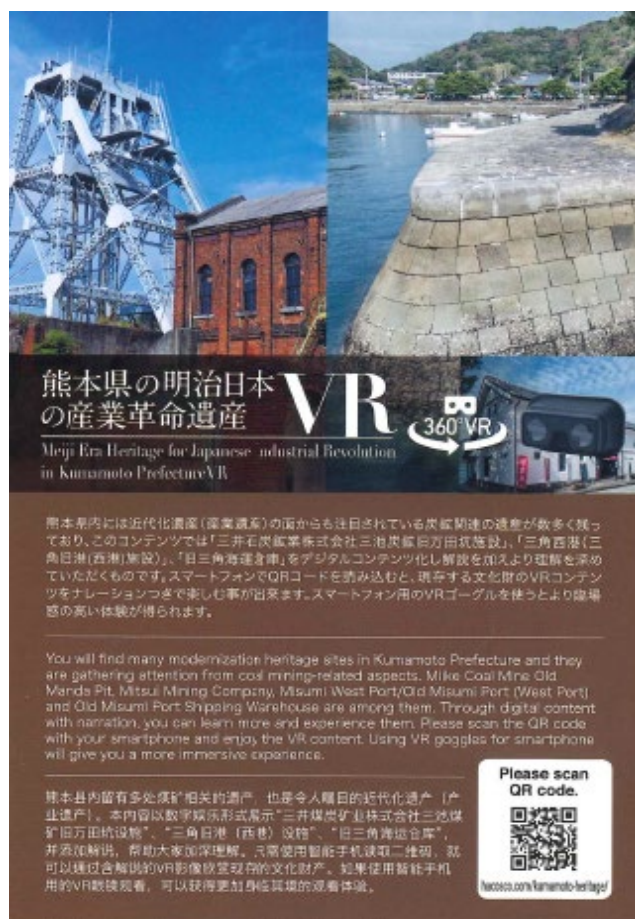
(Name) Meiji Era Heritage for Japanese Industrial Revolution in Kumamoto Prefecture VR

(Descriptive digital content)

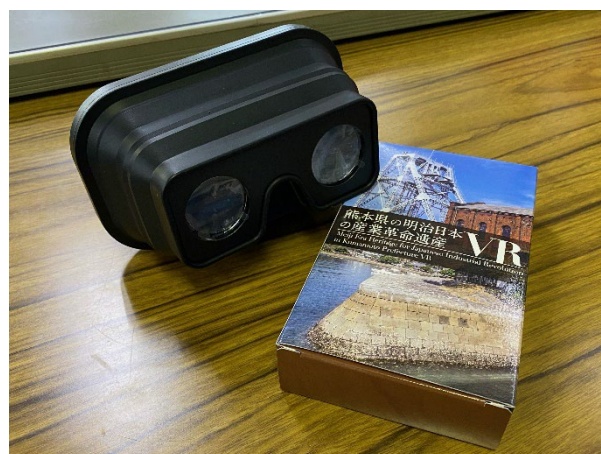
VR goggles, information board, flyer

(Entity in charge) Taiyo Kikaku (NPO J-heritage)

(Relevant facilities) Manda Pit, Misumi West Port stone masonry wharf, former Misumi Marine Transportation Warehouse, Ryujokan



*Information board with QR code



*Set with VR goggles

[Reference material 3]

(Name) The Manda Pit VR

(Entity in charge) Arao City

(Location) Manda Pit Station

地下264メートルの
万田坑の坑道へ



万田坑
ステーションに
VR視聴機器を
導入!

The 万田坑VR

炭鉱の地下世界へ

万田坑の地下坑道をCGで再現!

まるで地下坑道にいるかのように疑似体験できる!

VRとは、Virtual Realityの略で、仮想現実のことです。万田坑VRでは、現在も残っている第二堅坑坑口から、ケージと呼ばれるエレベーターに乗って地下まで降り、坑内電車に乗り換えて採掘現場まで行き、ダイナマイトを使う発破シーンなど採炭の様子を疑似体験できます。VRゴーグルを装着して地下の世界を見てみよう!





🔧 最先端技術を駆使!

人間の動きをCG上に反映させる
モーションキャプチャ技術を採用。

🔧 荒尾出身のナレーターを起用!

ナレーションは、荒尾市生まれで、父親が三池炭鉱で働いていた羽佐間 道夫氏。
はだま みちお

マジックキー イチ押し!

炭鉱の地下世界が再現されていてビックリ!
ぜひ、万田坑ステーションで見てみよう!



📍 万田坑ステーション展示室

🕒 9:30~17:00

🗓 月曜日(祝日の場合は翌平日)

👤 中学生以上 料 無料

📞 文化企画課 ☎63-1274

スマートフォンやパソコンからも視聴できます。

<https://www.city.arao.lg.jp/0/4217.html>

二次元コードからも
視聴できます





Visitor Centres

The Miike Area is equipped with one visitor centre and four auxiliary facilities with exhibits of component parts and the industrial sector in line with the interpretation strategy. Each facility cooperates with the local community to prepare exhibits that best bring out the true World Heritage values in harmony with the historical and cultural values of the region. They aim to create exhibits that allow visitors to easily understand the value of the components. Based on points raised in interpretation audits, local visitor centres will work with the Industrial Heritage Information Centre to digitize a huge volume of primary historic materials and use digital tools to enhance exhibits.

[Omuta Coal Industry and Science Museum]

Panels, footage, models, and a dynamic tunnel (mock tunnel) are used to exhibit and explain the history of the Miike Coal Mine.

The common exhibition is also available at the visitor centre of the Miike Area to explain the 23 components overall, and visitors can learn about Area 7's coal industry and the town in which various modernized industrial heritage live on to this day.



[Miike Port]

The hummingbird shape can be seen from the observation deck. Interpretation facilities such as an observation point are currently being planned in a location approximately 3 km away from this observation deck to supplement the current location.



[Old Nagasaki Customs House Miike Branch Office]

Construction and history of Miike Port are on exhibit using panels and footage on Miike Port, which is still an operating port today. A separate corner with panels on Sites of Japan's Meiji Industrial Revolution has also been set up.



[Manda Pit Station]

URL:<https://www.city.arao.lg.jp/kurashi/shisetsu/mandakou/>

A facility with models recreating the overall facility of the time, old photos on display of Manda Pit on panel boards, and a VR experience of the pit.



[Ryujokan]

Using this century-old facility in Misumi West Port, the construction and history of Misumi West Port are on display using panels and other tools. A separate corner with panels and footage used to describe the Sites of Japan's Meiji Industrial Revolution has also been set up, and plans are underway beyond 2024 to incorporate the same common exhibition being used at each of the visitor centres.



Children's education programs

The following children's education programs are being held in the Miike Area.

[World Heritage kids academy]

Online seminars are offered to elementary school students in Kitakyushu City, Nakama City (Yawata Area), and Omuta City (Miike Area) in Fukuoka where component parts are situated. Students take classes taught by lecturers on the history and value of the components, schools individually sort through what they have learned, and results are presented amongst each other as a means for exchange.

[Children volunteer guides]

At elementary schools in the school districts where the Miike Coal Mine, Manda Pit and Miyanohara Pit are situated, sixth graders become guides as part of their classes and explain the history and appeal of the Miike Coal Mine and the coal industry to visitors. This endeavor instills in children a love for their hometown.



[Sites of industrial modernization bus tour]

Sixth graders in Omuta City tour sites of industrial modernization by bus and learn the contemporary history of Omuta, which progressed alongside the development of the Miike Coal Mine. Students can touch the actual remains such as hoisting gear or a brick building to actually experience their sizes and other senses such as the smell of oil, to learn about the coal industry in a dynamic way.



[Marine education]

At elementary schools in regions of the Ariake Sea and rivers connected to it, marine education is provided with Miike Port as the theme each year as part of SDG initiatives. Marine life, marine pollution, the history of Miike Port and World Heritage values are taught as students ponder what action they can take now and in the future.

[Regional studies]

At elementary schools in Uki City, Misumi West Port and Sites of Japan's Meiji Industrial Revolution overall are incorporated into the curriculum. As a learning outcome, students act as guides, create promotional pamphlets and posters, and take various other initiatives. On-site learning includes not only experiencing the structure and role of Misumi West Port but also participating in programs exploring waterways that are normally off-limits.

**[School lunch service]**

Around the date commemorating World Heritage site inscription, elementary schools in the Miike Area serve school lunch having a conceptual connection with coal. Students watch videos related to the Sites of Japan's Meiji Industrial Revolution and are given an opportunity to learn about World Heritage values.





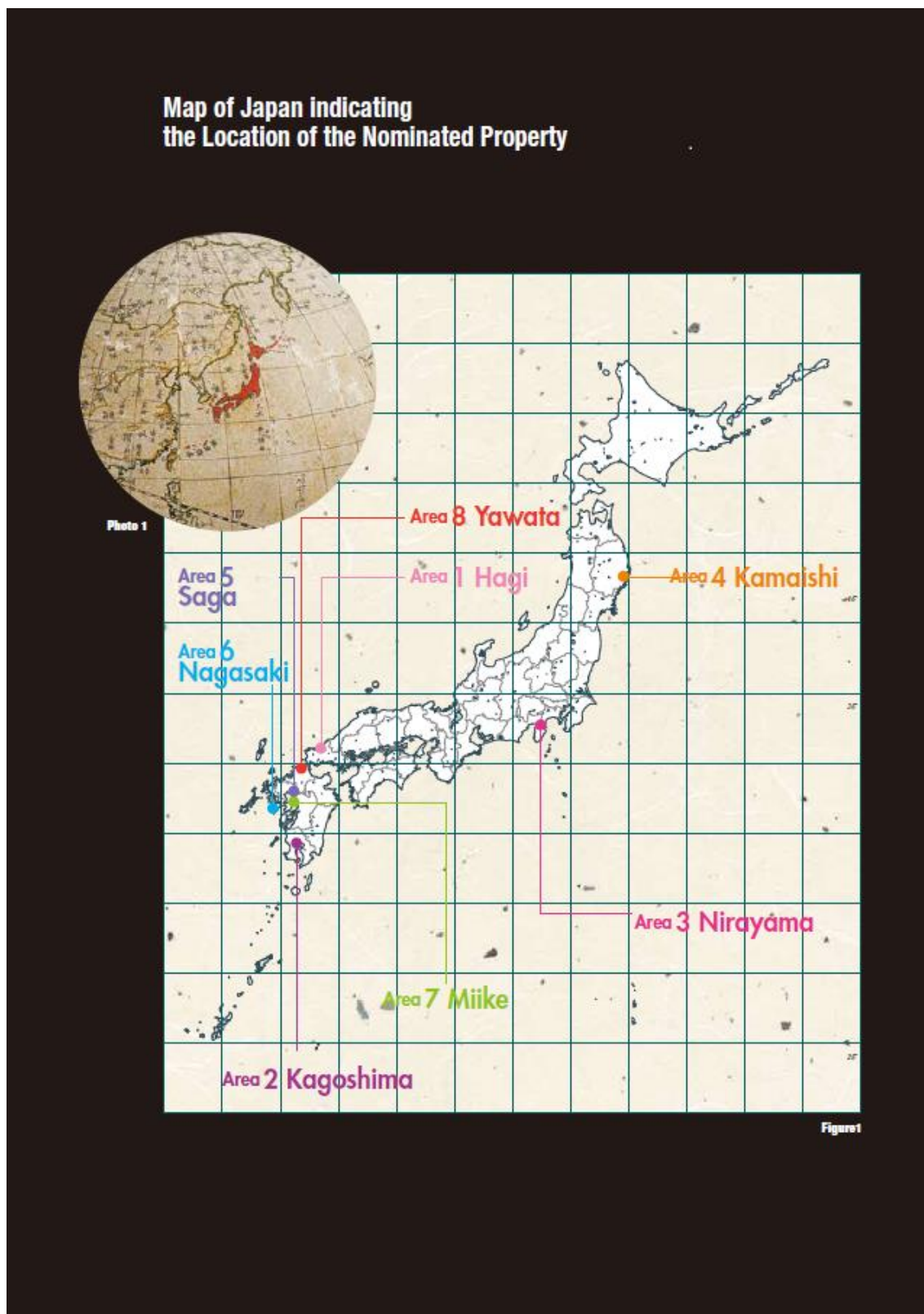
Cover photo by Omuta Coal Industry and Science Museum

Area8 Yawata

AREA-SPECIFIC INTERPRETATION PLAN



【Area List】

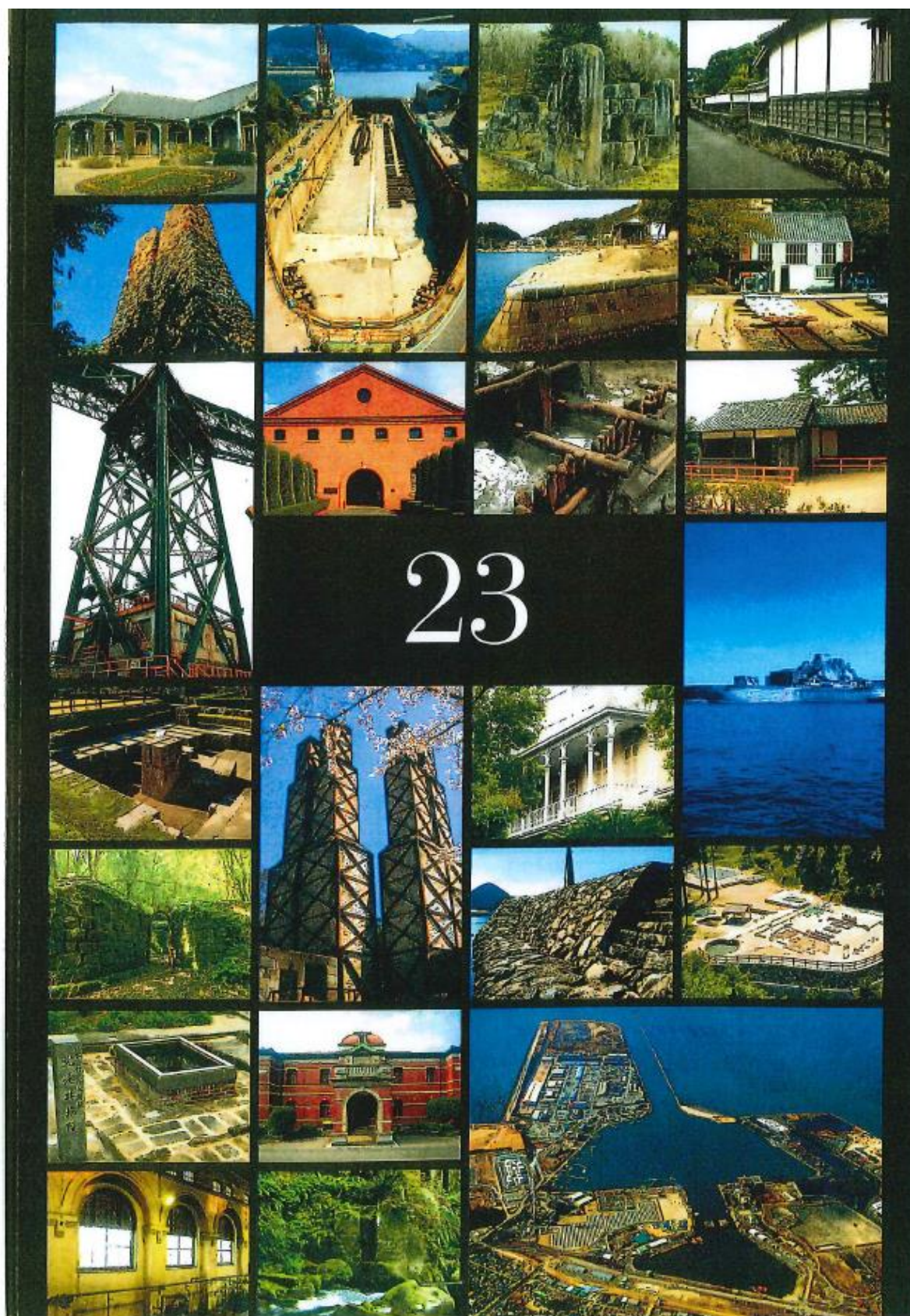


【Component Name】

List of the Component Parts

Area	Site	ID	Component Part
A1 Hagi	1 Hagi Proto-industrial Heritage	1-1	Hagi Reverberatory Furnace
		1-2	Ebisugahana Shipyard
		1-3	Ohitayama Tataro Iron Works
		1-4	Hagi Castle Town
		1-5	Shokasonjuku Academy
A2 Kagoshima	2 Shuseikan	2-1	Shuseikan
		2-2	Terayama Charcoal Kiln
		2-3	Sekiyoshi Sluice Gate of Yoshino Leat
A3 Nirayama	3 Nirayama Reverberatory Furnaces	3-1	Nirayama Reverberatory Furnaces
A4 Kamaishi	4 Hashino Iron Mining and Smelting Site	4-1	Hashino Iron Mining and Smelting Site
A5 Saga	5 Mietsu Naval Dock	5-1	Mietsu Naval Dock
A6 Nagasaki	6 Nagasaki Shipyard	6-1	Kosuge Slip Dock
		6-2	Mitsubishi No.3 Dry Dock
		6-3	Mitsubishi Giant Cantilever Crane
		6-4	Mitsubishi Former Pattern Shop
		6-5	Mitsubishi Senshokaku Guest House
	7 Takashima Coal Mine	6-6	Takashima Coal Mine
		6-7	Hashima Coal Mine
	8 Glover House and Office	6-8	Glover House and Office
A7 Miike	9 Miike Coal Mine and Miike Port	7-1	Miike Coal Mine and Miike Port
	10 Misumi West Port	7-2	Misumi West Port
A8 Yawata	11 The Imperial Steel Works, Japan	8-1	The Imperial Steel Works, Japan
		8-2	Onga River Pumping Station

Table1



SITES OF
JAPAN'S
MEIJI INDUSTRIAL
REVOLUTION
IRON & STEEL, SHIPBUILDING
AND COAL MINING

Executive Summary

Brief Synthesis

“Sites of Japan’s Meiji Industrial Revolution: : Iron and Steel, Shipbuilding and Coal Mining” comprise a singular ensemble of industrial heritage sites that represent the first successful transfer of industrialization from the West to a non-Western nation.

From the middle of the 19th century to the early 20th century, Japan achieved rapid industrialization that was founded on the key industrial sectors of shipbuilding, iron and steel, and coal mining. The initial phase was one of trial and error experimentation in iron making and shipbuilding, based mostly on Western textbooks, and by copying examples of Western ships. This was followed by the more successful importation of Western technology and the expertise to operate it and, by the late Meiji period, full-blown industrialization through newly acquired domestic expertise and the active adaptation of Western technology to best suit Japanese needs and social traditions. This successful industrialization was achieved in just a little over 50 years without colonization, and on Japan’s own terms. The property is testimony to this unique phase in world history.

Justification for Criteria

Criterion (ii)

The property is a series of heritage sites that, together, uniquely illustrate the process by which feudal Japan sought technology transfer from Western Europe and America from the middle of the 19th century. This technology was adopted and progressively adapted to satisfy specific domestic needs and social traditions, thus enabling Japan to become a world-ranking industrial nation by the early 20th century.

Criterion (iv)

The technological ensemble of key industrial sites of shipbuilding, iron and steel, and coal mining is testimony to Japan's unique achievement in world history as the first non-Western country to successfully industrialize. Viewed as an Asian cultural response to Western industrial values, the ensemble had no counterpart elsewhere in the world.

Statement of Integrity

The 23 component parts are the best, and often the only, surviving examples of the key attributes that represent shipbuilding, the iron and steel, and coal mining industries and that are necessary to express Outstanding Universal Value. In each case, the boundary of the component part has been drawn to include the essential features that, overall, contribute to Outstanding Universal Value.

Component parts are in good condition and have mechanisms in place to control deterioration and keep sites free from the adverse effects of development. They have been variously affected by continued use, re-use or lengthy periods of abandonment, and their physical integrity varies between well preserved and fragmentary, the latter being sufficiently intact to be able to represent the former whole. In some cases, where the evidence is primarily archaeological, sufficient investigation has been carried out to verify that a substantial archaeological site survives in good condition for further study and presentation. In other cases, in particular those that remain in operational industrial use, ongoing use and maintenance have resulted in an extraordinarily high level of integrity of working industrial elements.

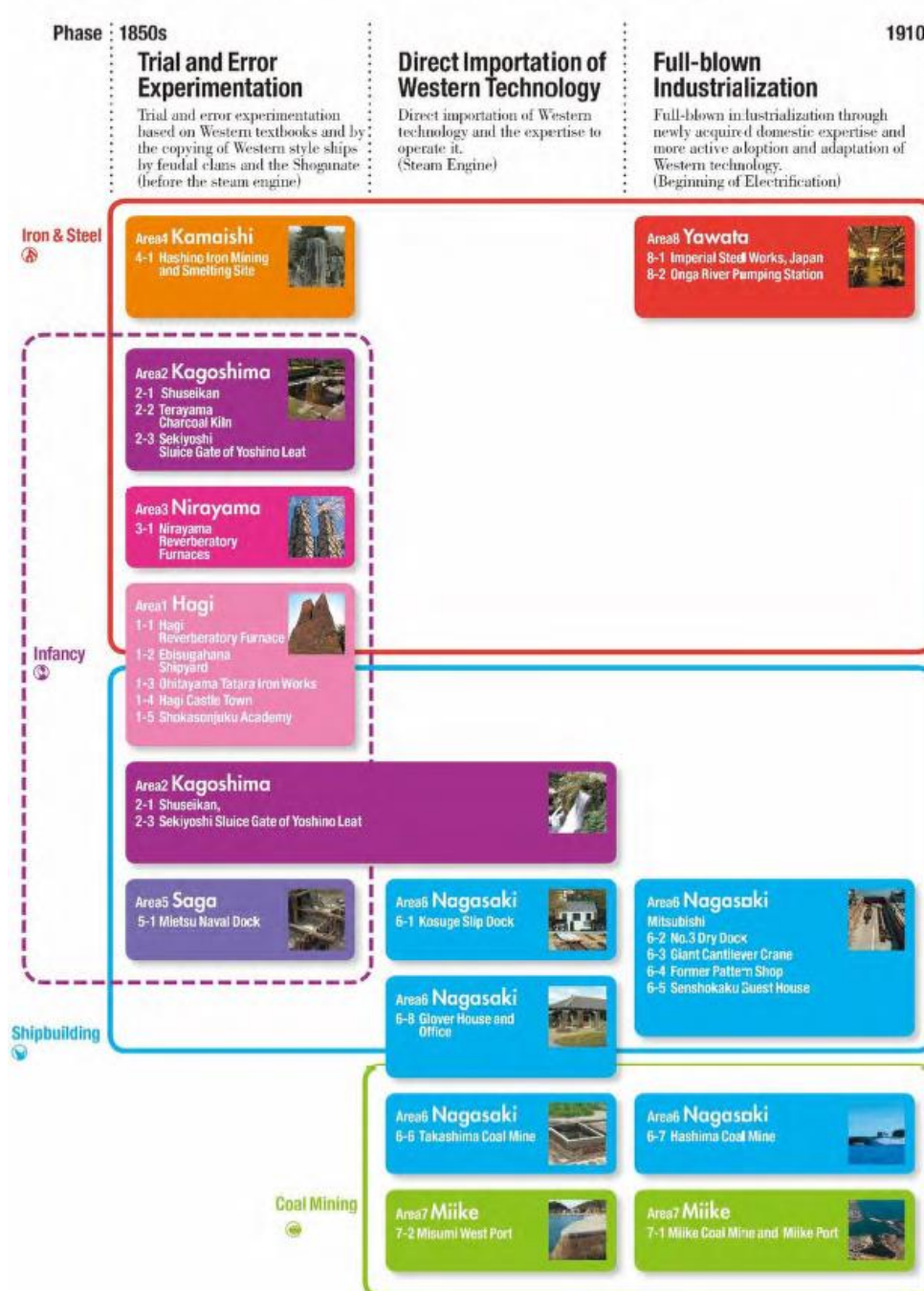
Statement of Authenticity

The property as a whole as well as at the level of each component part meets the conditions of authenticity in relation to Outstanding Universal Value. It has a high degree of authenticity as the best surviving group of industrial remains that represent, and demonstrate, the first, and rapid, transfer of industrialization from the West to a non-Western nation.

With regard to 'form and design' and 'materials and substance', the component parts constitute the original forms and materials of the range of industrial components necessary to represent the transfer of heavy industry from the West to Japan. Some contain sites that range from fragmentary or archaeological, that are nonetheless authentic relics of important industrial components of the series, to those that comprise substantially intact authentic physical remains that have been managed for many years as historic sites which display these characteristics. Others possess an extremely complete survival not only of form, design and materials but also of continuing use and function.

Industrial History Related to the Yawata Area

The Yawata Area encompasses component parts that retain records related to the iron and steel industry in the third phase, Full-blown Industrialization, in the World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”



The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO on November 30, 2017, as an appendix to the State of Conservation Report noted the following:

11. Interpretation Plan (extract)

(1) Consistent OUV rollout across all component parts

Based on the Interpretation Strategy, the consistent interpretation of OUV should be presented across all component parts. This will be agreed by all stakeholders, and coordinated and implemented commonly in a branded World Heritage style.

(2) and (3) Progress in dealing with the “full history” of each site, including information gathering related to workers

Advice from international experts who are members of the Expert Committee on the Industrial Heritage including Operational Properties (Cabinet Secretariat of Japan), from the international heritage expert who was the ICOMOS technical evaluation field assessor of the World Heritage nomination of the “Sites of Japan’s Meiji Industrial Revolution”, and from the President of the ICOMOS International Scientific Committee on Interpretation and Presentation, comprises the following four key policies:

- 1) Focus on the interpretation of Outstanding Universal Value; in conformity with the primary purpose of the World Heritage, OUV of the inscribed property should be presented clearly at each site, not confusing with other, albeit related, issues. Based on this, Recommendation g)* should be implemented.
- 2) The scope of the “full history” of each site, except for the OUV period (from 1850s to 1910) as described on page 78, falls into two parts: prior to 1850s, and from 1910 to the present. The target of the full history should be narrowed down, considering the local values that supplement the understanding of the background of each component part. Where relevant, with regard to the interpretation of the full history on the location of each component part, high quality research such as collecting primary historical documents and recording oral testimonies should be carried out, and the result of this research should, at some stage, be made publicly available through appropriate media.

* Recommendation g)

“Preparing an interpretive strategy for the presentation of the nominated property, which gives particular emphasis to the way each of the sites contributes to OUV and reflects one or more of the phases of industrialisation; and also allows an understanding of the full history of each site.”

Based on the Interpretation Strategy, we have had multiple audits of the current status of interpretation at the component parts and visitor centres, etc., in the various areas undertaken by international experts familiar with industrial assets and the interpretation thereof in countries around the world.

As a result, auditor Barry Gamble identified the following issues in relation to the Yawata area.

- The First Head Office's conservation works are to be commended. When they are completed in 2020, it will provide a fitting facility to present its contribution to the WHS and that of the Component Part - even though access will (at least for the time being) be limited due to its location within the operational site.
- The First Head Office observatory space has enhanced its visitor experience with the introduction of a virtual reality experience that provides interpretation of the WHS and also the history of this Component Part. There is an early stage proposal to develop a tunnel from the observatory to the First Head Office which would provide safe and controlled physical access to a secured area within this operational site which has necessary restricted access.
- The Innovation Gallery is an appropriate publicly accessible cultural facility that serves as a visitor centre to accommodate the future "common exhibition".
- The Onga River Pumping Station interpretation is to be commended. It clearly states the significance of the Component Part and its contributions and relationships to other Component Parts and the overall OUV of the WHS.

Discussions have been held regarding this interpretation plan for the Yawata Area thus far by the local conservation council.

As pointed out above, conservation work on the First Head Office has been completed according to schedule. With regard to establishing roads leading directly to the facility, discussions are currently underway with experts both in Japan and abroad to determine a plan that will ensure public access without any damage to World Heritage values.

We will also cooperate with the Industrial Heritage Information Centre to develop exhibits that better reflect the World Heritage values in harmony with the historical and cultural values of the region.

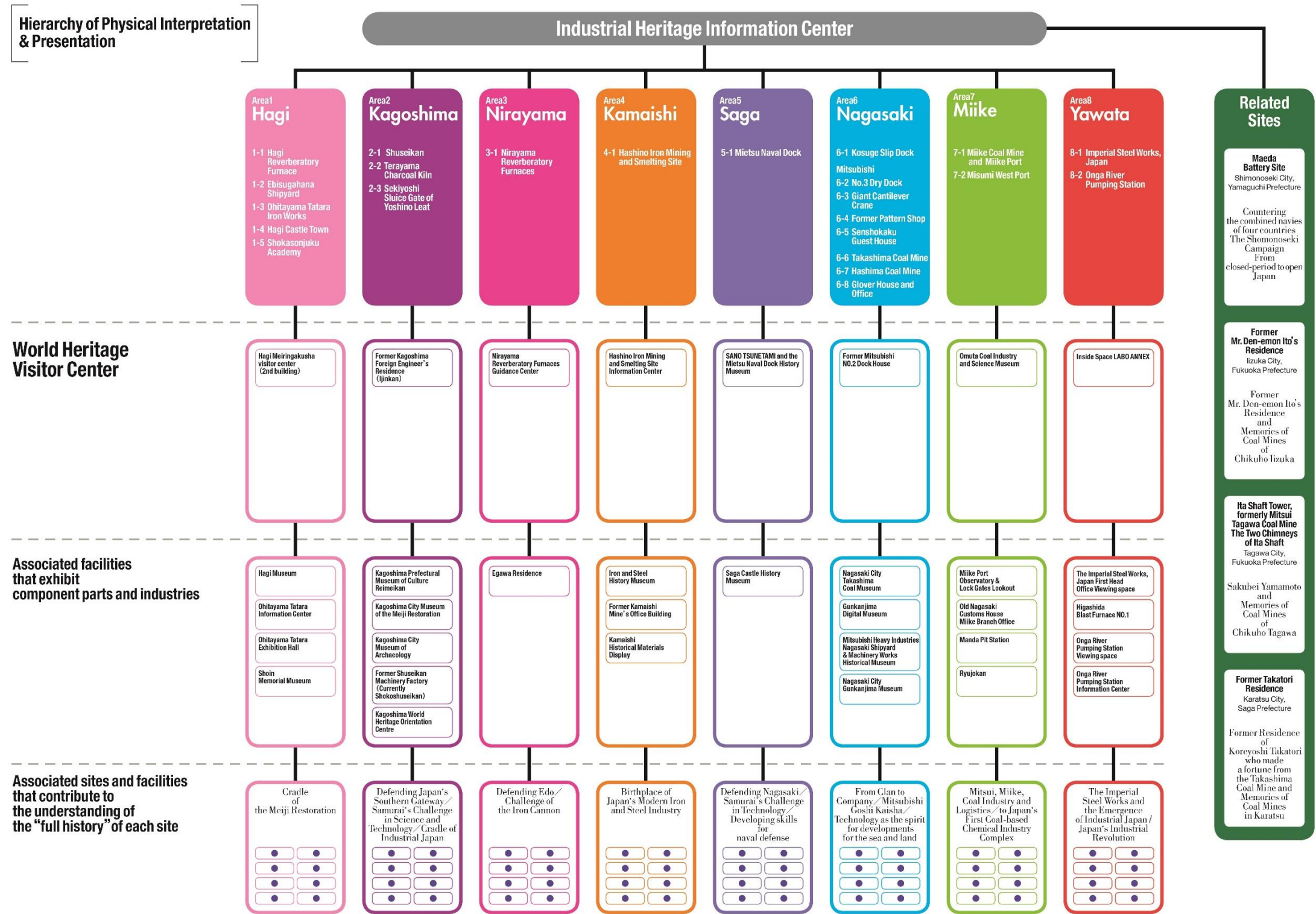
The local conservation council will review the implementation progress of this plan and consider ways to make improvements as appropriate.



Local Conservation Council meeting

Hierarchy of Physical Interpretation and Presentation

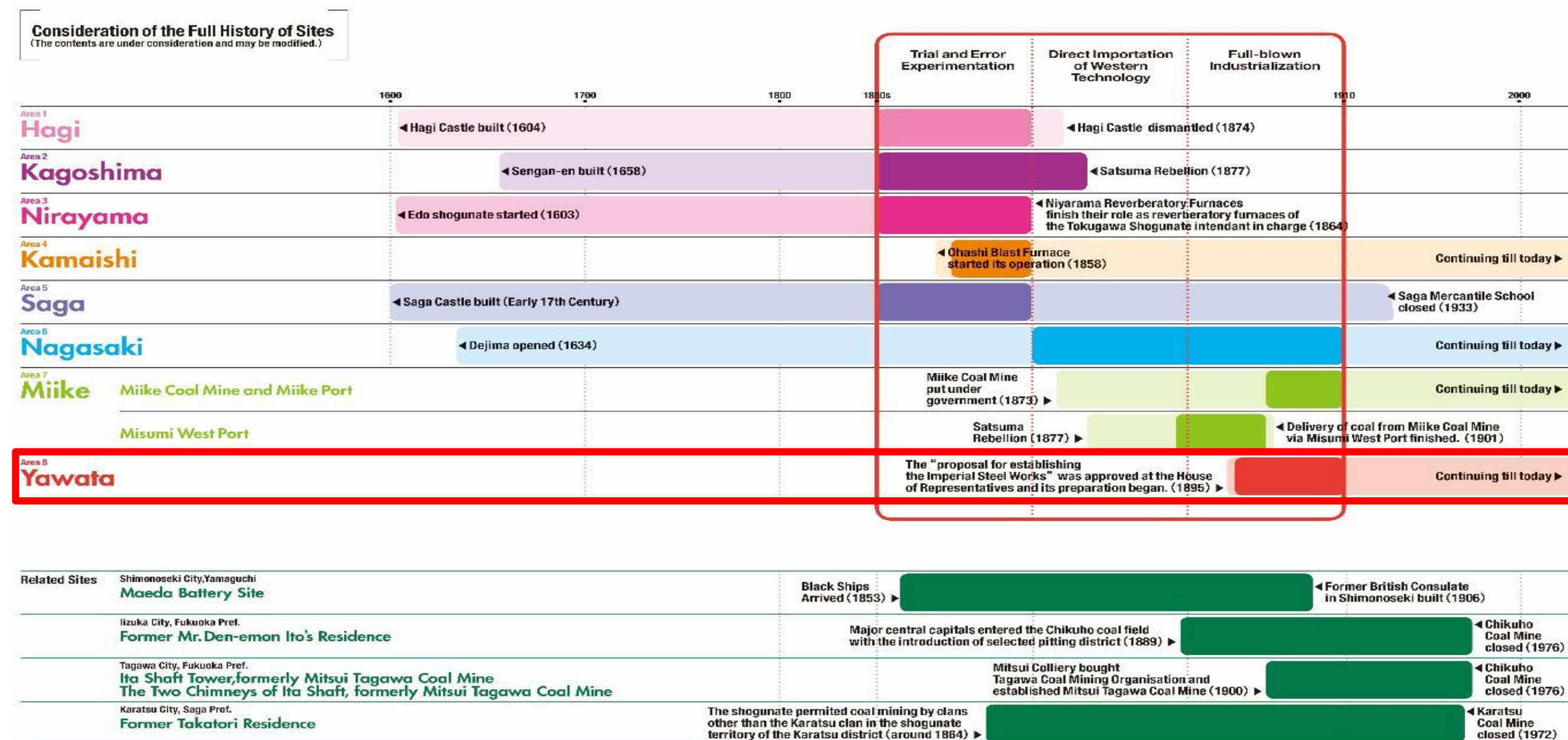
The Industrial Heritage Information Centre and the various local visitor centres will work together to build a system enabling the effective communication of the OUV of the Sites of Japan’s Meiji Industrial Revolution.



Related sites: Sites that were component part candidates in the provisional UNESCO World Heritage listing on the January 5, 2009, and that comprise industrial heritage (valuable assets that provide insight into the historical background and social situation of the time) that will be utilized in an integrated manner with the World Heritage Listed “Sites of Japan’s Meiji Industrial Revolution.”

Consideration of the Full History of Sites

The Interpretation Strategy which the Cabinet Secretariat submitted to UNESCO in 2017, addressed consideration of the full history of sites as shown in the figure below.



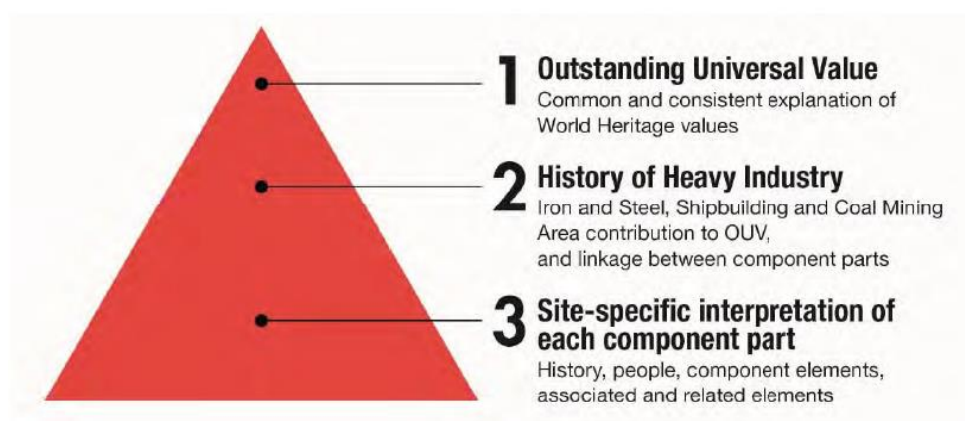
Interpretation in the Yawata Area

Approach of the Interpretation Strategy

The Interpretation Strategy provides the following schematic in relation to concepts for interpretation and presentation.

Interpretation for the Yawata area too will be approached in line with this in order to resolve the issues identified in interpretation audits.

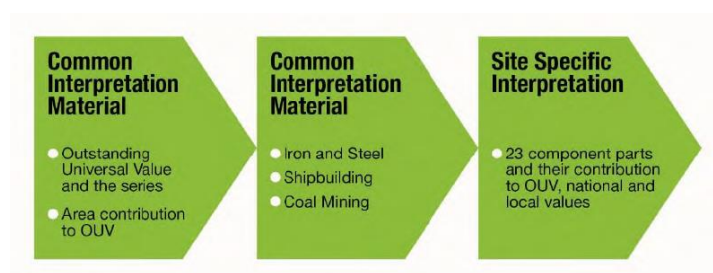
Interpretation and presentation of the Sites of Japan's Meiji Industrial Revolution: Hierarchy of value and themes



OUV stands at the top of the interpretation pyramid at the Industrial Heritage Information Centre and the various regions' visitor centres and is therefore the top-priority theme over the interpretation and presentation of individual regions and industries, such as history specific to an area or component part. Addressing interpretation in the order of (1) OUV, (2) the history of heavy industry, and (3) site-specific interpretation of each component part, as shown above, will ensure consistent presentation across the property

Interpretation flow at each local visitor centre

Hierarchy of Interpretation



Relationship between Iron and Steel Sites

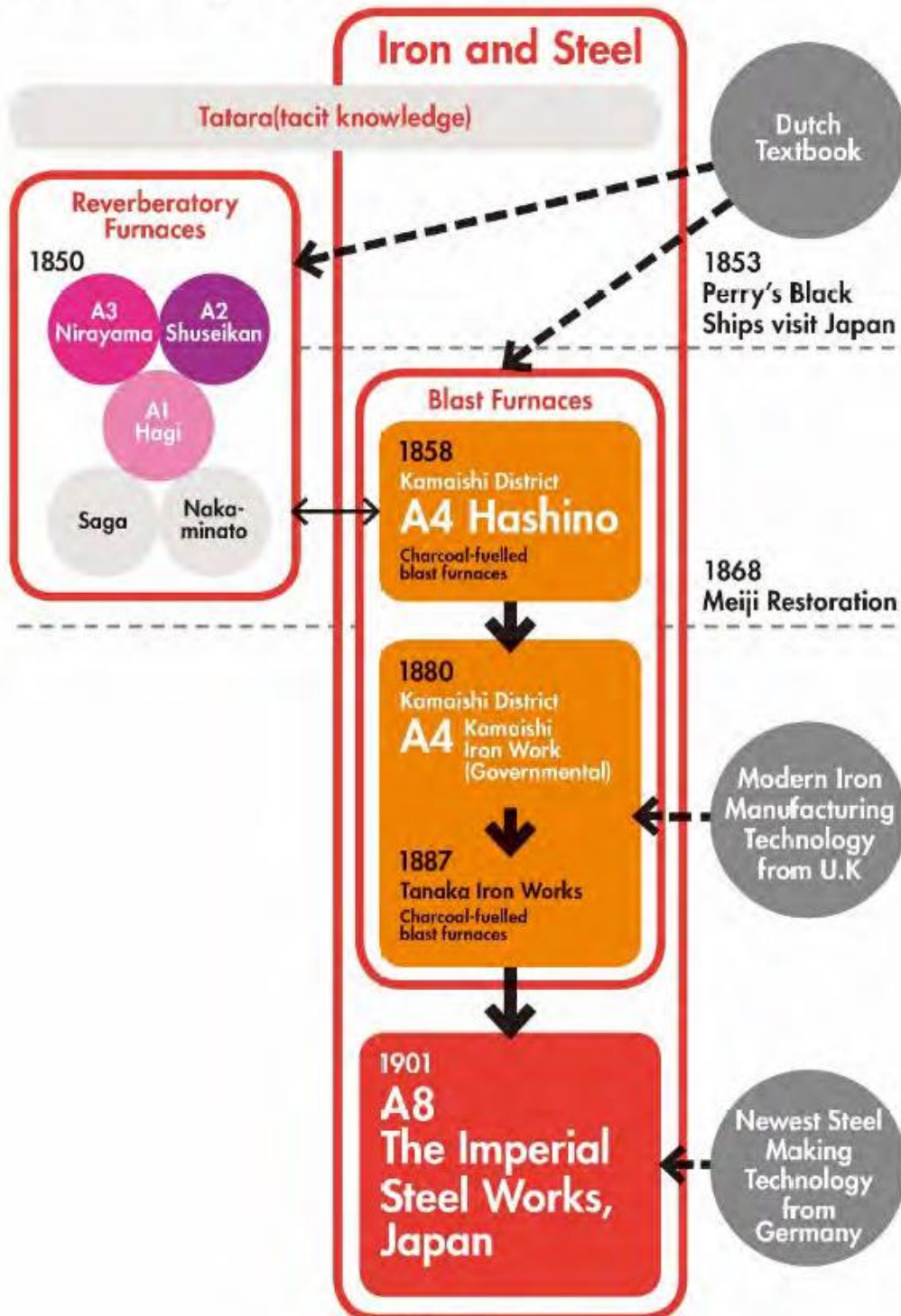


Figure 3-2



Presentation Using “Liquid Galaxy,” Etc.


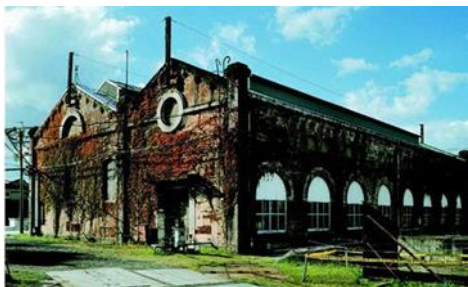
The Industrial Heritage Information Centre, which was established in March 2020 pursuant to the Interpretation Strategy, uses an immersive video multi-display that draws on the World Heritage OUV period (1850s-1910), as well as the Consideration of the Full History of Sites schematic. It explains through images the history and transformation of component parts in the various areas, as well as the way that people lived, etc., presenting these in a way that enables visitors to experience in a very real way the evolution of the property, the contribution to OUV, and the full history. This area will also establish a digital archive of documents gathered by the Industrial Heritage Information Centre and the visitor centre in the area, which will be gradually reflected into interpretation tools.



Yawata Area Component Parts

This area contains four component parts in total, all heritage that relates to the Imperial Steel Works, Japan, with the Repair Shop and Onga River Pumping Station being component elements that are still operational today.

<p>Relevant industries: Iron and steel</p> <p>Name of component part: First Head Office of the Imperial Steel Works, Japan</p> <p>(Overview of component part) Built in 1899 ahead of production facilities, this edifice is an architectural fusion of Japanese and European design, a two-story, red brick building with bilateral symmetry and a central dome set with a Japanese tile roof. The building contained offices for the director, chief engineering officer, and advisory engineer and performed a central function in the steel works.</p>	 <p>(Facility not open to the public)</p>
<p>Relevant industries: Iron and steel</p> <p>Name of component part: Repair Shop of the Imperial Steel Works, Japan</p> <p>(Overview of component part) Designed by German firm Gutehoffnungshütte (hereafter GHH) and built using their steel material in 1900, this facility remains today as the oldest existing steel-structured building in Japan. It was used in the manufacturing and processing of various parts used in the steel works and for repairing machinery. Since then, it has been enlarged on three occasions to accommodate the increase in the amount of steel production and remains today as an industrial facility still in operation for over a century.</p>	 <p>(Facility not open to the public)</p>

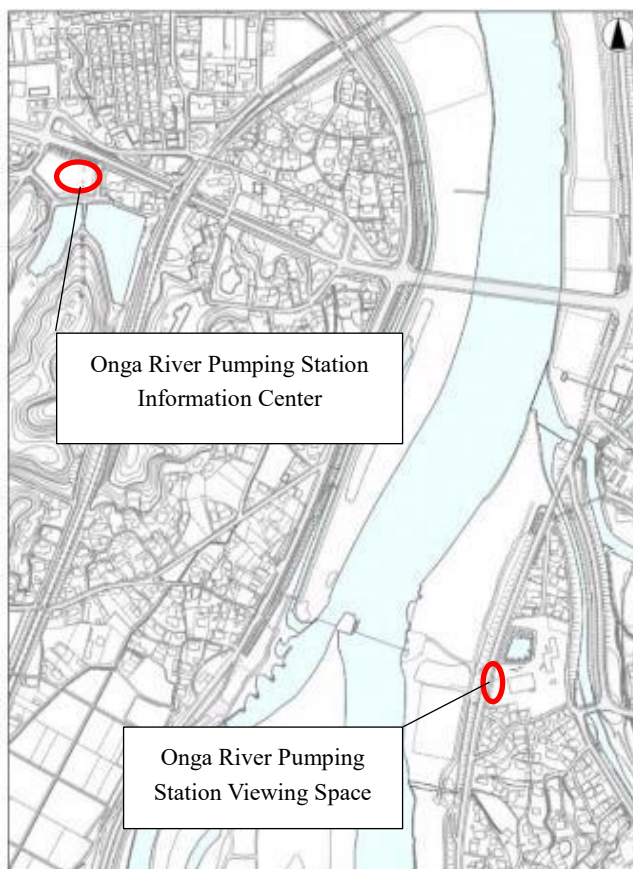
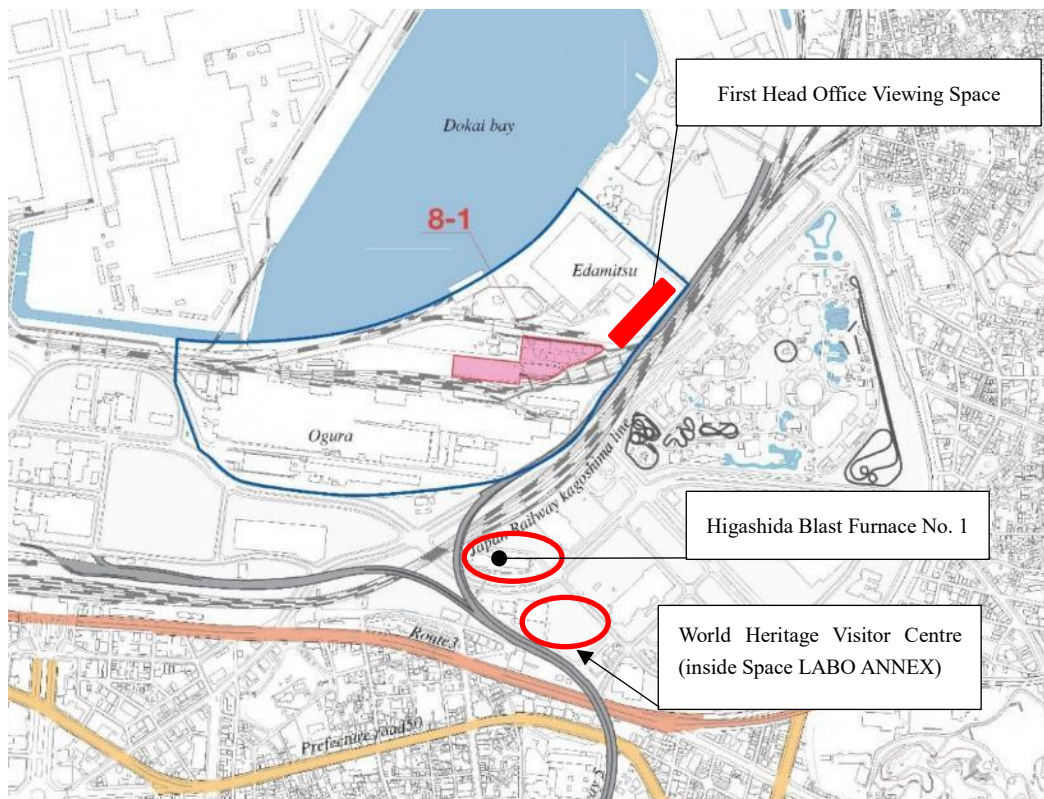
<p>Name of component part: Former Forge Shop of the Imperial Steel Works, Japan (Overview of component part) Built in 1900 for the purpose of manufacturing forgings needed for the construction of the steel works. This steel-structured building was designed by German firm GHH and built using their steel material, just like the Repair Shop. Forgings needed for the construction of the steel works, such as large-scaled spanners, chisels, hammers, and stands for machine mounting, were manufactured here.</p>	 <p>(Facility not open to the public)</p>
<p>Relevant industries: Iron and steel Name of component part: Onga River Pumping Station (Overview of component part) Facility used to deliver water to the steel works. It began supplying industrial water in 1910 to cope with the shortage that arose with the 1st phase expansion plans for the steel works. It is a red brick building typical of Meiji architecture. Steam has been replaced by electricity for power, and the facility is still in operation today.</p>	 <p>(Facility not open to the public)</p>

World Heritage Plaques

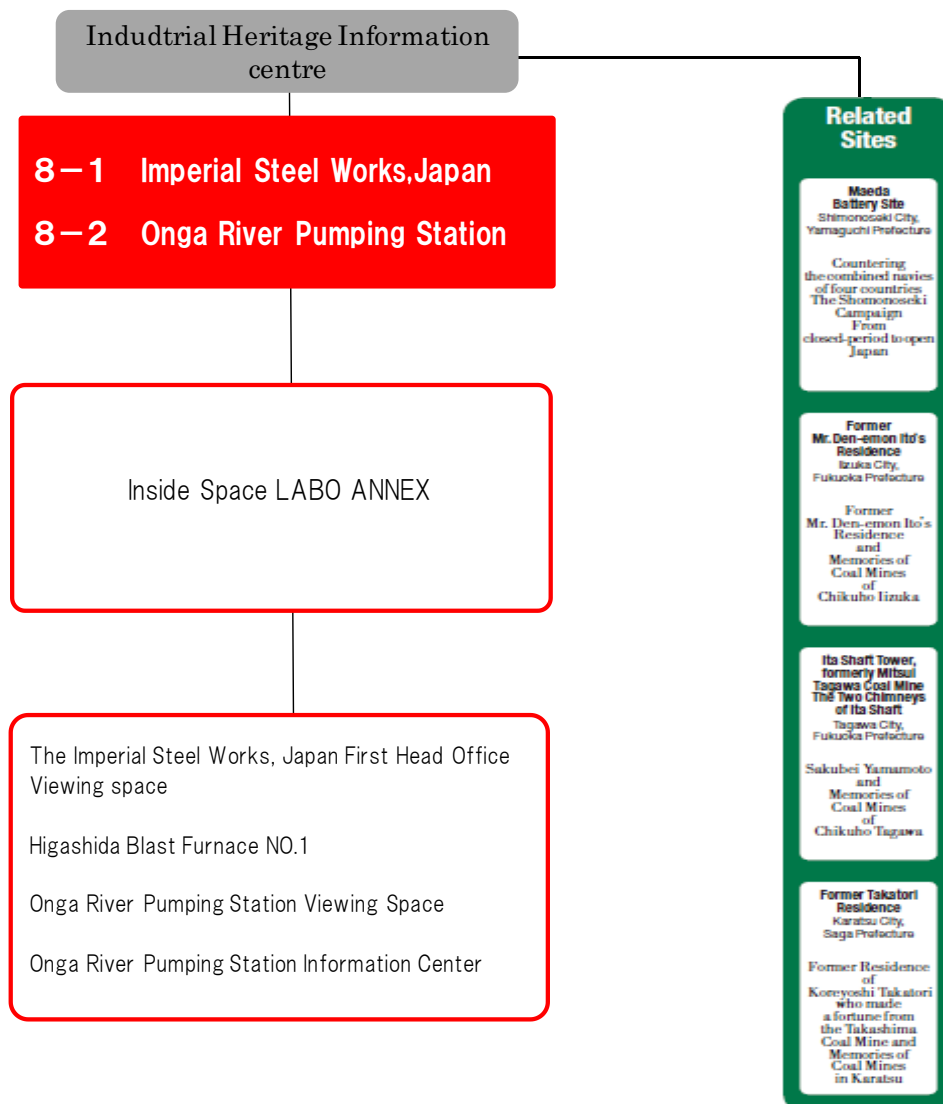
In line with the UNESCO Guidelines, World Heritage plaques have been installed at the various component parts to inform visitors properly about the OUV of the property.



Yawata Area: Distribution of Interpretation Facilities



Yawata Area: Hierarchy of Physical Interpretation and Presentation



Access Guide Maps

Access guide maps for the component parts in each area have been produced in both Japanese and English and are distributed free to visitors. The Nagasaki area map will also be available in Chinese and Korean as of early December. The access maps are designed to help tourists orient themselves in relation to the component parts of the various areas and enable them to visit as many component parts as possible within each area.

By linking the maps to a smartphone app, information can be communicated about component parts not open to the public using augmented reality (AR) functions to show 3D models, videos, and 360-degree panorama views of inaccessible sites.



Information Counters

These are set up in administrative institutions and airports to distribute access guide maps and other information.



Kitakyushu City Hall



Hankyu Ferry Terminal (Izumiotu City, Osaka)

Guide Map Distribution Points and Number of Maps Distributed

Guide map distribution points and the number of maps distributed are as follows.

Overall map		Yawata Map	
No. distributed	177,762	No. distributed	65,519
Japanese & English	177,762	Japanese	50,090
Main distribution point	No. distributed	Main distribution point	No. distributed
Administrative organizations	300	Administrative organizations	14,104
Airports	550	Airports/ Airlines	1,350
Hotels	50	Hotels	2,700
Car rental agencies	100	Car rental agencies	100
JR (Railway)	600	JR (Railway)	800
Tourist information centers	700	Tourist information centers	81
Michi-no-eki roadside stations	4,400	Michi-no-eki roadside stations	2,000
NEXCO	168,500	NEXCO	15,300
Public interest corporation/foundation/ incorporated association	550	Public interest corporation/foundation/ incorporated association	4,250
Other	2,012	Other	40,685
JR Kyushu Hakata Station General Information		Council for the Japan Heritage Kanmon Straits	
West Nippon Expressway Retail Co., Ltd.		General Affairs Division, Planning and Coordination Bureau, City of Kitakyushu	
West Nippon Expressway Service Holdings Company Limited		Cultural Promotion Division, Human Resources Development and Citizens Affairs Department, Fukuoka Prefectural Government	
Fugetsu Foods Co., Ltd.		Kitakyushu Museum of Natural History & Human History	
Fukuoka International Airport Co., Ltd.		Yawata Steel Works, Nippon Steel Corporation	
Nagasaki Airport		Iizuka City Historical Museum	
Kagoshima Prefectural Library		Tagawa City Coal Mining Historical Museum	
JR Kagoshima Chuo Station Tourist Information Center		Moji Coast Guard Office	
Kitakyushu Convention & Visitors Association		Fukuoka City Tourist Information Center	
Omura City Hall Industrial Promotion Dept.		Kitakyushu Air Terminal Co., Ltd.	
JR Miyazaki Station Tourist Information Center		Kanmon-Kisen Co., Ltd.	

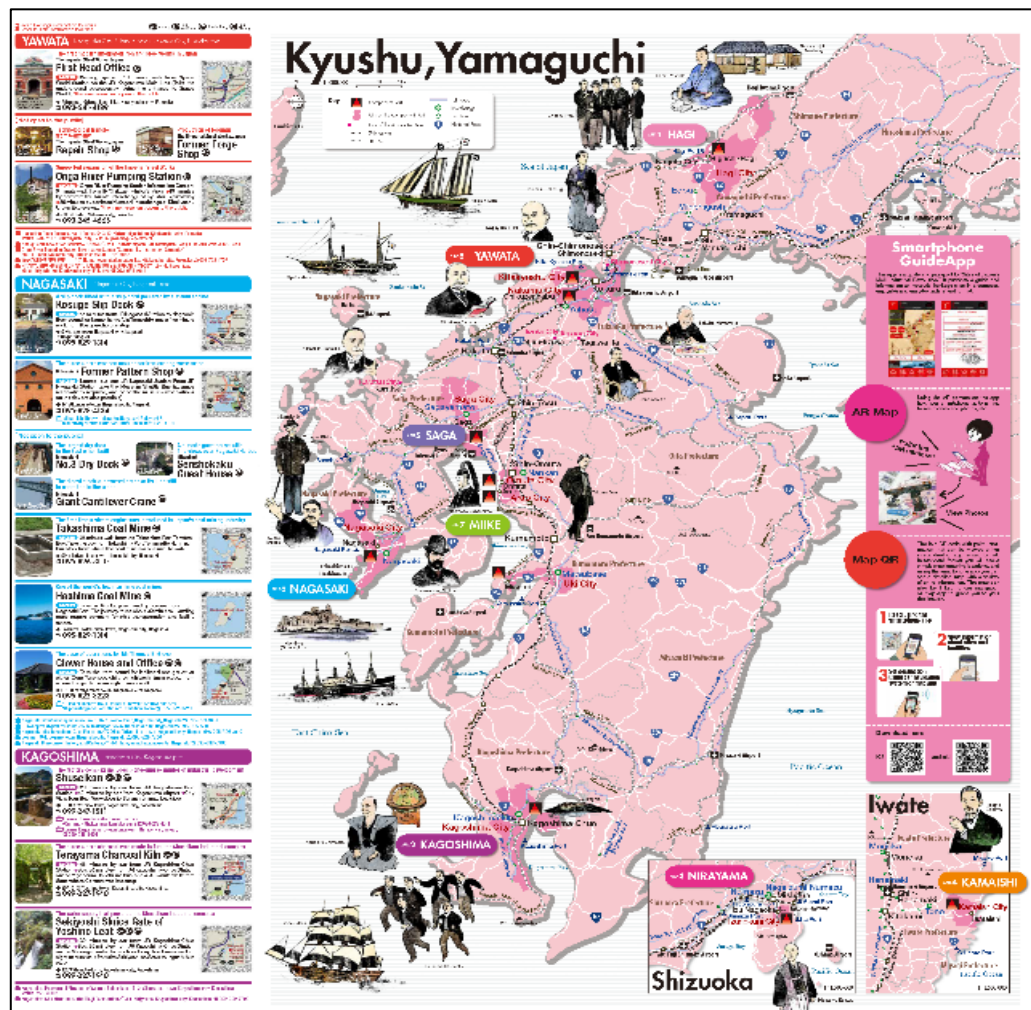
Total no. distributed
for the entire area

464,025

World Heritage Route

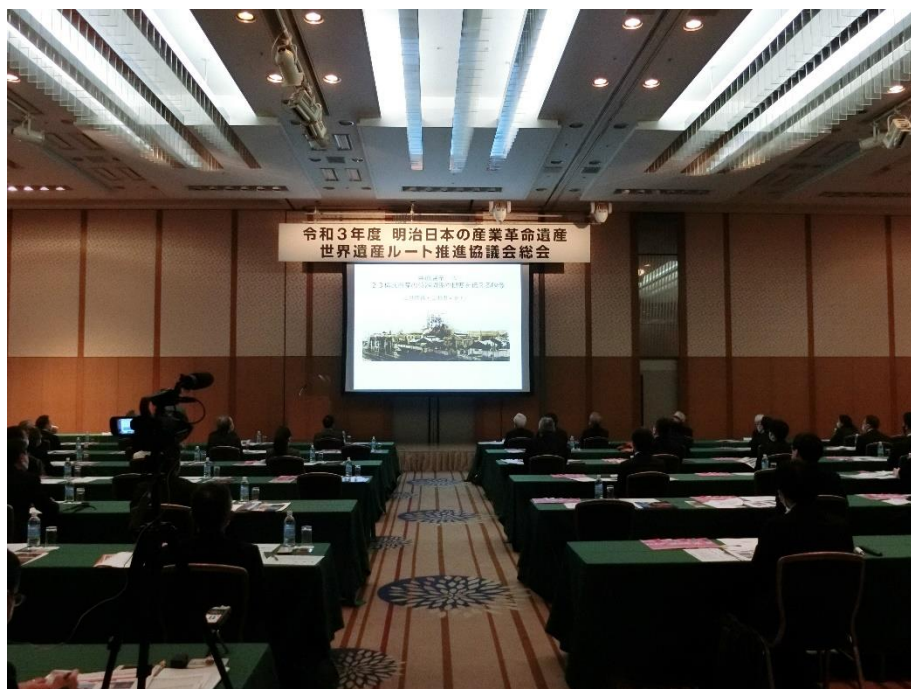
In accordance with the Interpretation Strategy, and also as noted in pages 395–396 of the Nomination Document, the World Heritage Route Promotion Council was founded to provide guidance and tourism infrastructure for understanding World Heritage as a whole. The Council attracts visitors to all component parts and related sites by producing maps, apps, and GPS navigation and by installing road signs and other signage using the common logo to promote the Sites of Japan's Meiji Industrial Revolution so that visitors are able to understand the World Heritage value constituted by the 23 component parts.

Work will continue to be undertaken steadily pursuant to the Nomination Document and the Interpretation Plan.





Map on p. 396 of the Nomination Document



World Heritage Route Promotion Council meeting

Installation of Road Signage, Etc., Using the Common Logo

Status of installation of road signage

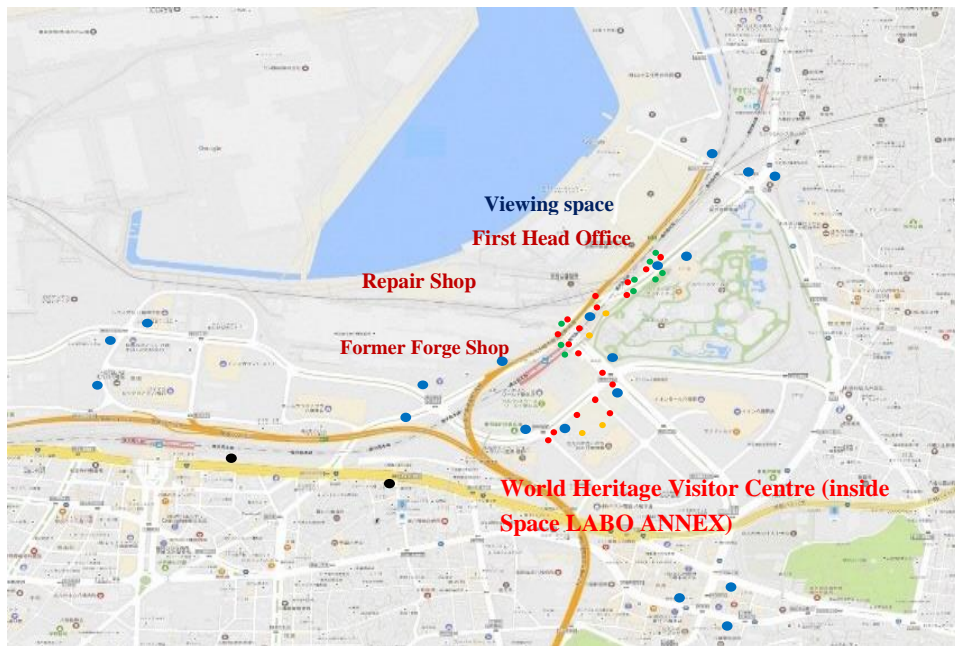
Place	No. of signs installed
Kitakyushu City	54
Nakama City	14

Photos of road signage



Locations of Road Signs Using the Common Logo

(Kitakyusyu City)

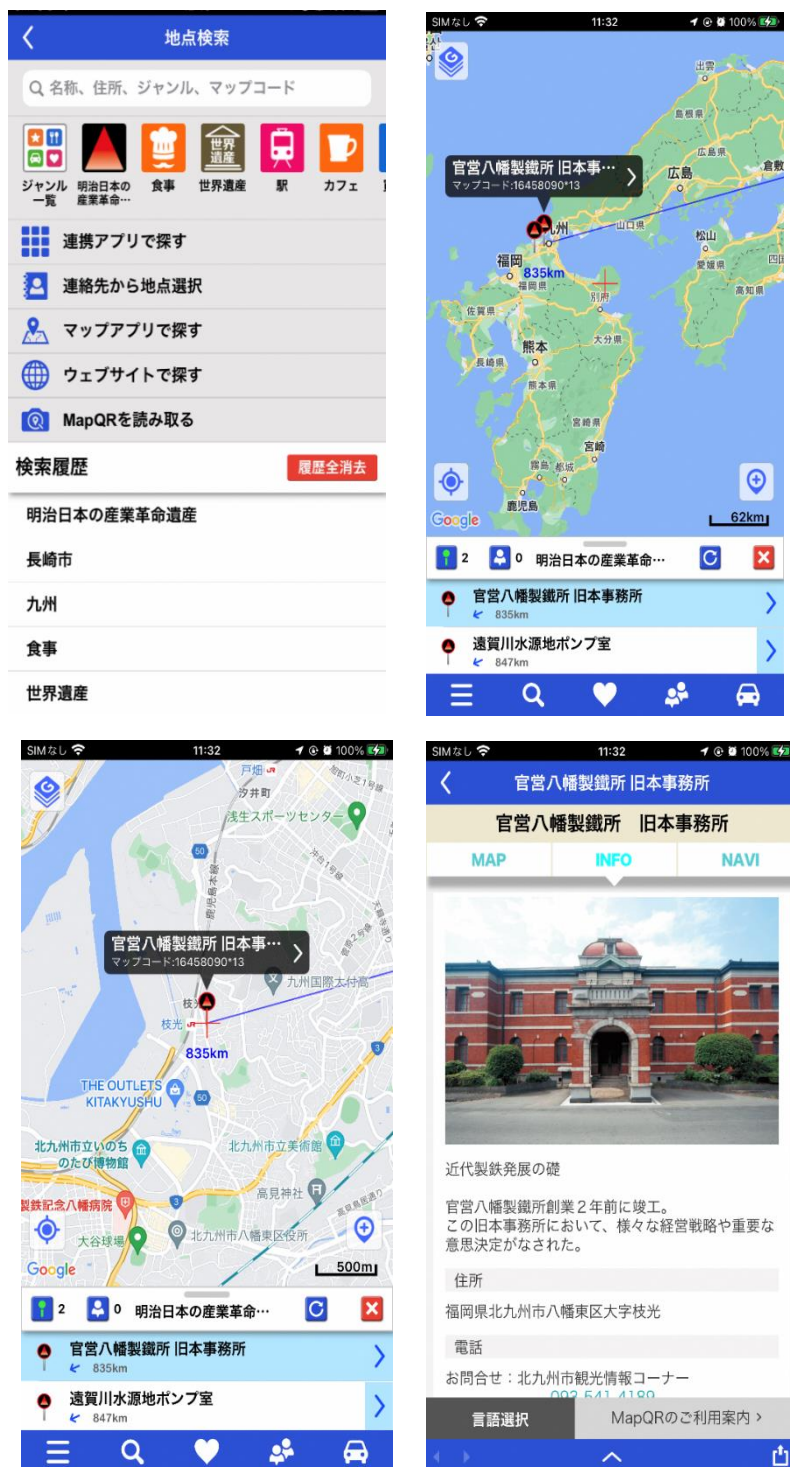


(Nakama City)



Linkage with Car Navigation (Denso Car Navigation)

Example of linkage with smartphone app so that the target destination can be sent to a car navigation system



The destination can be sent directly from a smartphone to the car navigation system.



A video on how to use the application has been put up on YouTube.



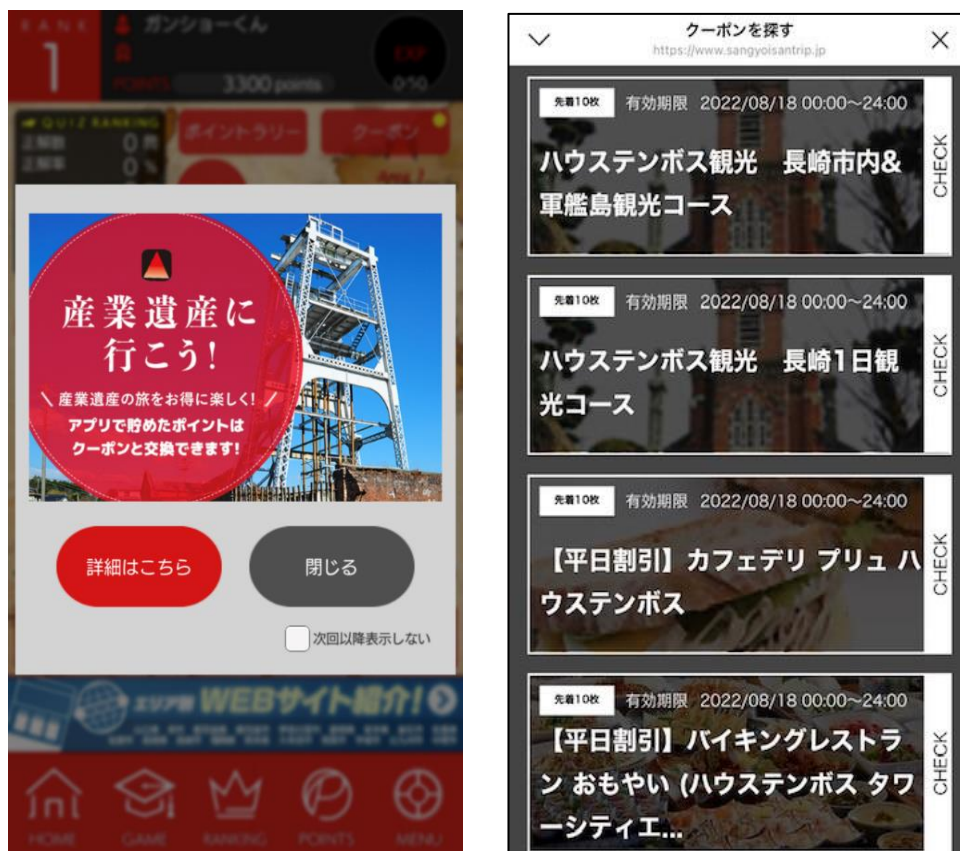
App Utilization

The app introduces the Sites of Japan's Meiji Industrial Revolution, including detailed stories and explanations, as well as the historical background, using video and computer graphics, etc. Users can earn points by playing games and using the AR camera on the app and use them as coupons for souvenirs and other prizes. As such, it serves as a mechanism for both deepening understanding of World Heritage value and feeding back into World Heritage Route tours. The smartphone app is available in Japanese, English, Korean, simplified Chinese, traditional Chinese, and Vietnamese.



Use of Line App

Points acquired on the app can be exchanged for coupons.



Point-of-purchase advertising has been created and placed in stations and information centres, etc., to encourage people to sign up to the LINE app.



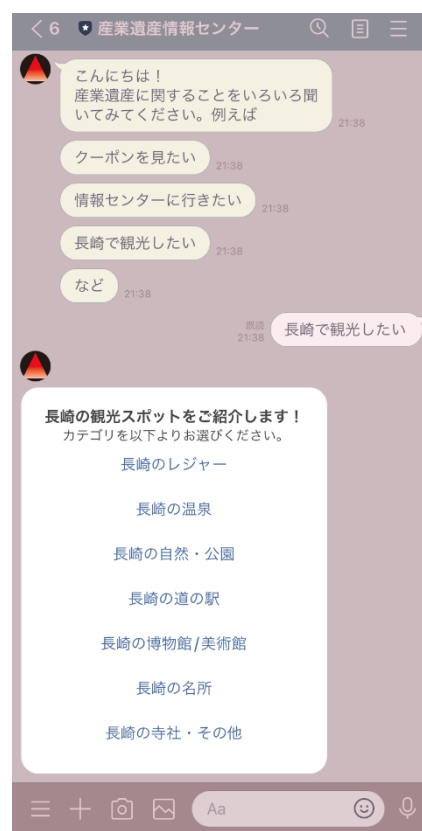
LINE is used as a runway for achieving two-way communication geared to the circumstances of the user based on locational information, such as the use of existing guide apps and communication about coupons that can be used in shops at the area visited. The service is provided in multiple languages so as to support international visitors.



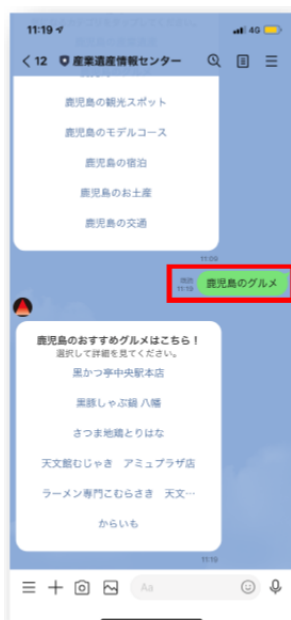
LINE functions (examples)



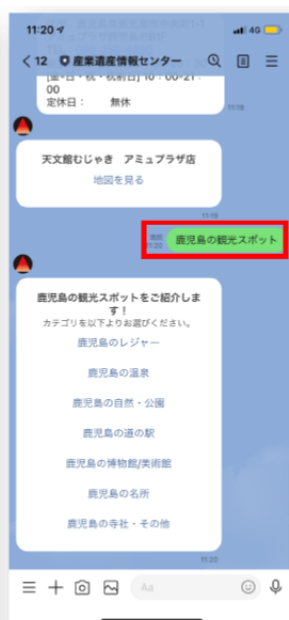
Introduction to model courses



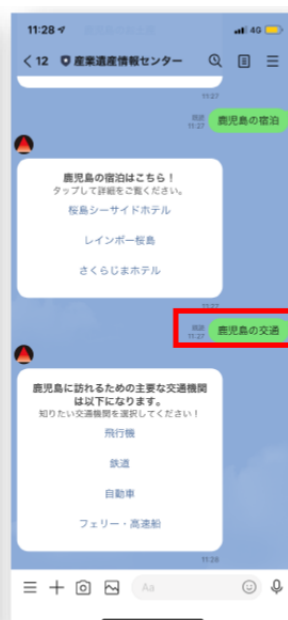
AI chatbot function



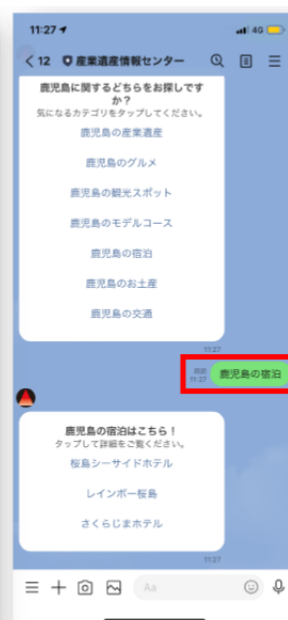
Gourmet information



Tourist spots



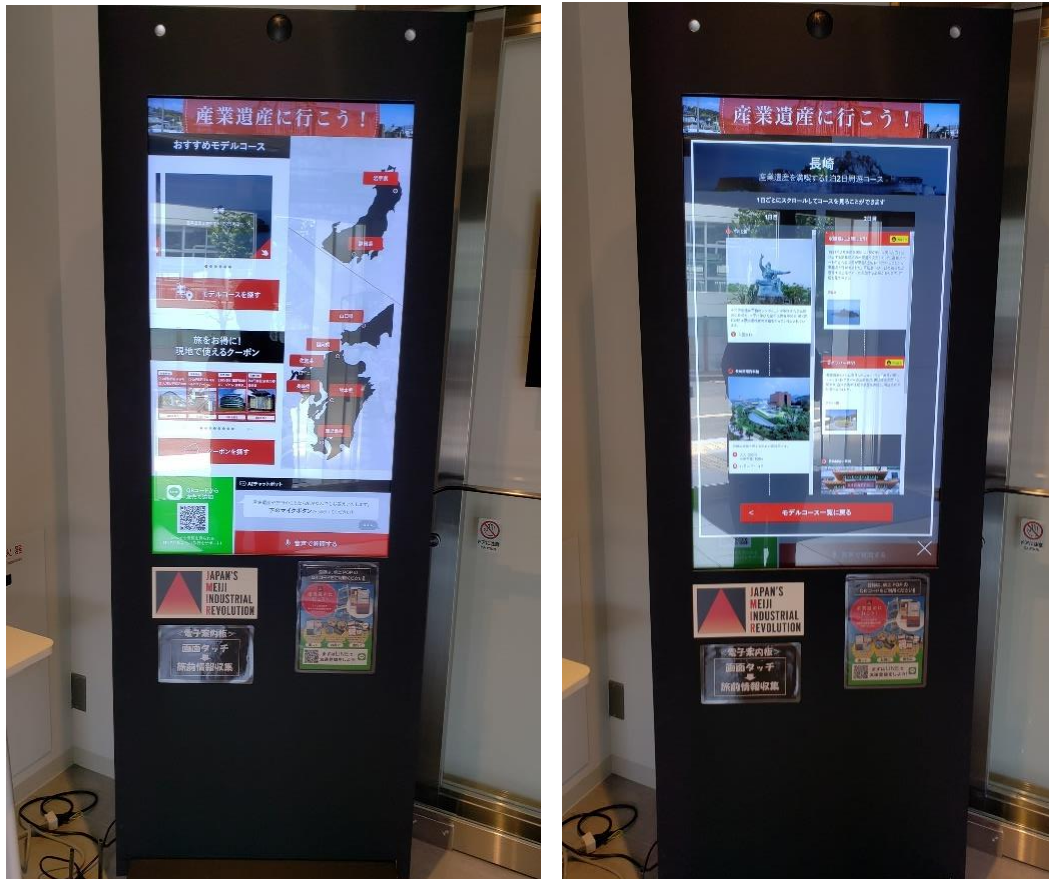
Traffic information



Accommodation information

Digital Signage Functions

Digital signage has been installed in the Industrial Heritage Information Centre as a mechanism for encouraging multi-destination tourism by displaying local guide maps and information on multi-destination industrial heritage routes. AI chatbots have also been installed to respond to a wide range of multi-destination routes and tourism questions in real time.



Enhancement of digital content

Component elements that are operational and not open to the public in this area are introduced on relevant websites and applications with content created using digital technology that recreates scenes of facilities in operation.

- 1) Explanation of OUV and a simulated tour utilizing virtual reality
(First Head Office Viewing Space)



官営八幡製鐵所 VR視聴コンテンツ

HISTORY 世界遺産 官営八幡製鐵所

[プロローグ]

写真提供：日本製鉄㈱九州製鐵所



▶ 3分50秒

日本製鉄(株)九州製鐵所には、操業当時の歴史を記憶したガラス乾板写真があります。この貴重な史料を使用し、世界遺産たる官営八幡製鐵所の歴史的な価値を伝えるストーリーです。

※コンテンツ全体のプロローグとしてご覧ください。

TIME TRAVEL

[タイム・トラベル]

構成資産 旧本事務所

写真提供：日本製鉄㈱九州製鐵所



▶ 1分

TIME TRAVEL

[タイム・トラベル]

構成資産 修繕工場

写真提供：日本製鉄㈱九州製鐵所



▶ 1分

現在の写真から、当時を再現したCGで一世紀前へタイムトラベル。構成資産である「旧本事務所」と「修繕工場」の2つのコンテンツが、お楽しみいただけます。

THE IMPERIAL STEEL WORKS, JAPAN

VIRTUAL TOUR 旧本事務所 見学ツアー

[バーチャル・ツアー]



▶ 3分30秒

官営八幡製鐵所「旧本事務所」内部を歩いている感覚で見学できる360°バーチャルツアーです。内装復元工事前の様子を2018年春に360°カメラで撮影した貴重な映像を元にしています。

VIEW FROM SKY 空から観る世界遺産関連施設

[ビュー・フロム・スカイ]



▶ 視聴時間は任意です

眺望スペース上空から、ドローン&360°カメラで撮影。「旧本事務所」「修繕工場」「旧鍛冶工場」3つの構成資産に加え、東田第一高炉史跡広場や北九州イノベーションギャラリーを空の上からの爽やかな眺めとともにご紹介します。

タブレットでも、 VRデバイスと同じコンテンツ をお楽しみいただけます。

グループやご家族で眺望スペース訪れた方や
VRは苦手という方には、タブレットでの視聴
が可能です。



写真提供：日本製鉄九州製鉄所

！ ご利用上の注意

- ※VRの視聴は無料ですが、台数に限りがございます。
- ※眼科に通われている場合や目に疾患をお持ちの方は、専門医に相談の上、ご利用ください。
- ※屋外での視聴のため、雨天の場合など、天候によりVR視聴ができない場合があります。
- ※13歳未満は原則タブレットでの視聴となりますが、保護者の同意を頂く方のみVRゴーグルでの体験を実施させて頂いています。
(但し、7歳未満は保護者の同意があってもVRゴーグルを使用できません。)

官営八幡製鐵所 旧本事務所 眺望スペース

(北九州市八幡東区東田5丁目)



- 入場無料
- 開場時間 / 9:30～17:00 (入場は 16:30 まで)
- 閉場日 / 毎週月曜日、年末年始
- JR 利用 / 鹿児島本線 スペースワールド駅から徒歩約 10 分
- 都市高速利用 / 北九州都市高速「枝光 IC」から車で 2 分
- ※専用駐車場 (無料) あり

アクセス

- 2) Commemorative photo using AR app
(First Head Office Viewing Space)



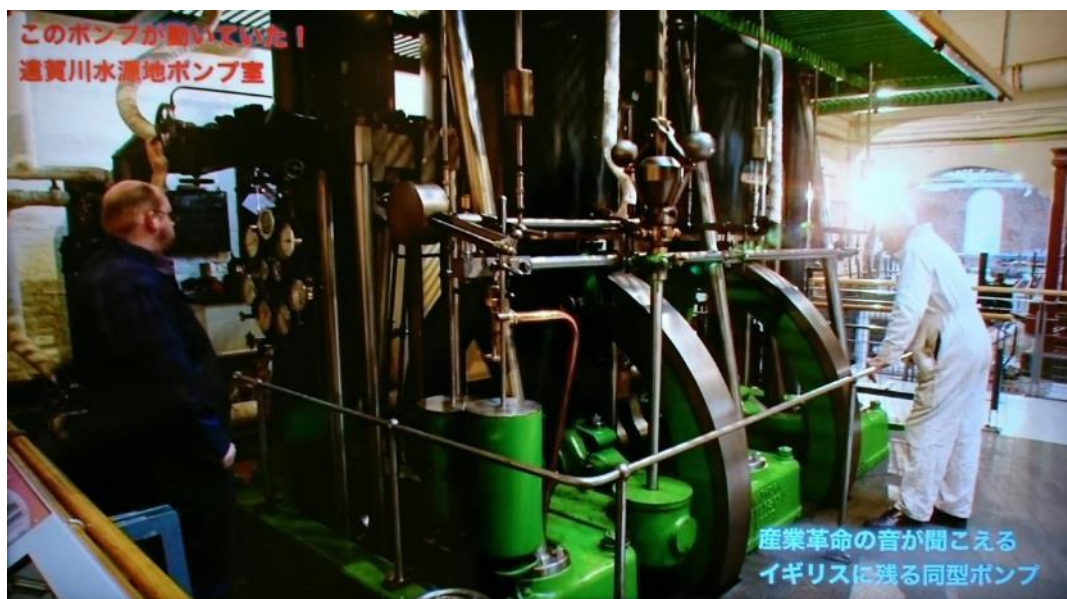
- 3) Footage of the interior and description of components, etc., using digital signage



- 4) 3D measurement technology images of the Onga River Pumping Station building interior (Onga River Pumping Station Information Center)



- 5) Video introducing the same triple expansion pumping engine as that of the Onga River Pumping Station (Onga River Pumping Station Information Center)

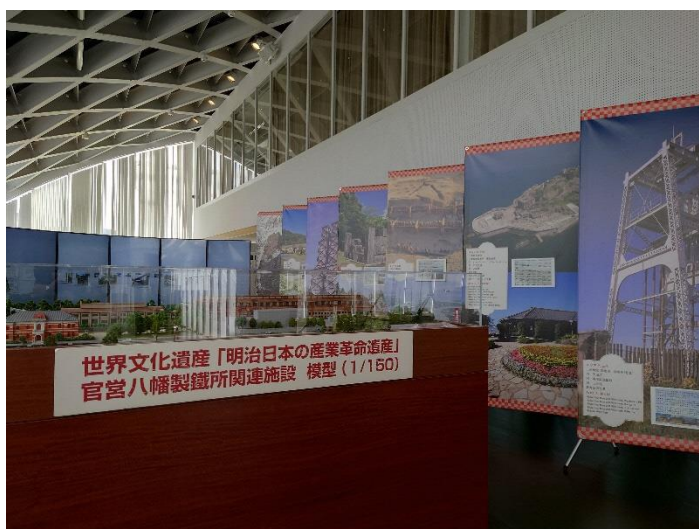
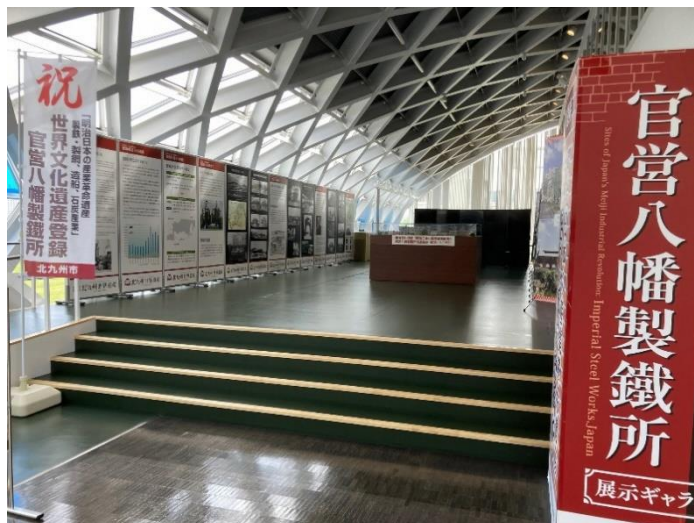


Visitor Centres

The Yawata Area is equipped with one visitor centre and four auxiliary facilities with exhibits of component parts and the industrial sector in line with the interpretation strategy. Each facility cooperates with the local community to prepare exhibits that best bring out the true World Heritage values in harmony with the historical and cultural values of the region. They aim to create exhibits that allow visitors to understand the value of the components easily. We will work to digitize valuable primary historical material and create exhibits leveraging digital tools going forward in cooperation with the Industrial Heritage Information Centre, taking into consideration issues raised by the interpretation audit.

[Inside Space LABO ANNEX]

A facility where visitors can learn about the overall history and World Heritage values through miniature replicas 1/150 in size that recreate the Imperial Iron Works-related facilities, along with panel exhibits and video content.



[The Imperial Steel Works, Japan First Head Office Viewing Space]

The Imperial Steel Works, inscribed as World Heritage, is not open to the public as it is situated in a steel works area that is still operational today. Thus, a viewing space is made available to allow visitors a closer look at the First Head Office which is a World Heritage facility.



[Higashida Blast Furnace No. 1]

Blast Furnace No. 1 is preserved as a monument to symbolize Kitakyushu, which is the birthplace of Japan's first integrated iron production. The blast furnace has undergone ten reconstructions and had operated from its first firing in August 1962 until its shutdown in January 1972 as a pioneer for Japan's super-high-pressure blast furnace era.



[Onga River Pumping Station Information Center]

Visitors to this facility learn about the Onga River Pumping Station, from its construction to the history of the transition that took place in the water delivery system, as well as World Heritage values through displays of bricks and water pipes uncovered at the Onga River Pumping Station and intake weir used until recent years, in addition to old photos, interpretive panels, and images of the interior.



[Onga River Pumping Station Viewing Space]

This facility allows visitors to view the exterior of the Onga River Pumping Station and to learn about World Heritage values with interpretive panels. A static exhibit of the electric pump that was used inside until recent years is also on display in a neighboring location.



Monitor tour



Learning Program for Children



**World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel,
Shipbuilding, and Coal Mining” (No. 1484)**

**Heritage Impact Assessment Report for the Post-Disaster Recovery and Repair Project at
the Terayama Charcoal Kiln in Area 2 Kagoshima (Component Part 2-2)**

1. Introduction

This document reports on the Heritage Impact Assessment (hereinafter referred to as “HIA”) to be conducted in connection with the post-disaster recovery and repair project for the Terayama Charcoal Kiln (Component Part 2-2), one of the 23 component parts of the World Cultural Heritage property “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.”

The recovery and repair work is to be performed on the Terayama Charcoal Kiln, which partially collapsed due to landslides triggered by heavy rainfall between June 27 and July 1, 2019. State of Conservation Report¹ was submitted to the UNESCO World Heritage Centre in November 2019 describing the state of damage to the Terayama Charcoal Kiln and the emergency measures taken.

The post-disaster recovery and repair work will be conducted while paying close attention to ensuring there is no adverse impact on the Outstanding Universal Value (hereinafter referred to as “OUV”) of the Terayama Charcoal Kiln. The evidence from the end of the Edo period (1850s and early 1860s) and evidence of changes over time will be preserved, while endeavoring to secure stability in the kiln as a structure, maintaining a balance between those two considerations in restoring it.

The (1) Location and (2) Purpose of the post-disaster recovery and repair project covered by the HIA, as well as (3) Information assumed and (4) the Entity responsible for the HIA are as indicated below.

(1) Location of the project

The HIA applies to the post-disaster recovery and repair project proposal for the Terayama Charcoal Kiln (Component Part 2-2), a component part of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining,” inscribed on the World Heritage List in July 2015. Its location, longitude and latitude, land area, and other details are indicated in the table below (Figures 1, 2).

Component Part Name	Location	Latitude	Longitude	Component Part Area (ha)	Buffer Zone Area (ha)
Terayama Charcoal Kiln	Yoshino-cho, Kagoshima City	31° 39' 42.3"–45.5" N	130° 36' 0.6"–4.2" N	0.64	2.01

(2) Purpose of the project

Heavy rainfall between June 27 and July 4, 2019 caused the Terayama Charcoal Kiln to partially collapse on two occasions, on June 28 and July 1 (Photos 1 to 4).

Following the collapse, the surrounding area was made off-limits to ensure the safety of visitors. To prevent further flooding and runoff on the charcoal kiln and slope, they were covered with weathered sheets as an emergency measure (Photos 5 and 6). As additional measures, sandbags and other means were used to prevent water from accumulating on the sheets at the top of the kiln by enabling drainage from both inside and outside the kiln; while on the slope, drainage was installed on the flat area at the bottom of the slope so water runs to the nearby waterway.²

¹ The report is available for downloading at the following URL: <http://whc.unesco.org/document/179734> (See pp. 321–330.)

² To ensure these measures were effective, rainfall was monitored during the rainy season in June to July 2020, and it was confirmed that they functioned properly even when rainfall exceeded 100 mm per day.

Since full-scale recovery and repair work has not been achieved at this stage, however, leaving these emergency measures in place would inevitably have a considerable adverse impact on conserving the OUV and promoting understanding by visitors. At the same time, carrying out the post-disaster recovery and repair work too hastily must be avoided.

For these reasons, we wish to conduct the HIA at the planning stage of the recovery and repair project, and to carry out the project in a way that will minimize any adverse impacts on the aboveground and buried historical and archaeological remains/objects and landscape and will contribute to promoting understanding by visitors.

(3) Information on which the HIA is to be premised

The information assumed in conducting the HIA is that in public plans and reports, including a) the ICOMOS Evaluations of Nominations of Cultural and Mixed Properties of May 4, 2015 assumed in the Decision at the time of World Cultural Heritage inscription, b) the Conservation Management Plan attached to the Nomination file for World Cultural Heritage inscription,³ c) matters pertaining to methods for conservation of the Terayama Charcoal Kiln stipulated in the Conservation Work Programme and Implementation Programme for the Terayama Charcoal Kiln⁵ drawn up after inscription, d) the results of various surveys conducted based on these, and e) the results of surveys conducted following the disaster. An overview of a) to e) is given below.

³ The report is available for downloading at the following URL: <http://whc.unesco.org/uploads/nominations/1484.pdf> (See pp. 801-856.)

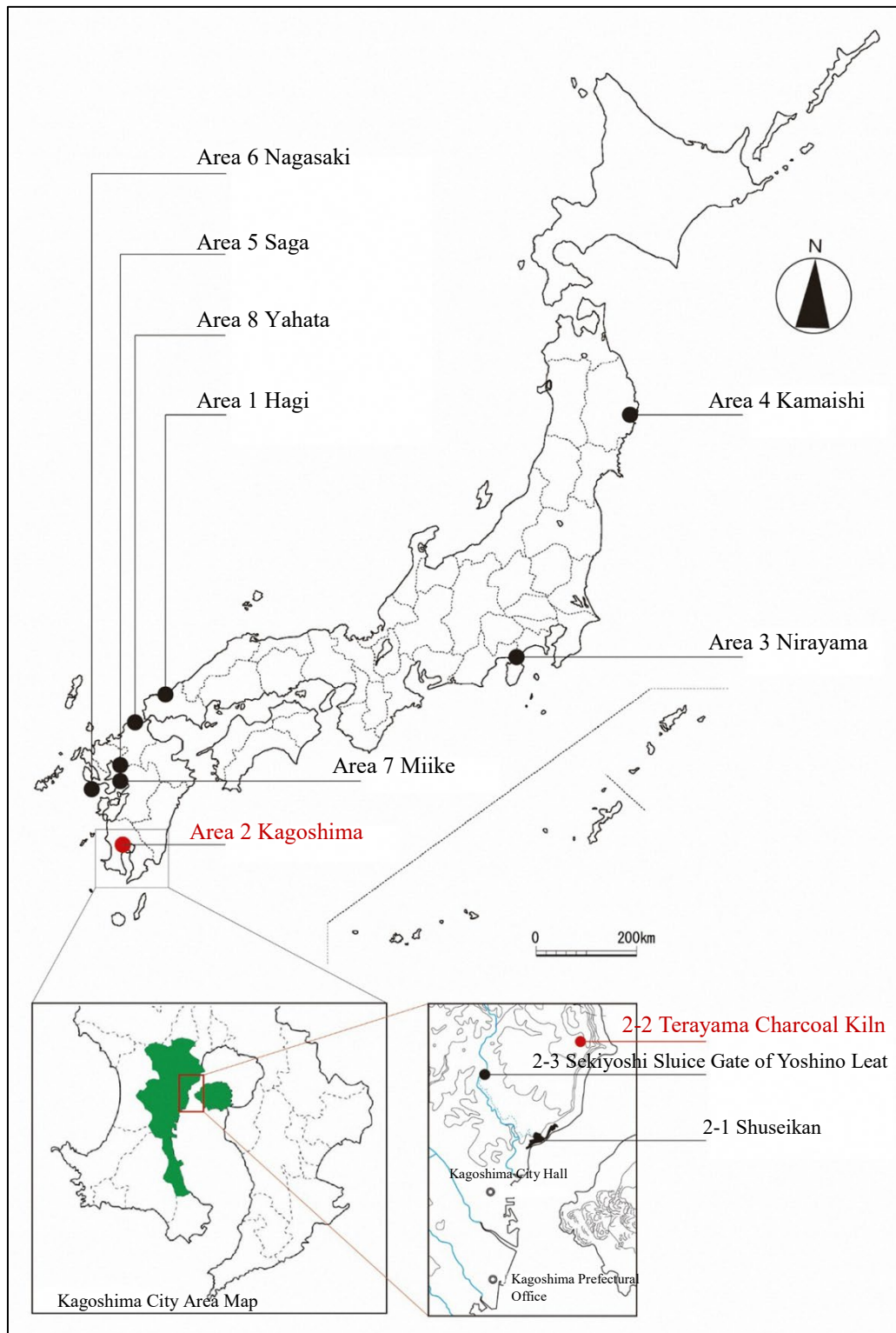


Figure 1. Position of Component Part 2-2

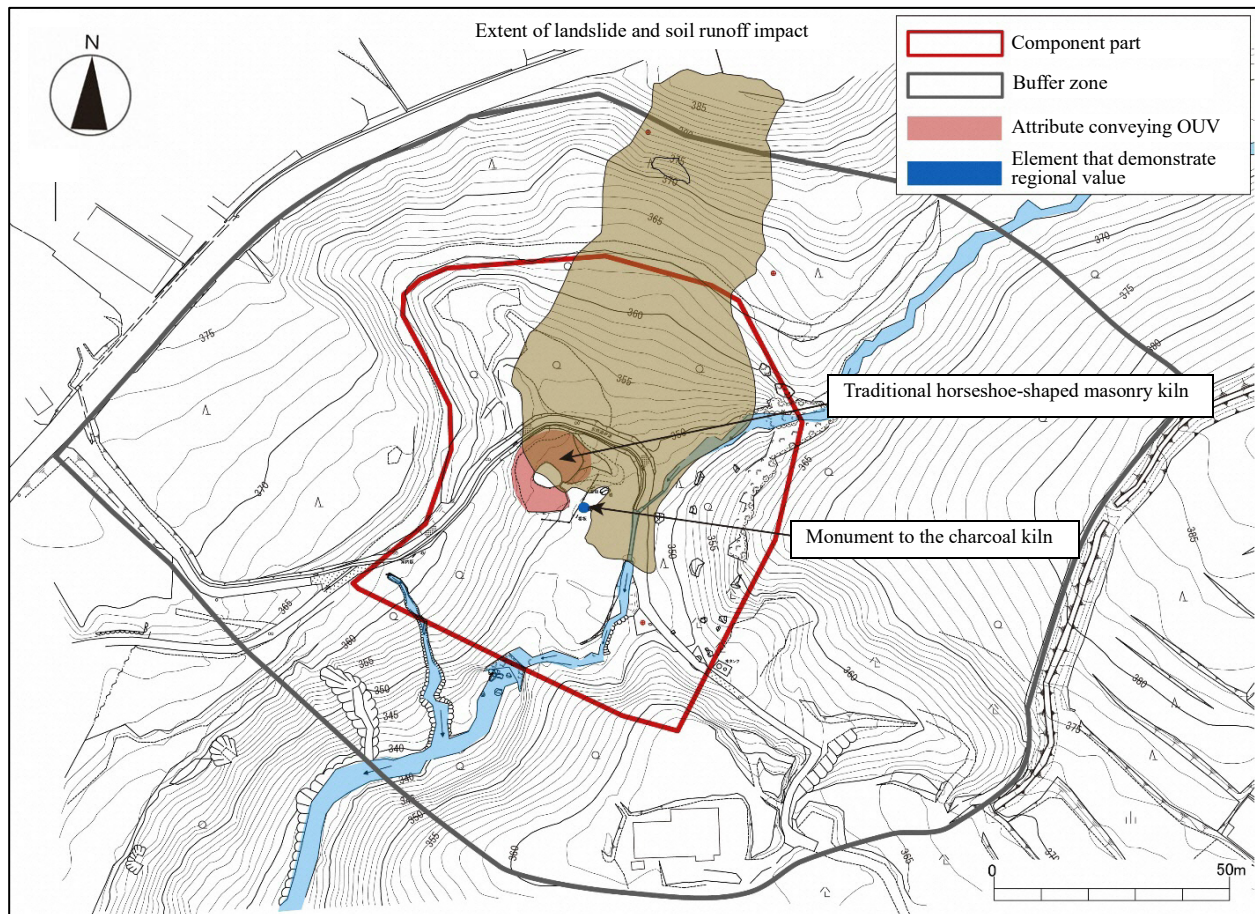


Figure 2. Component part, buffer zone, and extent of damage



Photo 1. State of damage (taken June 28, 2019)



Photo 2. State of damage (distant view; taken July 1, 2019)



Photo 3. State of damage (charcoal kiln; taken July 1, 2019)



Photo 4. State of damage (slope; taken July 1, 2019)



Photo 5. Updated state of charcoal kiln (taken March 12, 2020)



Photo 6. Updated status of slope (taken March 3, 2020)

a) Description of the component part given in ICOMOS Evaluations of Nominations of Cultural and Mixed Properties (May 4, 2015)

The industrial complex of Kagoshima is located in a garden at Shuseikan created in 1658. Its aim was to manufacture iron for cannons and shipbuilding. There are surface remains of a reverberatory furnace and its water channel, a charcoal kiln, the foundations of a spinning mill, and a sluice gate. There are also two standing buildings: a former machinery factory, 1864-5, the earliest surviving in Japan, and a house for foreign engineers involved in the spinning mill, built in 1866-7. The Shuseikan reverberatory furnace demonstrates variants from Dutch plans in terms of size and the way local traditional [approaches] such as cylindrical firebricks were used for the furnace instead of Western technology. This illustrates local experimentation and adaptation of Western prototypes. Like the Hagi furnace, it was ultimately unsuccessful.

b) Conservation Management Plan

This plan is the one attached to the Nomination file for World Cultural Heritage inscription.⁴ It states that recovery and repair measures are to be implemented based on the plan in case of a natural disaster. The excerpts from the Plan given below indicate matters to be referred to in the recovery and repair work.

■ **Conditions of the component parts that are to be maintained**

The conditions of the individual attributes conveying the OUV are to be maintained into the future, from the standpoints both of the aboveground and buried historical and archaeological remains/objects and of the landscape. At the same time, the setting of the kiln as an industrial heritage is to be maintained.

■ **Preservation policy**

With the primary aim of maintaining and reinforcing the conditions at the time of inscription, maintenance, small-scale repairs, and other measures necessary for everyday maintenance will be carried out. Repairs and other preservation measures will also be carried out as needed. These measures will be limited to the minimum necessary interventions for keeping intact the Authenticity of the component part.

■ **Routine maintenance and repairs**

While regularly observing the stone masonry to check for deformation, repairs will be made as needed with the guidance and advice of domestic and international experts.

■ **Repairs and other preservation measures**

Repairs and other preservation measures for the stone masonry of the Terayama Charcoal Kiln...[omit]

⁴ The report is available for downloading at the following URL: <https://whc.unesco.org/uploads/nominations/1484.pdf>

will be carried out in stages, starting from places having the highest urgency. In so doing, the current state of places in danger of collapse will be identified, construction methods that are suitable for permanent preservation without adverse impact on the OUV will be studied, and the work will be carried out with the guidance and advice of domestic and international experts.

■ **Conditions of the buffer zone that are to be maintained**

The buffer zone around the charcoal kiln is covered with secondary forest of *Castanopsis sieboldii* and tan oak from which charcoal were made. The buffer zone protects the setting that represents the traditional process of producing charcoal from the raw materials provided by the surrounding natural environment.

■ **Response to natural disasters**

If fire, wind or water damage, landslide, earthquake or other natural disaster should occur, recovery measures will be carried out in accordance with the Plan. In case the situation changes due to a natural disaster, the Plan will be modified as appropriate based on the situation.

c) **Terayama Charcoal Kiln Conservation Work Programme and Implementation Programme**

This Work Programme and Action Plan is the one submitted to UNESCO in 2017 as Attachment b)-7 to the State of Conservation Report.⁵ While the Work Programme and Action Plan does not cover the occurrence of a natural disaster, the excerpts given below indicate matters to be referred to in recovery work.

■ **Basic thinking on conservation measures**

Regarding stone masonry from the kiln remaining above ground in the original state, results of displacement measurements will be analyzed, and repairs will be made under expert guidance as needed, to maintain the stable state. If the excavation surveys turn up remains related to hard charcoal production, appropriate underground preservation measures will be devised.

■ **Direction of conservation measures**

To maintain in good condition the stone masonry of the kiln that is an attribute of the OUV and another element of regional value, regular monitoring will be conducted by Kagoshima City; and when damage or potential damage is identified, repairs will be made in stages, assigning priorities based on the views of experts, etc., for the sake of maintaining stability of and strengthening the remains. If repairs are carried out, all due consideration will be made for retaining the originally used materials and their substance, material qualities, and structures of buildings and other structures rising above ground. As for underground remains that have so far been confirmed, protective layers of appropriate thickness will be provided and the remains will be maintained in stable state under the ground.

d) **Results of various surveys conducted based on (a) and (b)**

■ **Displacement measurements**

Measurement points were set at 124 places where there was a potential for bulging deformation of the stone masonry, and regular displacement measurements were conducted using survey instruments. During the period from November 2015 to December 2017, displacement exceeding 10 mm was observed at around 10 percent of the measurement points, suggesting that deformation was progressing. The following surveys were then conducted as a basis for studies on major restoration, with a view to dismantling and rebuilding the stone structure.

■ **Three-dimensional measurement mapping, monitoring charts creation, analysis of deformation causes**

For the archaeological remains of the charcoal kiln standing above ground, three-dimensional

⁵ The report is available for downloading at the following URL: <http://whc.unesco.org/document/165004> (See pp. 100-107.)

measurements was implemented and monitoring charts were created for the masonry to gather basic data for the schematic design of the rebuilding. Based on the results of these and past surveys, causes of deformation were analyzed. The major causes of deformation of the stone masonry were assumed to be rainfall draining into the earthen walls backing the peripheral masonry, causing soil to degrade and run off, and physical and biological degradation of the stones.

- **Excavation surveys**

To determine the overall shape and foundational structure of the charcoal kiln, Kagoshima City had excavation surveys conducted mainly in the periphery of the kiln, with advice and guidance by the Shuseikan Area Expert Committee for the Conservation, Restoration, Presentation and Utilization established by the City, made up of experts in such fields as archaeology, heritage conservation, architecture, and landscape. The surveys revealed the existence of heretofore unknown stone masonry on the northeast side of the kiln, as well as a foundation-shaped stone structure under the front of the kiln suggesting a rectangular plane (Figure 3).

- **Vegetation survey**

To determine the distribution of the secondary forest of *Castanopsis sieboldii* and tan oak from which charcoal were made at the kiln, a vegetation survey was conducted mainly in the buffer zone around the kiln.

e) Results of various surveys conducted after the disaster

- **Damage assessment survey**

The positions of fallen stones were recorded, after which the stones were moved for safekeeping. Of the portion that has not yet collapsed, the extent of impact from the landslides was confirmed. The results confirmed that of the 667 stones in the masonry visible above ground, a total of 139 stones collapsed; on the northeast side of the masonry, 54 stones collapsed; and from the arch and on the southwest side of the masonry, 85 stones collapsed. Stones in the vicinity of the collapsed areas were also found to have shifted.

- **Structural surveys**

Cross-sectional observation of the kiln stone masonry and earthen walls on the southwest side of the collapsed area was performed using archaeological methodology. The results showed the charcoal kiln was built using a unique construction process in which building stones and earth fill were layered repeatedly, instead of using the backfill approach often seen in stone walls of early modern Japanese castles, using gravel as a backing for the stone structure. Further, as the earth fill forming the alternating layers behind the masonry slopes from inside to outside the kiln, it is assumed that uneven land subsidence may have been one cause of the bulging. Other hints for learning about the deterioration and collapsing process that occurred after shutting down the kiln were also obtained from the surveys (Figure 4).

- **Geological surveys**

On the slope by the Terayama Charcoal Kiln, five locations were chosen for soil boring surveys, six locations for simple dynamic cone penetration tests, and two locations for groundwater level measurement. These tests revealed the existence of a small depression under the plateau behind the slope that collapsed, and of highly water permeable sedimentary layers, such as deposits from pyroclastic surges. Given this topography compounded with approximately 180 mm of daily precipitation (total rainfall of 700-800 mm), it is likely that the landslides occurred when this heavy rainfall triggered an eruption from the slope of the rainwater that had permeated the plateau.

(4) Entity Responsible for the HIA

The Kagoshima City Government conducted the HIA and prepared this Report.

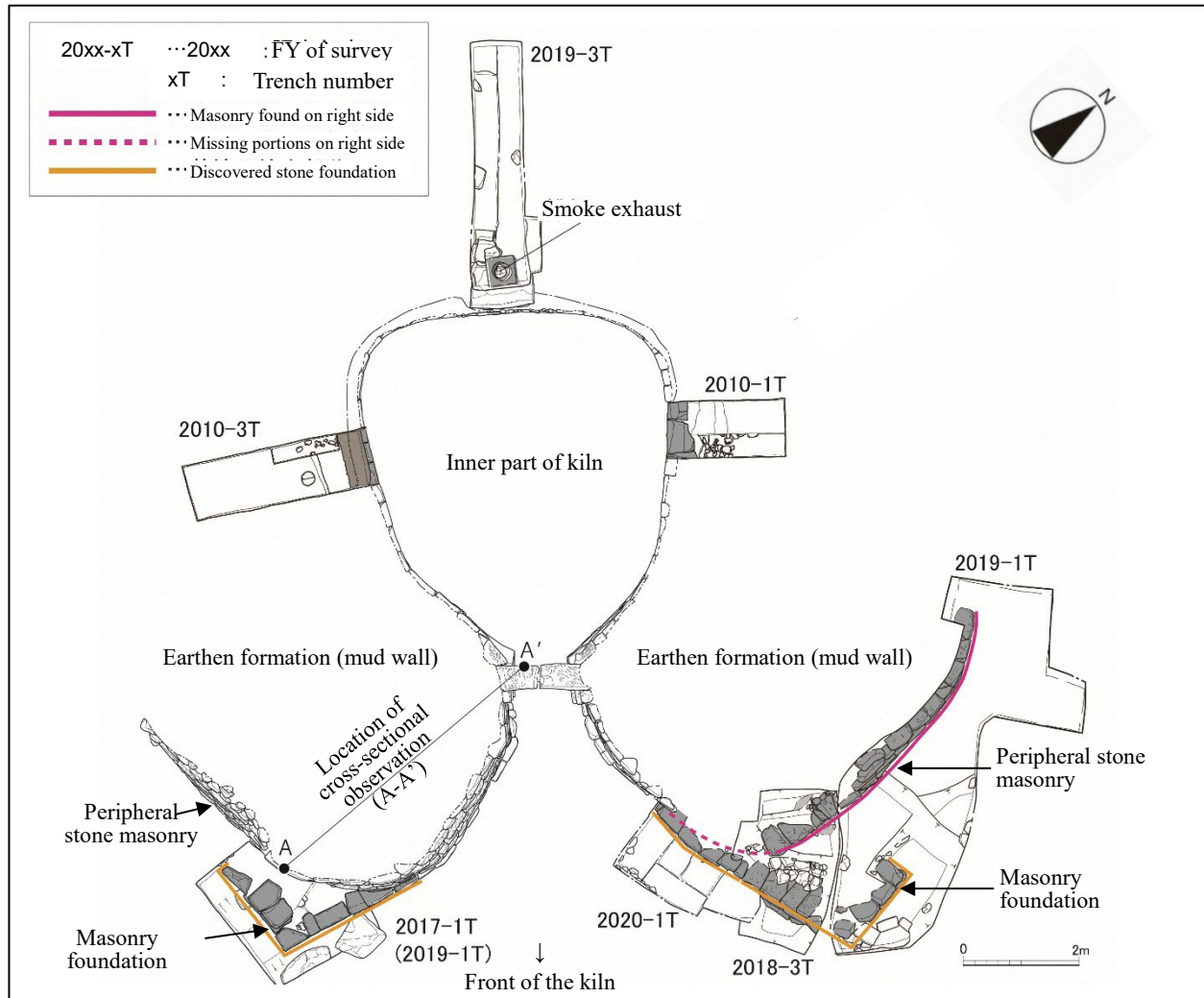


Figure 3. The main excavation survey locations and survey results

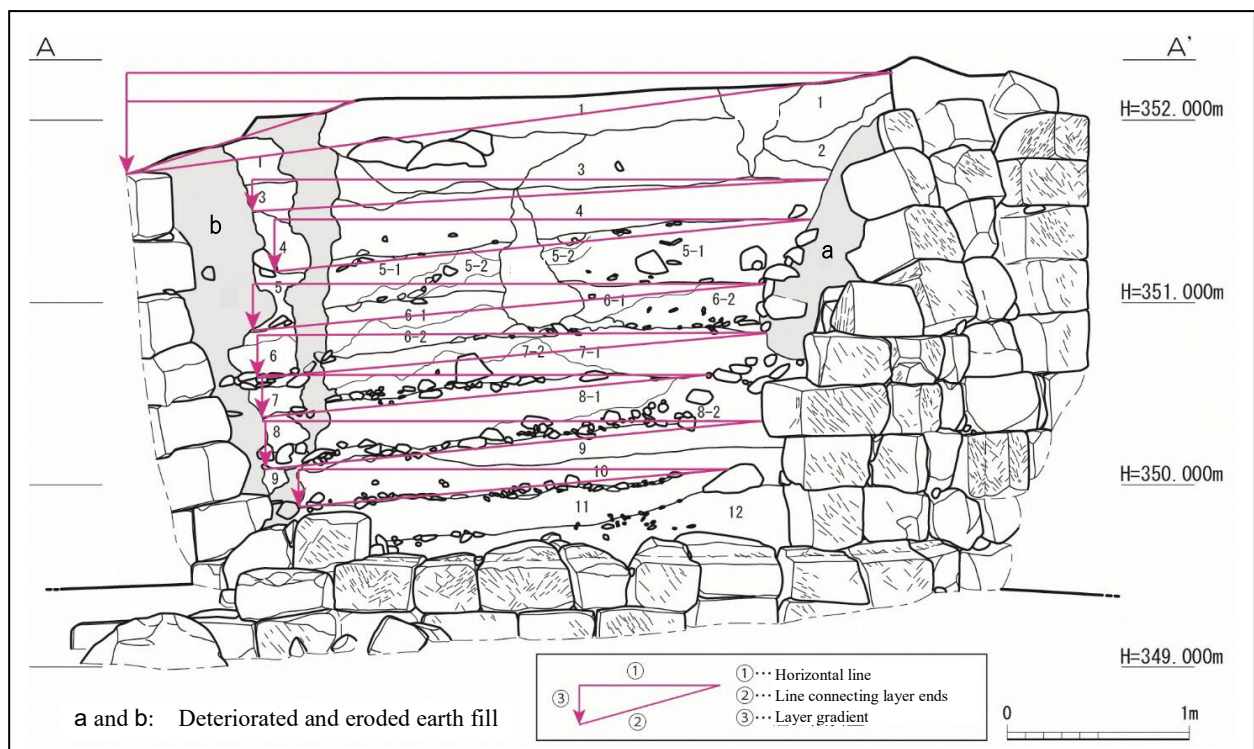


Figure 4. Cross-sectional view of the collapsed southwest side of the kiln (structural survey result)

2. Proposed plan for the post-disaster recovery and repair project

(1) Overview of the damage

The charcoal kiln suffered partial collapse on two occasions, June 28 and July 2, due to the impact of heavy rains and landslides.

The first time, the mud wall backing the stone masonry around the periphery of the kiln absorbed rainwater until the masonry could no longer bear the weight of the wall, causing a section of the masonry approximately 2.5 meters high and 2 meters wide on the northeast side of the mud kiln to collapse.

The second time, a landslide approximately 30 to 50 meters wide and extending around 100 meters occurred on the slope northeast of the kiln. Large amounts of soil and trees flowed into the component part, burying a large portion of the kiln and causing a section of the masonry approximately 2.5 meters high and 3.5 meters wide on the southwest side of the kiln to collapse from the impact.

After the disaster, emergency and safety measures were taken to clean up the environment, and basic surveys were made in preparation for recovery work. A draft recovery plan was then drawn up based on the results. In the process, the Shuseikan Area Expert Committee for the Conservation, Restoration, Presentation and Utilization carefully studied ways of proceeding without adverse impacts on the OUV.

Surveys conducted after inscription of the Terayama Charcoal Kiln on the World Heritage List, and a chronology of events relating to the disaster, are shown in Table 1.

Table 1. Chronology of the surveys conducted after inscription of the Terayama Charcoal Kiln on the World Heritage List and the events relating to the disaster

2015	July	The decision was made to inscribe the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining,” including the Terayama Charcoal Kiln, on the World Heritage List.
	November	Displacement measurements of the stone masonry of the Terayama Charcoal Kiln were begun (conducted four times annually through June 2019).
2017	June	Bulging of up to 10 mm was confirmed by displacement measurements.
	December to March	Causes of deformation in the masonry were analyzed, and a three-dimensional measurement map and diagnostic report of the masonry were prepared.
2018	March	Excavation surveys confirmed the structure of the foundation of the stone masonry.
		Vegetation surveys were conducted in the buffer zone.
	May to December	An emergency design for preservation and restoration was developed in case of collapse.
	June	Displacement measurement by 3D scanning was added to the observation methods.
	September	Excavation surveys confirmed the structure of the stone masonry and foundation on the east side of the kiln.
	November	Consultations were held with international experts regarding conservation measures for the masonry, including dismantling and rebuilding.
2019	February	The Shuseikan Area Expert Committee for the Conservation, Restoration, Presentation and Utilization deliberated the course of action for dismantling and rebuilding the masonry.
	May	The Shuseikan Local Conservation Council approved the earlier-discussed approach to dismantling and rebuilding the masonry.
	June 28	Stone masonry on the northeast of the charcoal kiln collapsed due to heavy rain.

	July 1	Landslides occurred, and stone masonry on the southwest side of the kiln collapsed and became buried under inflowing soil.
	July	Photographic surveys of the damage to the kiln were made, the extent of the damage was measured, and emergency measures were taken on the slope in the vicinity of the kiln.
	August	Emergency measures were taken at the site of the kiln.
	September	Details of the damage and measures planned to be taken were reported to the 10th session of the Industrial Heritage Expert Committee (including Working Properties). Mr. Michael Pearson as a member and Mr. Duncan Marshall as an advisor of the Committee were consulted regarding recovery methods.
	November	A State of Conservation Report on the damage was submitted to the UNESCO World Heritage Centre.
	November to March	After carrying out provisional recovery work (safety measures), the damage state of the kiln was confirmed and its structure was surveyed, and geological surveys were conducted on the surrounding slope.
2020	April to November	A schematic design was prepared for recovery work on the surrounding slope.
	May	Excavation surveys confirmed the foundation of the stone masonry, which already had been missing sections before inscription as a World Cultural Heritage. Soil mechanics testing was also conducted on the soil used in building the kiln.
	June to February	Work was begun in June 2020 on drafting plans for the post-disaster recovery and repair work to be carried out on the kiln. This is to be fleshed out to a schematic design by February 2021.
	September	Strength tests were conducted on the collapsed stones. At the 11th session of the Industrial Heritage Expert Committee (including Working Properties), the HIA was deliberated and discussions with international experts were conducted in writing.

(2) Basic policies

- The recovery and repair work will be carried out from the standpoints both of preserving evidence from the end of the Edo period (1850s and early 1860s) and evidence of changes over time on the Terayama Charcoal Kiln, and of securing stability in the kiln as a structure.
- While the fundamental aim will be to restore the places damaged in the disaster, stone masonry discovered underground in the surveys will also be partially exposed and reconstructed. The masonry that had already collapsed prior to World Heritage inscription will be restored to a minimal extent, and missing sections will be replaced by new layers of stones to secure stability of the charcoal kiln as a structure.

Based on modern-day surveys conducted in areas throughout Japan on similar cases of Kishu binchotan charcoal kilns,⁶ it seems likely that a shed (tent) was used to prevent rainwater infiltrating into the charcoal kiln and the walls.⁷ Considering, however, that the existence of such a shed cannot be proven at the present time, and that installing a shed would substantially alter the appearance of the kiln, it was decided not to build one. Instead, appropriate drainage measures will be implemented on the top of the walls of the charcoal kiln to reduce the amount of rainwater infiltrating into the charcoal kiln and the

⁶ Hard charcoal-producing kilns in the Wakayama region on the Kii Peninsula of the main island of Japanese Archipelago. Hard charcoal has high quality and is referred to as “binchotan” charcoal. The Terayama Charcoal Kiln was built using techniques from that region.

⁷ The “walls” referred to here are the portion consisting of peripheral stone masonry and an earthen (mud) backing layer.

walls. Detailed methods will be stipulated in the schematic design to be completed by February 2021 and at each phase of the design development, scheduled for the next fiscal year and after.

- Recovery and repair work is to be carried out mainly using traditional construction methods, limiting the intervention of modern methods to the minimum extent needed for stabilisation of the structure.
- In cases where it becomes necessary to dismantle existing masonry and mud walls on the periphery of the charcoal kiln, archaeological structural surveys will be conducted and the masonry and mud walls will be reconstructed based on the results.
- The slope on the site where the landslides occurred will be graded, with no major changes made to the topology. Drainage measures for rainfall accumulating on the slope as well as slope erosion control measures will be taken. As a slope erosion control measure, out of consideration for the impact on the landscape and preservation of the ecosystem, seeds of the local *Castanopsis sieboldii* and tan oak collected in the vicinity of the Terayama Charcoal Kiln will be raised as seedlings and used for tree planting. It is expected to take around ten years for the planted trees to recover as full-fledged foliage.
- The slope in the buffer zone where the landslides occurred is steep and unstable. To prevent further collapse, it will be reformed into a more stable incline. As measures against underground seepage water, which is a cause of the collapse, and drainage of rainwater accumulating on the slope will be improved, and slope erosion control will be implemented. For greening of the embankment, vegetation mats will be used, and a natural vegetation dispersal method will be adopted, by which seeds carried by the wind from nearby vegetation are relied on for recovery.

(3) Project Implementation

After conclusion of the World Heritage Committee session in 2021, Kagoshima City will begin work on a detailed design development for the charcoal kiln post-disaster recovery and repair project. At the same time, the City will begin restoration work on the buffer zone slope, aiming for completion during fiscal 2021, preparing an environment in which the charcoal kiln recovery and repair work can be carried out safely and effectively.

At this time, the City is aiming to complete all phases of the recovery, repair and restoration work by 2022.

(4) Current issues

The current main issue is that simply putting back in place the stones that collapsed will not ensure a stable structure. Along with putting these in place, it will be necessary also to use new stone materials to fill in missing sections in the masonry that were confirmed before the disaster, and to dismantle and rebuild places where bulging occurred. Otherwise it will be difficult to restore the masonry to a stable structure.

Places where the stone masonry has missing sections were found on the northeast side of the kiln, and periodic displacement measurements revealed that the stones surrounding that area are shifting, causing an unstable state. The foundation of the relevant area was identified in the excavation surveys conducted in 2020, and there is clear archaeological evidence for filling in the missing sections with new stones on top of the foundation.

Analysis to determine the cause of bulging was conducted before the disaster occurred. The bulging was found to be caused by deterioration of masonry stones and infiltration of rainwater into the upper portion of the masonry, which led to deterioration of the earthen layer backing the masonry walls. It was planned to dismantle and rebuild the structure in fiscal 2019 and after. The collapse of the masonry of the charcoal kiln caused by the heavy rainfall led to the conducting of various surveys to understand the construction of the masonry backing, and in turn to the discovery that the bulging of the masonry may have been caused by uneven land subsidence due to differences in the foundational layers of the charcoal kiln.

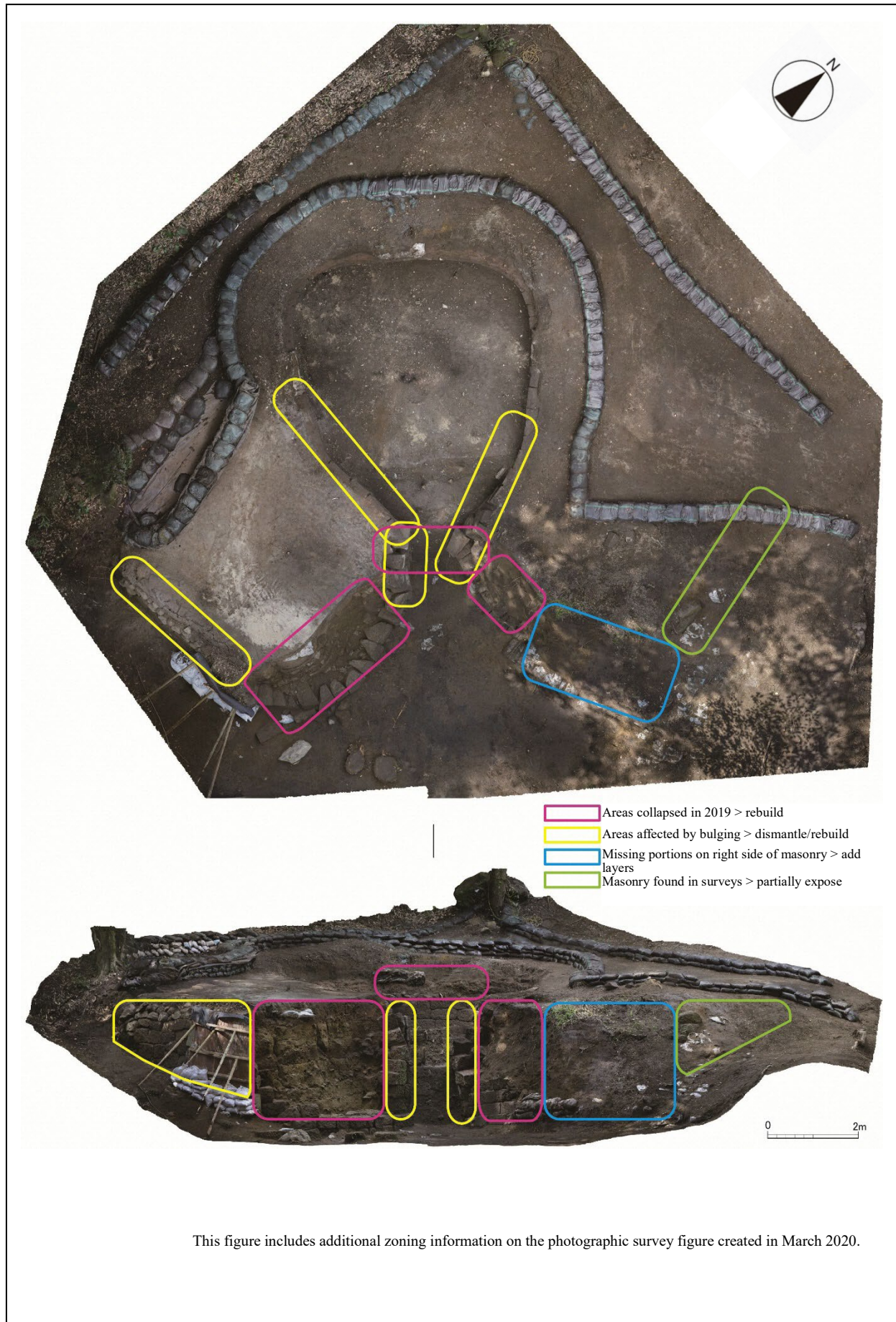


Figure 5. Approach to post-disaster recovery and repair of each portion of the charcoal kiln

3. OUV and the attribute that convey the OUV

(1) Aspects of OUV demonstrated in the Statement of Outstanding Universal Value (SOUV)

A Statement of Outstanding Universal Value (SOUV) was included in the World Heritage Committee Decision in 2015 approving inscription of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining” on the World Heritage List. Below are excerpts from the Brief synthesis at the beginning of the SOUV.

A series of industrial heritage sites, focused mainly on the Kyushu-Yamaguchi region of south-west Japan, represent the first successful transfer of industrialization from the West to a non-Western nation. ...[omit] The sites in the series reflect the three phases of this rapid industrialization achieved over a short space of just over fifty years between the 1850s and 1910.

The first phase, in the pre-Meiji Bakumatsu isolation period, at the end of Shogun era in the 1850s and early 1860s, was a period of experimentation in iron making and shipbuilding. ...[omit]

The second phase, from the 1860s accelerated by the new Meiji Era, involved the importation of Western technology and the expertise to operate it ; while the third and final phase, in the late Meiji period (between 1890 to 1910), was full-blown local industrialization achieved with newly-acquired Japanese expertise and through the active adaptation of Western technology to best suit Japanese needs and social traditions, on Japan’s own terms....[omit]

Collectively the sites are an outstanding reflection of the way Japan moved from a clan based society to a major industrial society with innovative approaches to adapting western technology in response to local needs and profoundly influenced the wider development of East Asia.

After 1910, many sites later became fully fledged industrial complexes, some of which are still in operation or are part of operational sites.

The aspects of OUV of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining” pointed out in the above “Brief synthesis” consist of the following two points.

The 23 component parts collectively represent:

- The three-phased process of rapid development in each of three industrial typologies; and
- the process of qualitative change that turned Japan into a major industrial society and profoundly influenced the wider development of the East Asian region.

The Terayama Charcoal Kiln belongs to the Iron and Steel industrial classification, and is one of the component parts demonstrating the first phase of trial and error experimentation. Further, as it shows the process of qualitative change which turned Japan into a major industrial society having a material impact on the wider development of the East Asian region, it is an indispensable component part in demonstrating OUV of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.”

(2) Attribute in the component part that conveys the OUV

The two aspects of OUV above are reflected in the attribute in the component part. A written response the Government of Japan submitted on November 5, 2014 in answer to the questions asked by the International Council on Monuments and Sites (ICOMOS) clarified that the following attribute of the Terayama Charcoal Kiln conveys the OUV.

■ **Response to a request from ICOMOS for additional information (submitted on November 5, 2014) (excerpt of portion relevant to the Terayama Charcoal Kiln)**

Area/Component Part	Attribute
Area 2 Kagoshima/Terayama Charcoal Kiln	Charcoal kiln made of traditional horseshoe-shaped stone masonry

■ **Nature of the attribute**

The above attribute of the Terayama Charcoal Kiln that conveys the OUV is of the following two kinds.

➤ **Historical and archaeological remains/objects of the charcoal kiln**

The Terayama Charcoal Kiln consists of the remains of a facility built with the aim of mass-producing hard charcoal with strong caloric force, for supplying fuel needed in the Shuseikan Enterprise in the end of the Edo period (1850s and early 1860s). It includes related historical and archaeological remains/objects. The historical and archaeological remains/objects of the hard charcoal production facility consist of the topography showing the location of the kiln, the remains of stone masonry and mud showing the aboveground structure of the kiln, and the historical and archaeological remains/objects of the facility that are buried underground.

➤ **Historical and archaeological remains/objects showing the hard charcoal production system**

The aboveground and buried historical and archaeological remains/objects on the site of the Terayama Charcoal Kiln from the end of the Edo period (1850s and early 1860s), besides showing the hard charcoal production system of the time, are part of the overall industrial system of the Former Shuseikan component part from the standpoint of supplying fuel to the Shuseikan Enterprise of the same period. The historical and archaeological remains/objects that show the hard charcoal production system are the aboveground kiln structure made of stone masonry and mud, the remains showing the operation processes involved in hard charcoal production, and the related historical and archaeological remains/objects that are buried underground. Also included are the trees in the surrounding area, from which the charcoal fuel was made.

(3) State of legal protection of the OUV and its attribute

The site of the Terayama Charcoal Kiln is designated as a Historic Site under the Law for the Protection of Cultural Properties and is therefore fully covered by legal protection measures. The Law imposes various restrictions on recovering, repairing and restoring the attribute on the site contributing to the OUV.

The buffer zone surrounding the Terayama Charcoal Kiln is designated as a Class II Special Zone of Kirishima Kinkowan National Park under the Natural Parks Act, and as the Terayama Scenic District under the City Planning Act. The two laws restrict new edifices exceeding a certain scale from being built that would damage the landscape or scenic area of the vicinity, and also limit changes to the shape or characteristics of the land and felling of trees or bamboo.

The buffer zone is further designated as a Natural Green Zone under the Kagoshima City Landscape Plan based on the Kagoshima City Landscape Ordinance and Landscape Act. When building a new edifice or other facilities in the Natural Green Zone, the shape, design, color, height, and other specifications must be in harmony with the surrounding natural environment and rural landscape.

In addition, the buffer zone is designated as a residential land development construction regulation area according to the Act on Regulation of Residential Land Development. When developing land for residential use, a permit from the Kagoshima City mayor is required, as a check on disorderly development that may cause landslides or sediment runoff during land development.

As outlined above, there are ample legal protective measures for the attribute that conveys the OUV located on the site of the Terayama Charcoal Kiln, and for the buffer zone that is its setting.

4. HIA concerning the proposed plan for the post-disaster recovery and repair project

(1) Impact on the attribute that conveys the OUV

a) Authenticity of the historical and archaeological remains/objects

The stone materials making up the masonry of the kiln that collapsed due to heavy rainfall in 2019 did not flow outside the component part and are all preserved inside the site. Thanks to the displacement measurements and three-dimensional laser measurements carried out on the masonry before the disaster, there are full records of detailed positional information of the individual stones. Accordingly, since it is possible to restore the stones based on this information, the Authenticity in terms of form/design and materials/substance of the historical and archaeological remains/objects has not been compromised.

The original construction methods that were used for the stone masonry and earthen walls, as determined from excavation surveys, will be followed to the extent possible in the rebuilding necessary to fix bulging and in adding new materials to fill in missing portions, keeping to a minimum any intervention by more modern methods. Stones for filling in or replacement will be chosen that are in harmony with the material quality of the remaining original stones. Marking will be inscribed on the new materials used for filling in, to demarcate them from the original stones. In such ways, the Authenticity in terms of form/design and materials/substance of the historical and archaeological remains/objects will not be compromised.

The historical and archaeological remains/objects of the foundation of the stone masonry and walls, preserved underground, will likewise be left essentially unchanged, so that their Authenticity in terms of form/design and materials/substance will not be impacted.

By using new stone materials to fill in sections that were missing from the stone structure before World Cultural Heritage inscription, and by dismantling and rebuilding the extent of the stone masonry that led to bulging over the years, the stones and walls of the charcoal kiln remains will be made more stable than before the disaster, increasing the Authenticity in terms of form. Since it was decided that ground improvement using contemporary methods as a measure against uneven land subsidence would not be carried out, it is not possible to completely deter bulging of the masonry. However, after the post-disaster recovery and repair project is completed, fixed-point observation of the behavior of the masonry and walls will be conducted periodically to collect data for use in future countermeasures.

To minimize the flow of rainwater inside the earthen wall portion of the kiln, appropriate drainage measures will be taken at the top of the wall; moreover, the portion of the stone masonry that will have missing sections filled in with new material is to be connected to the buried masonry discovered in the excavation surveys, and to be partially exposed and reconstructed. Note that detailed methods will be stipulated in the schematic design to be completed by February 2021, and at each phase of the design development, scheduled for the next fiscal year and after.

b) Appearance of the charcoal kiln remains

Masonry on the outer east side will be filled in with new building stones; and in places where bulging is found, dismantling and rebuilding will take place only to the minimum necessary extent, so that changes to the appearance of the charcoal kiln will be limited.

c) Impact on the hard charcoal production system

Adverse impacts on the hard charcoal production system of the end of the Edo period (1850s and early 1860s), shown by the aboveground and buried historical and archaeological remains/objects on the site of the Terayama Charcoal Kiln, cannot be estimated. As a result, adverse impacts on the overall iron and steel industry system of the Shuseikan Enterprise in the same period cannot be estimated.

(2) Impact on the setting, including the buffer zone

In the buffer zone and areas inside the component part affected by landslides and soil runoff, measures that are unavoidable from a safety standpoint will be taken in line with the extent of damage, including slope

grading, measures to deal with underground seepage that caused the collapse, and measures for draining water accumulating on the slope. The measures will involve artificial shaping and building of new structures. Recovery of vegetation will be carried out with due consideration for the impact on landscape and conservation of the local ecosystem, so that the impact on the setting including the buffer zone will be limited.

(3) Impact on visitor interpretation and utilization

On-site presentations are planned to convey to visitors the information learned from the buried historical and archaeological remains/objects. It will thus be possible to provide visitors with accurate information on the scale and structure of the kiln and on the process by which it was built.

Furthermore, in recovering vegetation on the slope inside the component part, seeds of the local *Castanopsis sieboldii* and tan oak, trees used as raw material for making hard charcoal, will be collected in the vicinity, raised as seedlings, and used for tree planting. This will help visitors understand that the surrounding natural environment is part of the setting showing the traditional charcoal production process.

5. Process for managing consensus building among related parties

(1) Governance

a) Shuseikan Local Conservation Council

In the management structure of the World Cultural Heritage property “Sites of Japan’s Meiji Industrial Revolution,” local conservation councils have been established for each of the Areas consisting of the property, based on the “General Principles and Strategic Framework for Conservation and Management for the Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.” For Area 2 Kagoshima as well, the Shuseikan Local Conservation Council has been established, which will exchange information and views and make decisions concerning the basic policy and methods of post-disaster recovery and repair work for the Terayama Charcoal Kiln. Consensus on the contents of this Report was reached at the Area 2 Shuseikan Local Conservation Council meeting of September 2020.

b) Expert Committees

In the process of advancing the post-disaster recovery and repair project, the Shuseikan Area Expert Committee for the Conservation, Restoration, Presentation and Utilization established by Kagoshima City discussed and studied the approach from a specialized viewpoint, with guidance and advice from the Cabinet Secretariat and Agency for Cultural Affairs of the Government of Japan, while also seeking advice from the Industrial Heritage Expert Committee (including Working Properties) established by the Cabinet Secretariat. Due to the spread of COVID-19, overseas members were not able to attend the Expert Committee meeting in September 2020. In preparing this Report, however, their views collected in writing thereafter were taken into account.

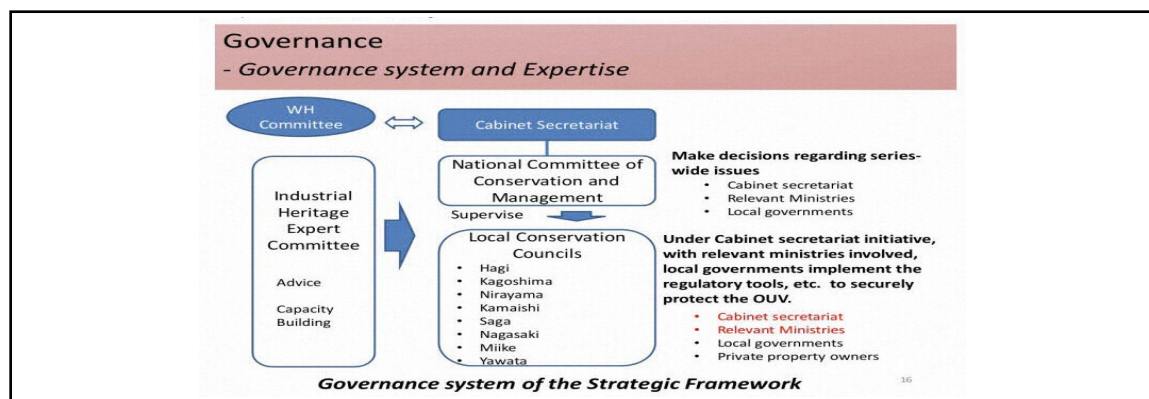


Figure 6. Governance system for the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining”

(2) Decision on recovery and repair methods and the management process

From immediately after the disaster and up to the present time, the post-disaster recovery and repair project has been deliberated carefully in the above two expert committees, with guidance and advice of the Cabinet Secretariat and Agency for Cultural Affairs, on the way to drafting of a plan. Likewise, in drawing up the schematic design to be completed by February 2021 and at each phase of the design development in the following fiscal year, detailed methods for recovery and repair will be selected through careful deliberation, with the guidance and advice of the Cabinet Secretariat and Agency for Cultural Affairs.

6. Conclusion

The draft plan for the Terayama Charcoal Kiln post-disaster recovery and repair project is being advanced on the premise of stably maintaining the attribute conveying the OUV of the World Cultural Heritage property “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.” The project will greatly contribute toward visitor understanding of the OUV.

“Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining” (No. 1484)

Status of Heavy Rain Damage to the Coal Railway of the Miike Coal Mine and Miike Port (Area 7/Component Part 7-1), and Measures to Be Taken

Heavy rains on July 6, 2020 caused damage to the Coal Railway (Omura City, Fukuoka Prefecture) that is a component element of the Miike Coal Mine and Miike Port (Component Part 7-1), a component part of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.” The damage status and measures to be taken including for restoration are to be reported as follows to the UNESCO World Heritage Centre.

Cause of the damage

Record rain fell over a wide area from July 6 to 8. According to rain gauge measurements taken in Omura City, approximately 450 mm of rain fell in one day, exceeding the average monthly rainfall for July. It included a period of around two hours during which the rain fell at a rate of nearly 100 mm per hour, breaking all-time records.

State of damage and impact on elements contributing to OUV

The heavy rainfall on July 6 resulted in partial collapse at the Miike Coal Railway, a component element contributing to the Outstanding Universal Value (OUV). This was mostly limited, however, to runoff of topsoil that had accumulated on the ground surface. While the Meiji-era slope preserved under the topsoil (surface of remains dug into the bedrock) became exposed, almost no direct damage to the Meiji-era slope itself has been identified.

Moreover, three-dimensional laser measurements of the Miike Coal Railway had been carried out from 2018 to 2020, and the geometric and structural characteristics of the earthen structures were recorded. In addition, through excavation surveys, information had been collected on the original Meiji-era structure and construction methods.

Based on the above, while the damage this time had a major impact on the slope of the Miike Coal Railway, it was limited to the topsoil layer that has accumulated in later years; moreover, restoration of the slope to a stable state at the same incline as before the damage is possible, based on the past measurement survey results and other records.

Also of note is that mitigation measures will be taken in the recovery work, such as stabilizing the slope and making water drainage more efficient, so that the restoration should further improve stability, helping to maintain and strengthen elements contributing to the OUV.

Schedule

Measures taken immediately after the damage: Emergency measures; covering with sheets, preventing rainwater infiltration

Temporary placement of large retaining wall sandbags for preventing further

damage to the slope

Oct. 2020 to Jan. 2021: Engineering design; conducting surveys, deciding restoration methods

Feb. to Oct. 2021: Recovery work; construction work on affected places, water channel dredging, etc.

Under the direction and advice of the Agency for Cultural Affairs, Cabinet Secretariat, and Fukuoka Prefecture, specialized discussions and studies will be carried out, while taking into account also the views of international experts in the area of industrial heritage.



Miike Coal Railway: Photo of damage status



Miike Coal Railway: Photo of emergency measures in place

Heritage impact assessment report of the Manda Pit (Component Part 7-1) Storage and Pumping Station as well as Safety Lamp Room and Bathroom conservation/earthquake-proofing works

Outline

This document is a heritage impact assessment report of the conservation/earthquake-proofing works of the Manda Pit Storage and Pumping Station as well as Safety Lamp Room and Bathroom, the constituent elements of the Miike Coal Mine (Component Part 7-1), which is a component part of the World Heritage Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.

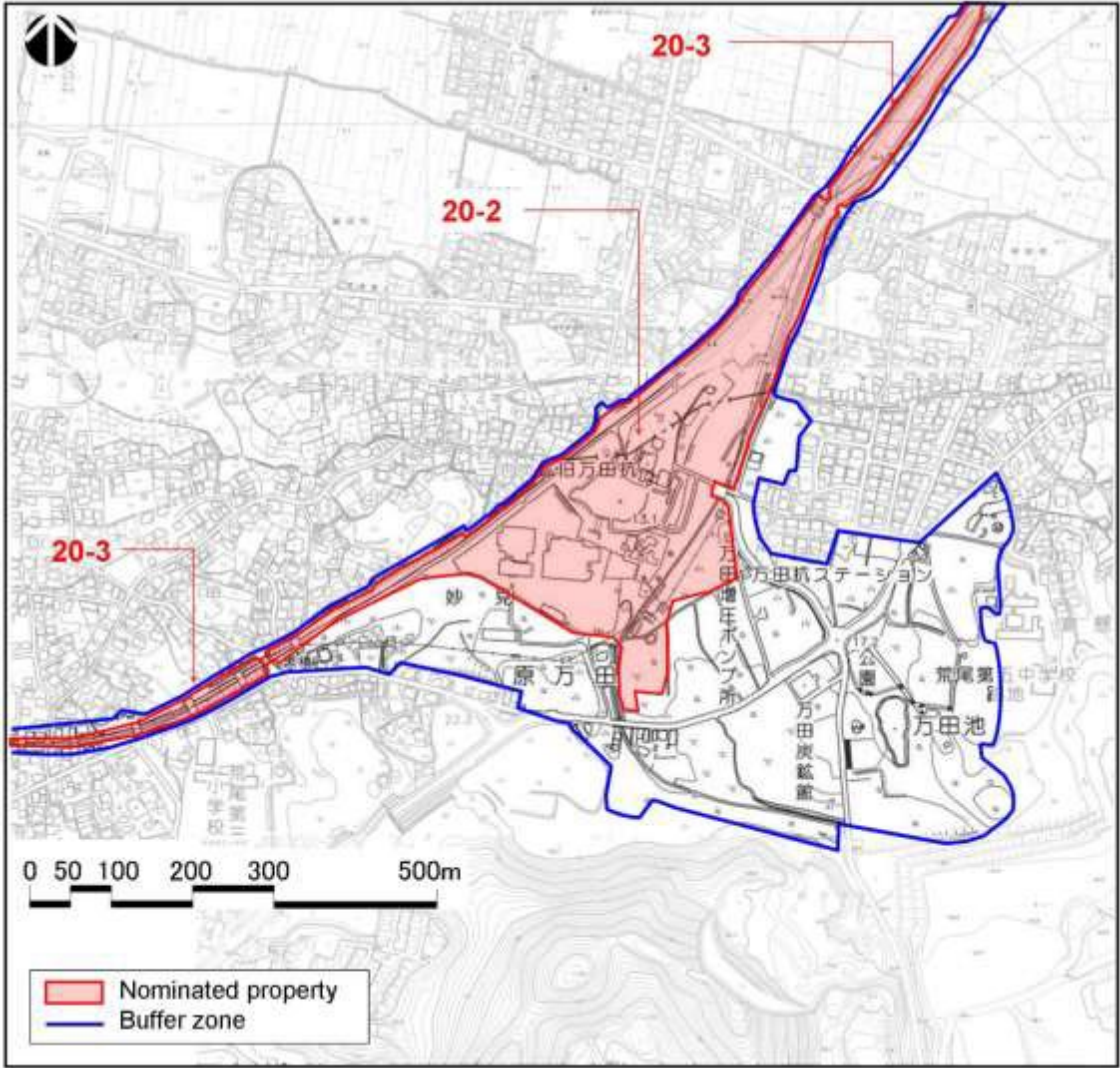
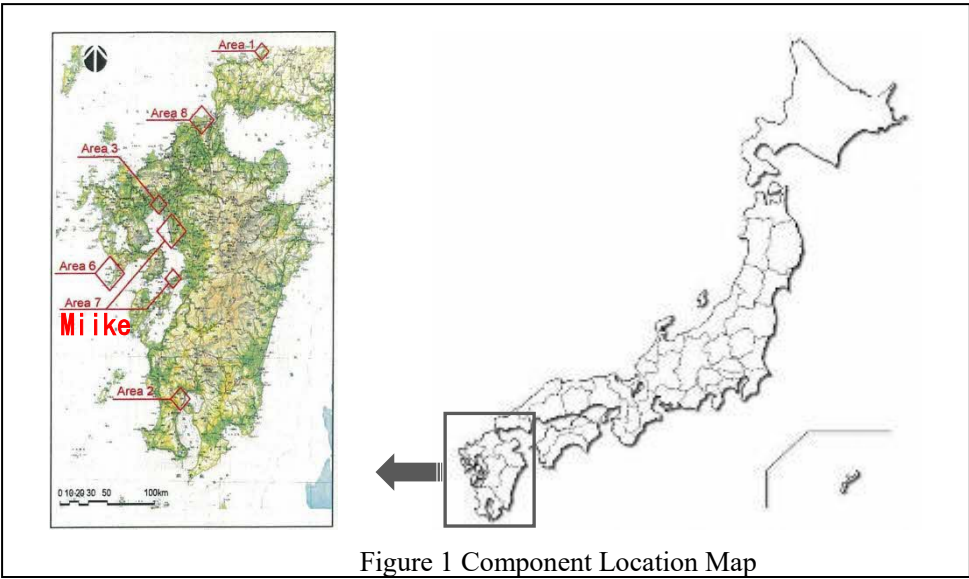
Given that the buildings are significantly deteriorated and that Japan is a quake-prone country, the conservation/earthquake-proofing works of these buildings are necessary to preserve these components permanently in the future.

The conservation works of the buildings are limited to replacing minimal members to preserve original members to the extent possible. Meanwhile, the earthquake-proofing works make minimal changes to the appearance; careful consideration is given to the impact on the site by, for example, placing reinforcement members along pillars and beams to make them as inconspicuous as possible in placing them indoors.

Therefore, the conservation/earthquake-proofing works of the Manda Pit Storage and Pumping Station as well as Safety Lamp Room and Bathroom in the Miike Coal Mine do not adversely impact the Outstanding Universal Value (OUV) and the property: Sites of Japan's Meiji Industrial Revolution.

1. Introduction

- (1) The object of this heritage impact assessment is the Manda Pit, a constituent element of the Miike Coal Mine and Miike Port (7-1), which is a component part of the *Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining* that was inscribed on the World Heritage List in July 2015.
- (2) This heritage impact assessment was made on the basis of the Conservation and Management Plan (CMP), the Conservation, Restoration, Presentation and Public Utilization Plan for Miike Coal Mine developed in 2019, and the research work (field work for conservation) of former Manda Pit Storage and Pumping Station as well as Safety Lamp Room and Bathroom in the Mitsui Coal Mining Co., Ltd. Miike Coal Mine, designated as Important Cultural Property, which was conducted as a subsidy project of the Agency for Cultural Affairs.
- (3) The main organization that prepared this heritage impact assessment report is Arao City.



2. Outline of the conservation/earthquake-proofing works of the buildings

(1) Outline of the buildings

For about 90 years from their completion in 1905 until 1997, the buildings of the Miike Coal Mine Manda Pit have gone through repeated modifications to adapt to changes in machines and mechanical power as a coal mining facility, under the management of Mitsui Coal Mining. The Storage and Pumping Station, a brick single-storied building, was a fan room to ventilate Pit No.2 in early years after its construction in 1905. At that time (1906 to 1914), it was equipped with a steam-powered Walker-type Fan, and later it was used as a storage to store mainly spare fire extinguishers and as a pumping station to send water pumped up in the pit. Thus, it has a water tank facility underground. Even today, the vestiges of the fan and a brick exhaust air chimney remain. The inside was drastically modified to divert functions.

The Safety Lamp Room and Bathroom, a brick single-storied building, was used as a machine room to run a Walker fan, which was installed in the adjacent fan room, in early years after its construction in 1905. Many vestiges (vestiges of the circular window of a machine drive shaft and steam piping) remain on the wall surface. After the Manda Pit was closed in 1951, it was used as the Safety Lamp Room and Bathroom. The safety lamp room is equipped with a charger for safety lamps (a lamp attached to a hard hat) used in a dark pit. Since it was used as a bathroom, a bathtub, among others, remains today.

Both the buildings have many damaged or missing bricks. The top of the arch also has some missing bricks, posing the risk of collapse. The decayed roof has caused major leaking of rain, with rainwater running down along brick walls. This caused salts to precipitate, and there are many sections where joint filler has been lost or damaged. The exterior wall section is thickly covered with plants. The inside of the exhaust tower is exposed to wind and rain as the upper roof is missing, leading plants to flourish notably. Because these are adversely affecting the conservation of the buildings, immediate action is required.

(2) Outline of conservation/earthquake-proofing

Concerning the implementation of the works, the Conservation, Restoration, Presentation and Public Utilization Plan for Miike Coal Mine, which was submitted on the basis of the recommendation “(b) Developing a prioritised conservation work programme for the property and its component sites and an implementation programme,” clearly states, under the heading of Preserving, strengthening, and stabilizing the buildings and remains in terms of material, substance, and structure, “The cities will scrutinize any instabilities that monitoring reveals by leveraging expert opinions and findings from studies, undertaking systematically restoration for reinforcement and stabilization” specifying that conservation/seismic reinforcement works will

be conducted for the Storage and Pumping Station and the Safety Lamp Room and Bathroom, for which earthquake vulnerabilities have been identified, and the Office Building, for which measures will be taken later.

In this conservation, conservation and structural reinforcement works are conducted with the principle of maintaining the condition at the time of coal mine closure, which represents its last years as an industrial heritage.

The buildings have long been neglected and severely deteriorated over time; particularly in the wooden roof with tiles, many sections have gone missing due to the damage of typhoon, the roof truss has been badly decayed by water leakage, and there is severe termite damage. Therefore, reroofing and partial repair works are carried out.

In the conservation works, dismantling is conducted at sections, including the roof, wooden parts, fittings, bricks, steel materials, concrete, concrete blocks, plastering, painting, wire nets, sheet metal, and facilities. However, although work items range widely, their scopes of dismantling are not the same, with dismantling and non-dismantling sections coexisting. Dismantling works in each section are conducted after making careful preparations to ensure non-dismantling sections will not be affected. Matters, such as moving/organizing fixtures stored in the building, cleaning/transporting waste disposed of underground, and dredging drains around the building, are planned as miscellaneous works associated with dismantling. In order to prevent bricks and steel materials from degrading in the future and inherit the value as a building, protective coating materials are applied to each member to maintain the present condition.

For the seismic reinforcement works, a seismic diagnosis was made before planning. The seismic diagnosis has identified structurally vulnerable parts (the former exhaust tower part in the Storage and Pumping Station and the wall stagger part between the bathroom and the changing room in the Safety Lamp Room and Bathroom) as well as the part in which out-of-plate breaking, which is a weak point of brick buildings, is expected to occur (the top of the end panel of the gable roof).

To reinforce the sections concerned, the prevention of out-of-plate breaking and the strengthening of the wall are planned. As a mechanism for preventing out-of-plate breaking, installing steel frames is planned, while inserting reinforcing bars is planned to reinforce the wall.

The structural reinforcement design is specific to each section. For the former exhaust tower part of the Storage and Pumping Station, reinforcing bars will be inserted to reinforce the wall and then steel frames will be placed to complement proof stress. For the gable roof of the part where

the fan used to be put in the Storage and Pumping Station, taking its appearance into consideration, it is planned to place steel frames along the roof surface to prevent out-of-plate breaking. In the wall stagger part between the bathroom and the changing room in the Safety Lamp Room and Bathroom, a rigid-framed structure will be adopted to prevent the walls of the stagger part from collapsing, by inserting reinforcing bars to reinforce the wall and placing steel frames to connect the walls of the stagger part. For the gable roof of the Safety Lamp Room and Bathroom, it is planned to place steel frames along the roof surface to prevent out-of-plate breaking, as in the case of the Storage and Pumping Station. In the drying room of the Safety Lamp Room and Bathroom, there are floors/walls for which methods of their connection to the wall have yet to be identified and their strength has not been confirmed exactly. However, they are expected to collapse in the future because creep is found on the floors. To address this, the plan includes the minimization of the impact on the building at the time of collapse by putting a falling prevention device in addition to structural reinforcement.

3. Value as a heritage

(1) OUV of the *Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining*

(Excerpt from the OUV statement resolved at the World Heritage Committee)

A series of industrial heritage sites, focused mainly on the Kyushu-Yamaguchi region of south-west of Japan, represent the first successful transfer of industrialization from the West to a non-Western nation. The rapid industrialization that Japan achieved from the middle of the 19th century to the early 20th century was founded on iron and steel, shipbuilding and coal mining, particularly to meet defence needs. The sites in the series reflect the three phases of this rapid industrialisation achieved over a short space of just over fifty years between 1850s and 1910.

The first phase in the pre-Meiji Bakumatsu isolation period, at the end of Shogun era in the 1850s and early 1860s, was a period of experimentation in iron making and shipbuilding. Prompted by the need to improve the defences of the nation and particularly its sea-going defences in response to foreign threats, industrialisation was developed by local clans through second hand knowledge, based mostly on Western textbooks, and copying Western examples, combined with traditional craft skills. Ultimately most were unsuccessful. Nevertheless this approach marked a substantial move from the isolationism of the Edo period, and in part prompted the Meiji Restoration.

The second phase from the 1860s accelerated by the new Meiji Era, involved the importation of Western technology and the expertise to operate it; while the third and final phase in the late Meiji period (between 1890 to 1910), was full-blown local industrialization achieved with

newly-acquired Japanese expertise and through the active adaptation of Western technology to best suit Japanese needs and social traditions, on Japan's own terms. Western technology was adapted to local needs and local materials and organised by local engineers and supervisors.

The 23 components are in 11 sites within 8 discrete areas. Six of the eight areas are in the south-west of the country, with one in the central part and one in the northern part of the central island. Collectively the sites are an outstanding reflection of the way Japan moved from a clan based society to a major industrial society with innovative approaches to adapting western technology in response to local needs and profoundly influenced the wider development of East Asia.

After 1910, many sites later became fully fledged industrial complexes, some of which are still in operation or are part of operational sites.

(2) Constituent elements contributing to the OUV

After introducing Western technology and beginning mechanical coal mining, the Miike Coal Mine continued to increase and maintain its coal output by digging several new pitheads. There are distinct remains in multiple existing pitheads, and multiple structures at the time of establishment remain in good condition; they exhibit an important interchange of human values (Criterion ii) and illustrate a significant stage in human history (Criterion iv), among the *Sites of Japan's Meiji Industrial Revolution*. Particularly, facilities related to Shaft No. 2 that remain in the Manda Pit, and continuous landscapes of the remains of Coal Railway, which extend from the Miyanohara Pit to the Manda Pit to the Miike Port, create a technological ensemble and mining landscape (Criterion iv); their values as cultural properties have been recognized at the national level and properly preserved.

The attribute that represents the OUV of the Manda Pit is a modernized coal mine equipped with a Davey pump drainage device, which was the world's most powerful one at that time, and two large Western shafts exist. It also includes a steel tower, a brick winding engine house (including a winch existing in the original location), a brick fan room, and attached buildings and structures.

Specifically, it consists of Shafts No. 1 and No. 2; Shaft No. 1/tower was completed in 1899 and Shaft No. 2 tower in 1908. With the construction of these pit facilities, various facilities were built, including a winding engine house, a boiler place, a coal washery, and an office. Although the facilities were upgraded, including electrification, from the Taisho to the early Showa period, coal mining was stopped in 1951 due to decreased efficiency in coal mining, resulting in the dismantling of Shaft No. 1 and other facilities. Concerning the buildings within the Manda Pit facility, the Shaft No. 1 tower was dismantled (reused by Hokkaido Ashibetsu Coal Mine in 1954), and the winding engine house was also demolished; today, the foundations of the shaft and the

tower as well as underground remains such as facilities related to Shaf No. 1 remain. Around the Shaft No. 2 tower and the Shaft No. 2 winding engine house, there exist many buildings including the office, the Safety Lamp Room, the Storage and Pumping Station, and the facility to enshrine Yamanokami.

(3) Present state of preservation

The Shaft No. 2 winding engine house consists of two connected, brick single-storied buildings with a gabled roof, and is equipped with two winches inside. The Shaft No. 2 tower, which is made of steel and as high as 18.9 m, and the Shaft No. 2 winding engine house had their conservation and earthquake-proofing works completed in 2010.

The Storage and Pumping Station and the Safety Lamp Room and Bathroom, the objects of the works, are brick buildings from the Meiji period. Initially, they were indispensable facilities as they housed the ventilation fan and machines critical for operation in the pit which had become long and large. Although they are important elements to prove the existence of the coal mine, the buildings are severely damaged.

The condition of damage of these two buildings, the objects of the works, is as outlined below.

□ Storage and Pumping Station

Brick walls have many sections damaged or missing, including openings that were created by later indiscreet modifications. The top of the arch also has some bricks missing, posing the risk of collapse. The decayed roof has caused major leaking of rain, with rainwater running down along brick walls. This caused salts to precipitate, and there are many sections where joint filler has been damaged. The exterior wall section is thickly covered with plants. The inside of the exhaust tower is exposed to wind and rain as the upper roof is missing, leading plants to flourish notably. Steel materials clinging to the brick walls, which are traces of functional members from the time when the building housed a fan, show severe damage by explosive fracture. Steel materials in the top of the exhaust tower are particularly severely deteriorated due partly to the influence of rainwater entry, significantly affecting brick walls and causing cracks in joints.

In the floor framing, rails inserted into brick walls are used as sleepers, and a little smaller rails are used as joists. The underground space is in wet condition at all times due to rain leakage and drainage water, and the rails are severely corroded and decomposed/flaking in layers, which is beyond the condition that allows the shape to be maintained by surface scrubbing. For the flooring, a mortar finish is given after laying PC (precast concrete) boards on the rails. Some sections have exposed PC boards and laid wood. The PC boards show sections where the reinforcing bars have fractured. Wooden floor boards/joist members are severely damaged by termites and seriously

decayed, with noted falling alongside the wall. Part of the floor is a floor of plain concrete, which was integrally placed with rails inserted into brick walls and used as sleepers. The underlying basement storage is in wet condition at all times due mainly to water leakage, and the rails that were integrally placed with the plain concrete floor were fractured and exposed.

In most roof truss members for structures, such as the roof purlin and ascending beams, the intrusion of termites is observed, which was caused by decay due to rain leaking through the roof; the members are severely decayed.

In the flat roof part, a mortar finish is given to bricks, and mortar is used as a waterproof measure. Mortar shows unevenness due to cracks and peeling, leading to poor drainage and rain leakage. Most roof board members of the pantile roofing part are observed to notably have decay due to rain leakage and the intrusion of termites; the members are severely decayed. This condition caused roof boards and tiles to fall, and parts with holes are confirmed. The top of the exhaust tower had a roof slated with corrugated iron sheets, which had gone missing because of wind damage and rain leakage as well as the associated decay.

On the north side, steel-framed lean-to eaves were attached, and vinyl chloride corrugate sheet roofing was changed to wood shingle roofing. Roofing materials remain only partially due to decay, and steel materials constituting the frame are confirmed to have rusting. Reinforced concrete eaves on the east side have some reinforcing bars that are exposed due to the explosive fracture.

Exterior wooden fixtures have gone missing due to decay. Interior wooden fixtures are confirmed to have sections damaged/missing due to decay. Exterior steel sashes are confirmed to have rusting, which was caused by peeling of painting. In most wood backing parts, peeling of painting is seen. In most steel substrate parts, peeling of painted surfaces due to rusting is noted.

Plastering at the circular cross section wall in the center of the former fan room and at the inclined wall in the exhaust tower flaked off entirely due to the intrusion of rainwater, with only its trace remaining. Plants are flourishing notably. It is recorded that the underground wall surfaces were given a mortar finish, which however shows peeling everywhere.

□ Safety Lamp Room and Bathroom

Brick walls have many sections damaged or missing, including openings that were irregularly created by later indiscreet modifications. Some openings do not have a lintel, and brick walls are formed only by adhesion force of joints in some sections, posing the considerable risk of brick

walls collapsing. Other openings have sections that are put between bricks replaced for the construction of wooden fixtures. The sections with replacement bricks are notably weathered due to precipitation of salts. The exterior wall section is thickly covered with plants. The sections that have lost the roof around the eaves are particularly thickly covered. At the part near the cornice of the top of brick walls, some inner part brick walls were chipped away by a later modification of the roof. In the drying room, brick walls were added to this part, and due to this influence, a jut is seen in the periphery of brick walls.

The mortar dirt floor shows peeling of mortar. In the bathroom/changing room, a trench created to drain water is intercepted by sediment.

The ceiling of the bathroom part shows progressing corrosion/decay due to rainwater that entered after the monitor roof had collapsed. The damage is particularly noticeable at the ceiling part of the monitor roof. The ceiling of the changing room shows progressing soiling/decay due to the influence of rain leaking through the roof. At the ceiling of the drying room, a galvanized plate has fallen due to weight after the plastered wall of the end panel had collapsed. Decay is progressing in the members around the eaves, including the flat beam, the pole place, and the roof purlins due to rainwater that entered through the lost part of the roof.

The roof is a slate roof with cement corrugated sheets, which have noticeable cracks. The roof used to be a pantile roof at the time of the construction, which was later reroofed using corrugated iron sheets, and the height of the roof truss was changed and raised. In the part connecting to the end panel, rainwater entered due to poor construction, causing the decay of roof truss members and the collapse of the plastered wall. The monitor roof has only part of the roof truss and ceiling left after roofing materials had fallen due to damage by strong wind. This condition has been allowing rainwater to enter considerably, contributing to the decay of monitor roof materials.

The Safety Lamp Room and Bathroom has steel-framed lean-to roofs attached on the south and the west sides. Both have undergone a modification to change vinyl chloride corrugate sheet roofing to wood shingle roofing. Due to decay, roofing materials only partially remain in part of the lean-to roof on the south side. Steel materials constituting the framework are confirmed to have rusting.

Exterior wooden fixtures have gone missing due to decay. Interior wooden fixtures are confirmed to have sections damaged/missing due to decay. Exterior steel sashes are confirmed to have rusting which was caused by peeling of painting. Aluminum sashes in the bathroom have gone missing.

Peeling of painting is seen in most wood backing parts. In most steel substrate parts, peeling of painted surfaces due to rusting is noted. The plastered wall in the drying room show noticeable peeling/flaking due to rainwater that entered through the roof, and the most part of it flaked off. In the end panel of the safety lamp room, traces of flaked plaster are confirmed.

The bathroom has many piping including hot-water/water piping and drainage piping. In most of them, coating materials have fallen off and rusting is confirmed in piping materials. Electric light fixtures also show progressing rusting; they have broken/fallen.

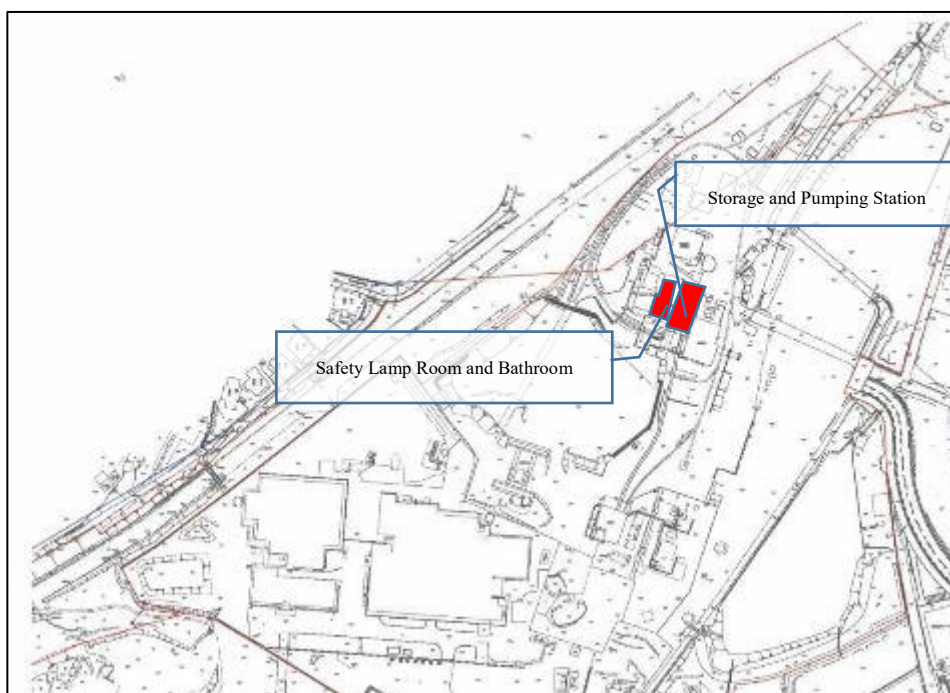


Figure 3 Location of buildings for works



Figure 4 Storage and Pumping Station



Figure 5 Safety Lamp Room and Bathroom

4. Assessment of the overall impact of conservation/earthquake-proofing works

The conservation/earthquake-proofing works are aimed at conserving the two deteriorated buildings

permanently and contributing to the promotion of their interpretation through disclosure to visitors after the works have been completed.

The basic policy stands by the fundamental assumption that existing members of the buildings are preserved to the extent possible and they are conserved so that their shapes remain as they have been, on the basis of the idea of “what can be preserved” instead of “what should be preserved.”

Members that are too deteriorated to be used may be replaced inevitably, but as a policy, old members to be replaced will be scrutinized and preserved as well to the extent possible.

In addition, the earthquake-proofing works do not make changes to the appearance; in placing reinforcement members indoors, consideration is given to make them as inconspicuous as possible by, for example, attaching them along a pillar or a beam.

5. Management process

Before the basic design of the works was decided through two years of cautious discussions at the Conservation Expert Committee consisting of members of the Agency for Cultural Affairs and experts from various fields.

The works have been reported at the Area 7 Miike Local Conservation Council in 2019.

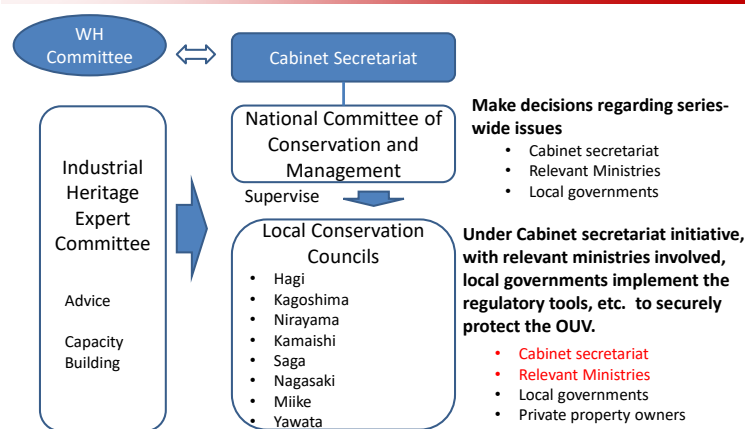
As for the management standards of the works, reference is made to the Cultural Assets Preservation Act, the Act on Regulation of Execution of Budget Pertaining to Subsidies and the Order for Enforcement of said Act, the rules of the Agency for Cultural Affairs/related laws and regulations, and related ordinances of Kumamoto Prefecture/Arao City, among others.

Regarding the organization for the works, the secretariat is established in the World Heritage and Cultural Exchange Office, Cultural Affairs Division, Arao City. In addition, a Conservation Expert Committee is organized to seek discussion and advice on the project.

Design and supervision are entrusted to Japan Cultural Heritage Consultancy, which specializes in the conservation of important cultural properties of Japan, and a chief engineer is assigned, who holds a professional qualification related to the conservation of important architectural monuments and buildings that is authorized by the Agency for Cultural Affairs.

Governance

- Governance system and Expertise



Governance system of the Strategic Framework

6. Work schedule

September 2016 to March 2018: Research for conservation/earthquake-proofing

May 2019 to March 2020: Demolition work, temporary work, execution design, etc.

April 2020 to March 2021: Carpenter's work, joiner's work, brick work, painter's work, etc.

April to October 2021: Completion

7. Conclusion

The conservation/earthquake-proofing works of the Miike Coal Mine Manda Pit Storage and Pumping Station as well as Safety Lamp Room and Bathroom are planned and carried out by respecting the OUV of the World Cultural Heritage: Sites of Japan's Meiji Industrial Revolution, including its integrity and authenticity; therefore, the works do not adversely impact the value of this site.

Conducting the conservation/earthquake-proofing works is a project necessary for the preservation and utilization of the sites because they do not diminish the OUV value as heritage but rather significantly contribute to assuring the OUV preservation and promoting the understanding of the value among visitors.

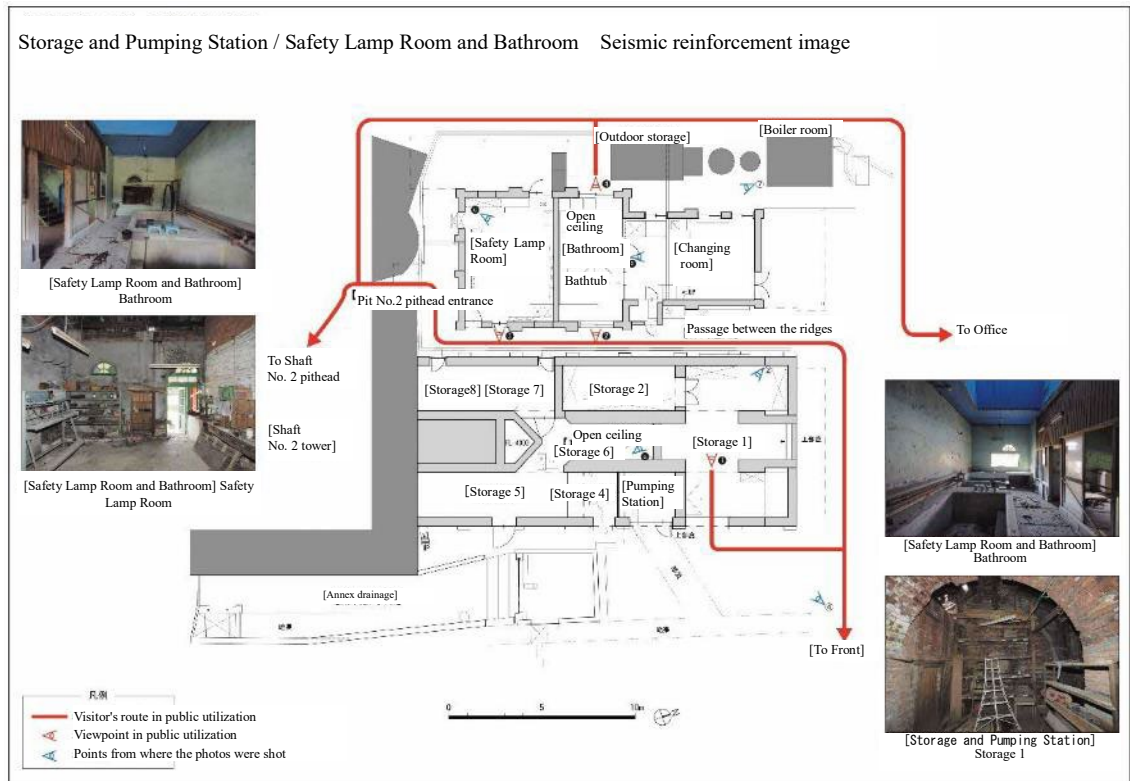


Figure 6 Legend of the seismic reinforcement image

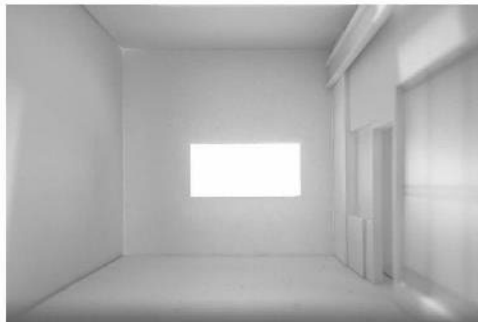
Storage and Pumping Station / Safety Lamp Room and Bathroom Seismic reinforcement image

1. Appearances from the viewpoint in public utilization

(1) Storage 1 (the former fan room) side bay viewed from the venter (invisible from Front)



(2) Bathroom viewed from the passage between the two buildings

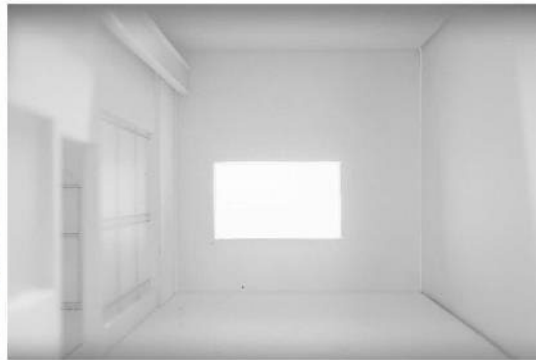


(3) Safety Lamp Room viewed from the passage between the two buildings



Figure 7 Seismic reinforcement image 1

(4) Bathroom viewed from the opening on the west side



2. Appearances from special viewpoints not opened to the public

(a)(b) Exhaust tower frame reinforcement looked up at from just under the tower

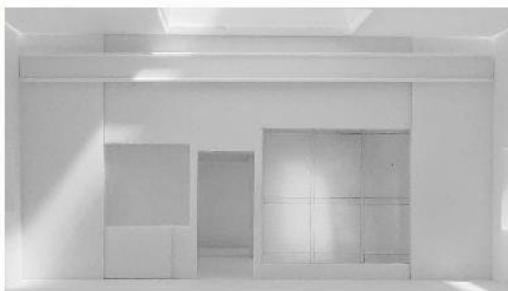


(c) Roof structure plane on the upper part of Safety Lamp Room looked up at from Safety Lamp Room



Figure 8 Seismic reinforcement image 2

(d) X4 lane frame reinforcement viewed from Bathroom



(e) Falling prevention device under the drying room viewed from the changing room



3. Appearances from viewpoints that provide an overview of reinforcement

(1) Reinforcement of the roof structure plane of the Storage 1 (former fan room) side bay, looked down from the above

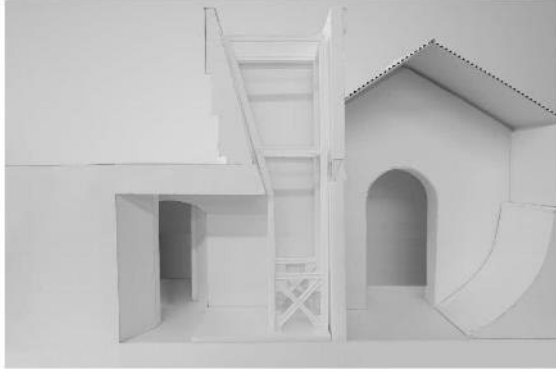


(2) Reinforcement of the roof structure plane of the Storage 1 (former fan room) side bay, looked up from the passage between the two buildings



Figure 9 Seismic reinforcement image 3

(3) Exhaust tower reinforcement viewed from the side



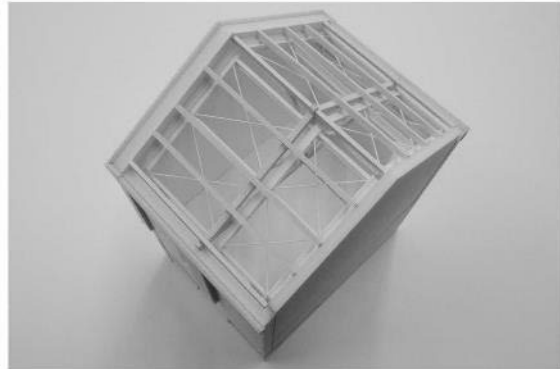
(4) Reinforcement members cannot be seen from the exterior



(5) Roof structure plane of Safety Lamp Room looked up from inside of the room



(6) Roof structure plane of Safety Lamp Room looked down from the above



(7) X4 lane frame reinforcement viewed from the boiler room



(8) X4 frame viewed from inside of the room. ○ shows the indoor side of (7)

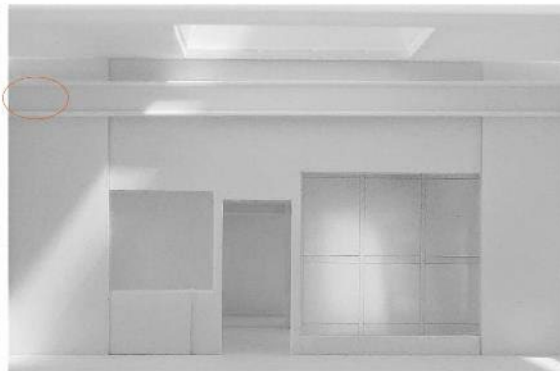


Figure 10 Seismic reinforcement image 4

Heritage impact assessment report of Miyanohara Pit (Component Part 7-1) Shaft No. 2 Winding Engine House conservation/earthquake-proofing works

Outline

This document is a heritage impact assessment report of the conservation/earthquake-proofing works of the Miike Coal Mine Miyanohara Pit Shaft No. 2 Winding Engine House, a constituent element of the Miike Coal Mine (Component Part 7-1), which is a component part of the World Heritage Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.

Given that the building is significantly deteriorated and that Japan is a quake-prone country, the conservation/earthquake-proofing works of the building are necessary to preserve the site permanently in the future.

The conservation works of the building are limited to partially repairing members of fixtures, such as windows and doors, to preserve original members to the extent possible. Meanwhile, the earthquake-proofing works do not change the appearance. In placing reinforcement members indoors, careful consideration is given by, for example, placing them along pillars and beams to make them as inconspicuous as possible.

Therefore, conducting the works will enhance the contribution of the building to the Outstanding Universal Value (OUV).

1. Introduction

- (1) The object of this heritage impact assessment is the Miyanohara Pit, a constituent element of the Miike Coal Mine and Miike Port (7-1), which is a component part of the *Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining* that was inscribed on the World Heritage List in July 2015 (Figures 1 and 2).
- (2) In the assessment, reference was made to matters stipulated in the Conservation and Management Plan (CMP) for the site as well as opinions of Japanese and non-Japanese experts.
- (3) The main organization that prepared the assessment report is Omuta City.

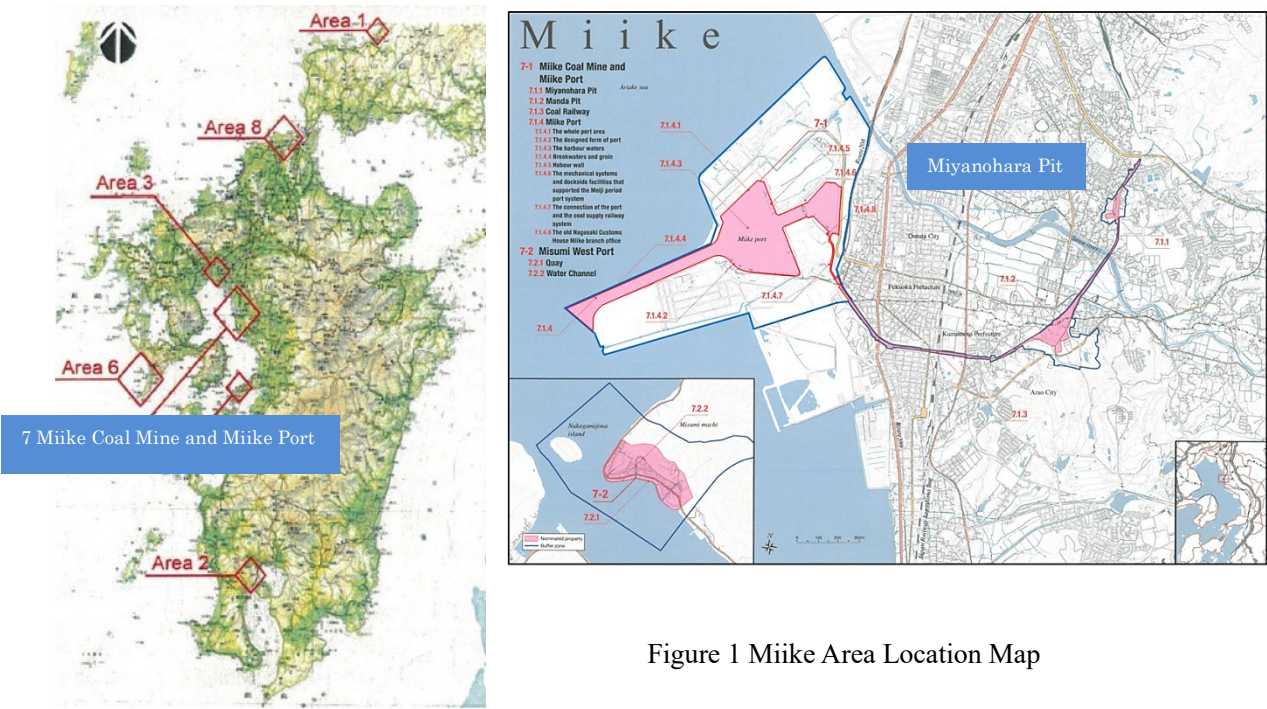


Figure 1 Miike Area Location Map

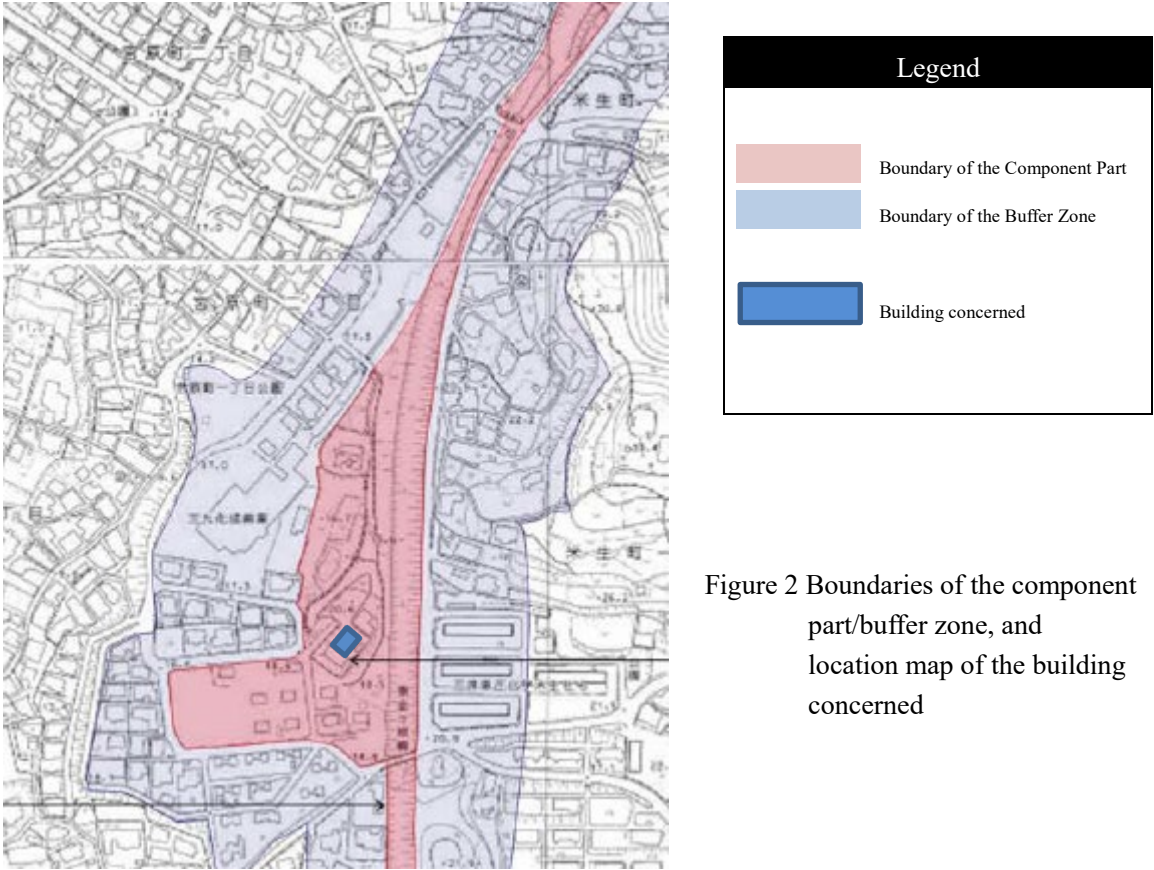


Figure 2 Boundaries of the component part/buffer zone, and location map of the building concerned

2. Outline of conservation/earthquake-proofing works of building**(1) Outline of building**

From its completion in 1898 until 1997, the Miike Coal Mine Miyanohara Pit had gone through modifications to adapt to changes in the machines and power source used as a coal mining facility as well as desired functions, under the management of Mitsui Mining Co., Ltd. The facilities stopped coal mining in 1931 but continued to be used as facilities for drainage and management until 1997. Among the facilities, the inside of the building of the Shaft No. 2 Winding Engine House, the object of the conservation/earthquake-proofing works, was drastically modified to divert facilities when the power was changed from steam to electricity.

Meanwhile, internal and external surfaces have many damaged or missing bricks. The top of the arch also has some missing bricks, posing the risk of bricks falling. The corroded roof has caused major leaking of rain, with rainwater running down along brick walls. This caused salts to precipitate, and there are many sections where joint filler has been lost or damaged. These are adversely affecting the conservation of the building, and the 39th World Heritage Committee Decision states, “At the Miike Coal Mine and Miike Port, some of the physical fabric is in poor condition.” To address this, immediate action is required (Attachment-1).

(2) Conservation and management policy

With regard to the conservation of the Miike Coal Mine (Miike Coal Mine Miyanohara Pit, Manda Pit, and remains of Coal Railway), the Conservation and Management Plan states the following principle and policies:

(1) Conservation principle

The present condition should basically be preserved for the sites. For all the sites, efforts should be made to preserve the present condition by using condition at the time of closure in 1997 as the base. Conservation works should use materials and construction methods based on the results of resource research and excavations but not on speculations. Reconstruction works should not be conducted as a rule. (The rest is omitted)

(2) Basic policies

- Preservation should properly be carried out in accordance with the Cultural Assets Preservation Act and the Landscape Act.
- After the registration as world heritage, proper preservation as world heritage should be ensured in accordance with the government's preservation policy for world heritage, in addition to by following domestic policies for the preservation of remains.
- For the elements at the time of operation of the Miyanohara Pit, the Manda Pit, and the Coal Railway, which directly represent the OUV, value as world heritage should properly be preserved.
- Within the boundary of this component part, there are buildings and archaeological remains. Each of them should be under proper conservation and management, while considering the surrounding environment as well to maintain the historical context of this component and taking adequate measures to preserve the cultural landscape through the operation of the Landscape Act and other laws.

On the basis of the principle and policies shown above, measures necessary for preservation, including conservation and reinforcement, are taken with the basic goal of preserving the present condition of the Miyanohara Pit Shaft No. 2 Winding Engine House, which is an element representing the OUV and contributing to the value as the country. Measures necessary for preservation involve minimal intervention, and consideration is given to maintain the authenticity of the sites. In addition, proper preservation is ensured in accordance with the Cultural Assets Preservation Act for the elements designated as a cultural property in Japan, and in accordance with the Landscape Act for the elements designated as a structure of landscape importance.

(3) Outline of the conservation/earthquake-proofing works

In the conservation works, seismic reinforcement and repair works are conducted with the basic goal of preserving the condition at the time of closure, which is condition at the time of registration as world heritage (Attachment-2).

First, the following seismic reinforcement works are carried out:

- (i) Insert reinforcement members into brick walls, and partially reinforce the concrete foundation

(Attachment-3)

(ii) Newly place steel beams inside the top of brick walls (Attachment-2)

(iii) Insert aramid fiber rods into the joints of brick outer surfaces (Attachment-4)

The primary purpose of each work is to improve the flexural capacity of brick wall surfaces for (i), to enhance the horizontal stiffness of the roof surface for (ii), and to reinforce the upper part of the opening and improve out-of-plane bending capacity for (iii).

The roof and the wood of the roof are temporarily removed for earthquake-proofing works and rain leakage repair works on the roof. However, members removed are returned to their original positions after earthquake-proofing works are completed. In removing them, sufficient preparations are made so as not to affect parts that are not dismantled.

In some repair works, sections with severe corrosion or cracks in wooden parts of doors and window frames are repaired. Here again, it is a prerequisite to partially repair original members without replacing them. In addition, for parts that are deteriorated and heavily damaged in the exterior wall of bricks, bricks are partially added to damaged sections, and near-empty joints between bricks are filled (Attachment-5). In these works too, it is a prerequisite to partially repair original members without replacing them. This way, through the conservation works aimed at preserving the condition at the time of closure, partial repair works are conducted using existing members.

3. Value as a heritage

(1) The OUV of the *Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining* is as described below (Excerpt from the statement of the OUV resolved at the World Heritage Committee) .

A series of industrial heritage sites, focused mainly on the Kyushu-Yamaguchi region of south-west of Japan, represent the first successful transfer of industrialization from the West to a non-Western nation. The rapid industrialization that Japan achieved from the middle of the 19th century to the early 20th century was founded on iron and steel, shipbuilding and coal mining, particularly to meet defence needs. The sites in the series reflect the three phases of this rapid industrialisation achieved over a short space of just over fifty years between 1850s and 1910.

The first phase in the pre-Meiji Bakumatsu isolation period, at the end of Shogun era in the 1850s and early 1860s, was a period of experimentation in iron making and shipbuilding. Prompted by the need to improve the defences of the nation and particularly its sea-going defences in response to foreign threats, industrialisation was developed by local clans through second hand knowledge, based mostly on Western textbooks, and copying Western examples, combined with traditional craft

skills. Ultimately most were unsuccessful. Nevertheless this approach marked a substantial move from the isolationism of the Edo period, and in part prompted the Meiji Restoration.

The second phase from the 1860s accelerated by the new Meiji Era, involved the importation of Western technology and the expertise to operate it; while the third and final phase in the late Meiji period (between 1890 to 1910), was full-blown local industrialization achieved with newly-acquired Japanese expertise and through the active adaptation of Western technology to best suit Japanese needs and social traditions, on Japan's own terms. Western technology was adapted to local needs and local materials and organised by local engineers and supervisors.

The 23 components are in 11 sites within 8 discrete areas. Six of the eight areas are in the south-west of the country, with one in the central part and one in the northern part of the central island. Collectively the sites are an outstanding reflection of the way Japan moved from a clan based society to a major industrial society with innovative approaches to adapting western technology in response to local needs and profoundly influenced the wider development of East Asia.

After 1910, many sites later became fully fledged industrial complexes, some of which are still in operation or are part of operational sites.

(2) The Miike Coal Mine and Miike Port, a site representing the coal industry in the third phase, is remains in the Meiji Era when Japan established its industrial base through the active introduction and adaptation of Western technology to best suit Japanese needs.

After introducing Western technology and beginning mechanical coal mining, the Miike Coal Mine continued to increase and maintain its coal output by digging several new pitheads. There are distinct remains in multiple existing pitheads, and multiple structures at the time of establishment remain in good condition; they exhibit an important interchange of human values (Criterion ii), and illustrate a significant stage in human history (Criterion iv), among the *Sites of Japan's Meiji Industrial Revolution*.

The attribute that represents the OUV of the Miyanohara Pit is a large Western shaft (featuring an existing steel tower), which was equipped with a drainage pump that was the world's most powerful one at that time and a modern winch. The brick winding engine house exists (the second winch has been installed in the original position). A huge Davey pump drainage pipe exists. Archaeological remains of other coal mine facilities, including the Davey pump room, also remain.

Concerning the state of preservation of the Miike Coal Mine Miyanohara Pit, the Shaft No.1

facilities had the building dismantled, but underground remains exist.

For the Shaft No. 2 facilities, the winding engine house, a brick single-storied building with a gabled roof, is equipped with two winches inside. The steel Shaft No. 2 tower, which is as high as 22 m, had its repainting completed in 2002.

Around the Shaft No. 2 tower and the Shaft No. 2 Winding Engine House, there exist the wall of the Davey pump room, a spur line, and buildings such as a staff lounge, as well as underground remains including a boiler chimney.

4. Decision on construction methods and management process

(1) Decision on construction methods

For the building concerned, research work, including structural diagnosis, was conducted with support from the government in 2010 and 2011, and construction methods for conservation/earthquake-proofing works were discussed and decided. After that, in 2019, the appropriateness of construction methods used at that time and innovative technologies were confirmed at an expert committee comprising experts in modern architecture and structural work methods as well as preservation and reinforcement of historic structures. Discussions were held in parallel with the Agency for Cultural Affairs, and the decision was made to adopt the construction methods described above.

The decision was explained to foreign ICOMOS experts and approved by them.

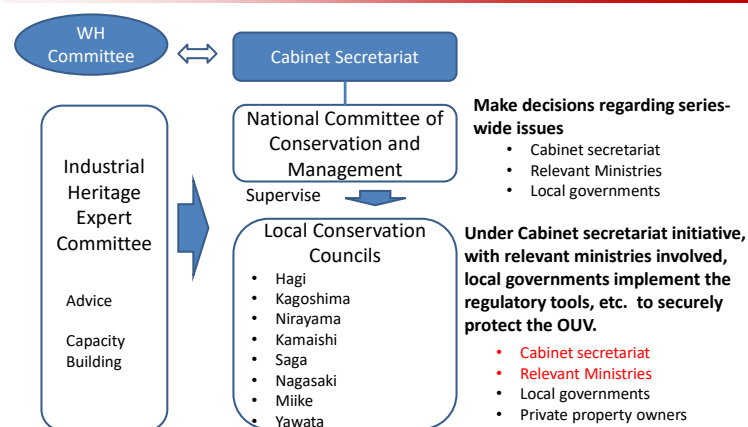
(2) Management standards of the works and the organization for the works

Regarding the management standards of the works, the works are managed in accordance with Japan's Cultural Assets Preservation Act, the Act on Regulation of Execution of Budget Pertaining to Subsidies and the Order for Enforcement of said Act, the rules of the Agency for Cultural Affairs/related laws and regulations, and related ordinances of Fukuoka Prefecture/Omuta City.

As for the organization for the works, the secretariat is established in the World Heritage and Cultural Property Office, Planning and General Affairs Division, Omuta City. In addition, an advisory committee consisting of experts is organized to seek discussion and advice. Design and supervision are entrusted to a company with a chief engineer authorized by the Agency for Cultural Affairs of Japan, and carried out in consultation with the City, the Prefecture, and the government as needed.

Governance

- Governance system and Expertise



Governance system of the Strategic Framework

5. Work schedule

July 2010 to September 2019: Research/discussions/consideration for conservation/earthquake-proofing

May 2019 to March 2020: Reconfirmation of the contents of the works

June 2020 to February 2021: Execution design

March to October 2021: Temporary work, removal of the roof

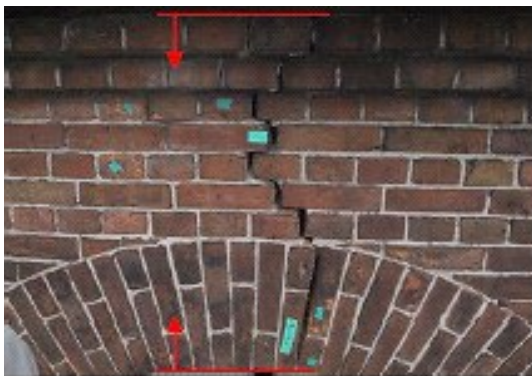
November 2021 to June 2022: Conservation works, earthquake-proofing works

July 2022 to March 2023: Printing and bookbinding of the report

6. Assessment of the overall impact of conservation/earthquake-proofing works

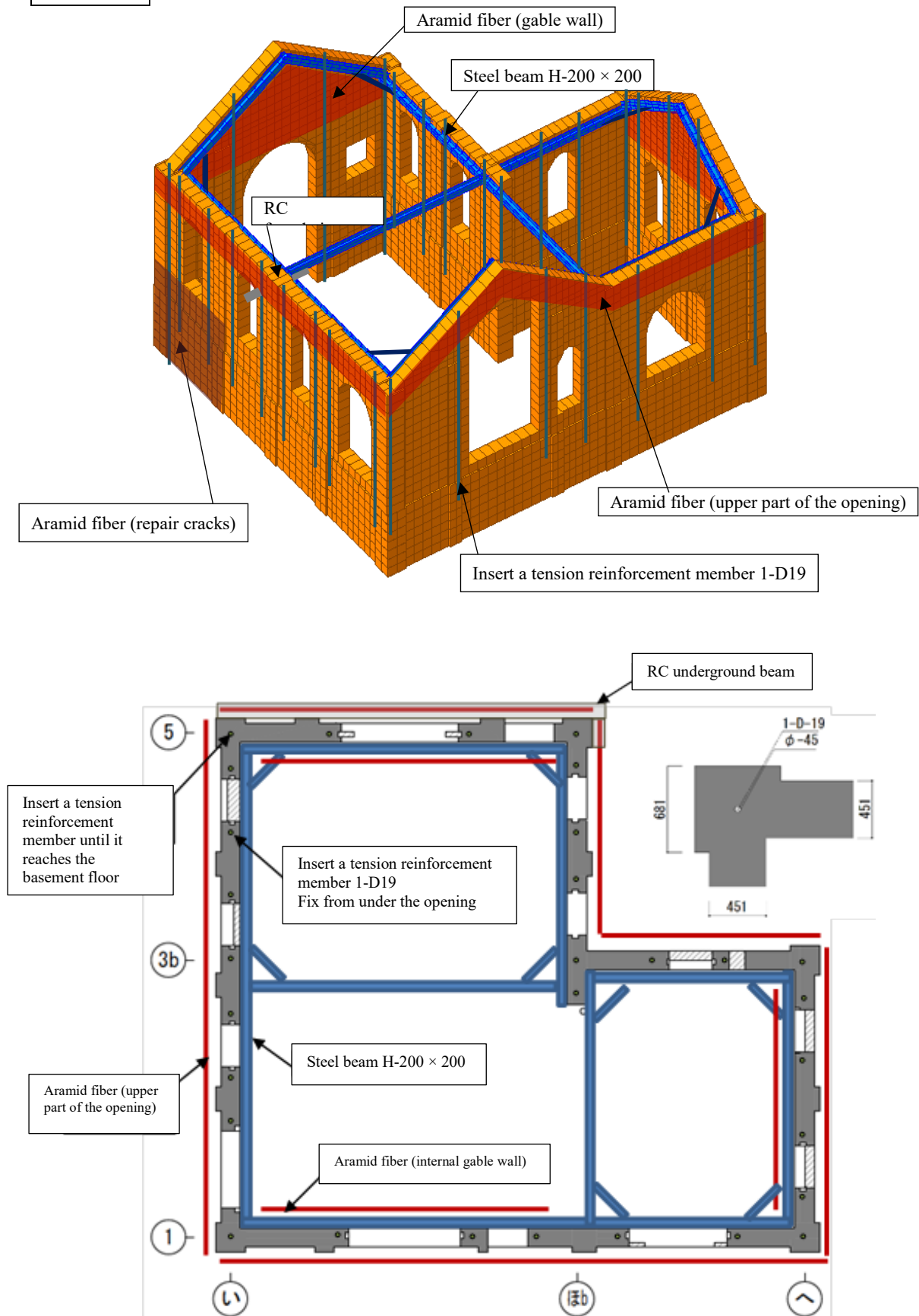
As described above, the conservation/earthquake-proofing works of the Miike Coal Mine Miyanohara Pit Shaft No. 2 Winding Engine House are conducted in such a way that existing members of the building are preserved to the extent possible, minimal changes are made to the appearance, and unnecessary designs are not brought in. Carrying out the works by respecting the OUV of the World Cultural Heritage: *Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining*, including its integrity and authenticity, will enhance the contribution of this building to the OUV without adversely affecting the value of this site.

Attachment-1





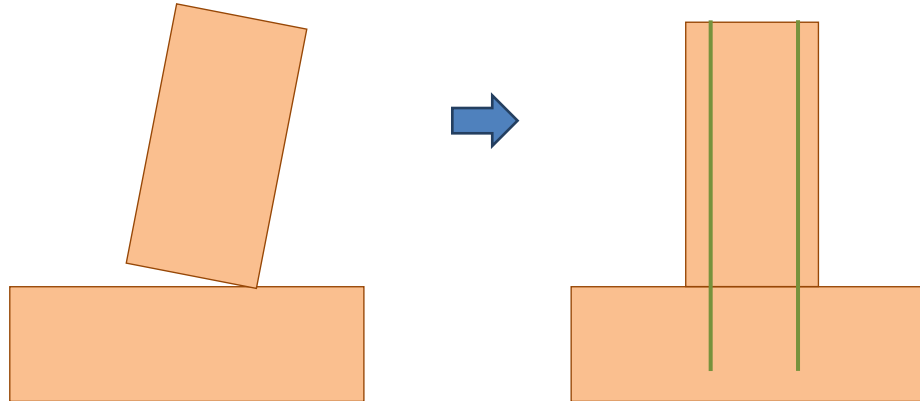
Attachment-2



Attachment-3

3. Construction methods for reinforcement

a) Reinforcement by inserting a tension reinforcement member



Conceptual diagram of reinforcement by inserting a tension reinforcement member



Drill a reinforcing bar insertion hole (42 ϕ , 3.8–7.0 m)



Insert a reinforcing bar (brick width: 333 mm, 1-D22)



Pour cement slurry

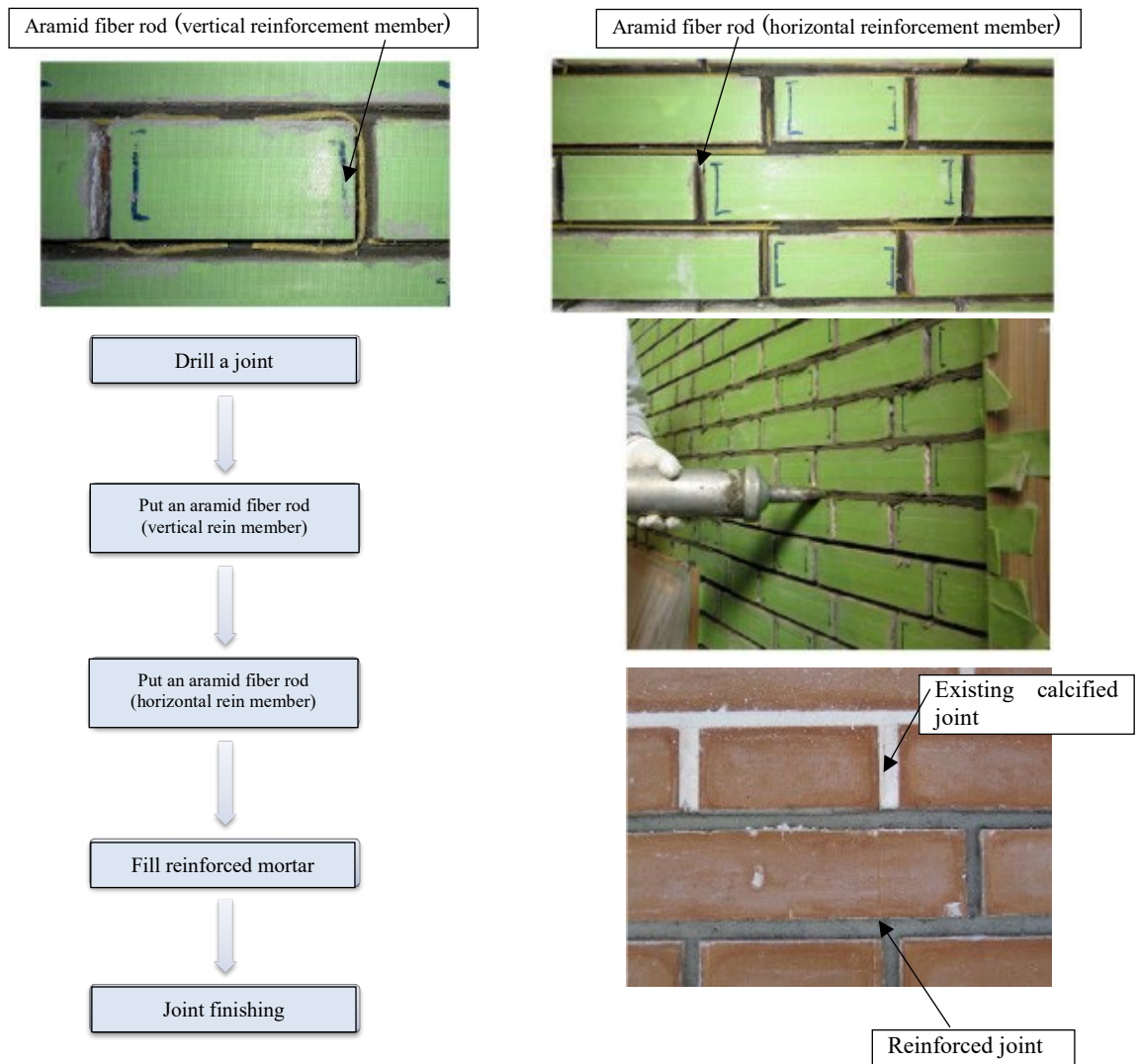
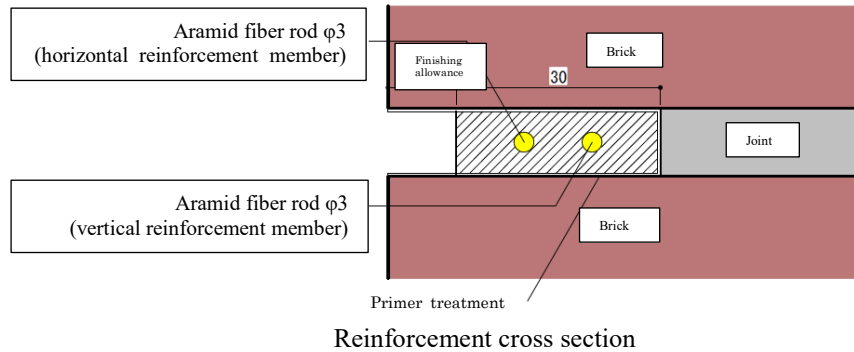


Completed pouring

Photos showing an example of insertion of a tension reinforcement member

Attachment-4

b) Joint replacement through aramid fiber rod insertion



Photos showing an example of aramid fiber rod insertion into a joint

Attachment-5



Repair bricks: Place supplementary bricks on a section where the bricks have been deeply deteriorated and lost, as seen in this photo



1. Chip away bricks deteriorated more than half



2. Remove carefully



4. Put a brick on the part



3. Fill mortar

“Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining” (No. 1484)

Summary of the Heritage Impact Assessment for a Route Change of the City Planning Road in Miike Coal Mine and Miike Port (Area 7/Component Part 7-1) and Its Buffer Zone

This document is a summary report on the Heritage Impact Assessment (hereinafter referred to as “HIA”) conducted regarding a change in route of the previously decided city planning road Manda-Shimoide Line that would have passed through the Miike Coal Mine and Miike Port (Area 7/ID 7-1), which is a component part of the World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining,” and its buffer zone. The (1) Location and (2) Purpose of the project covered by the HIA, as well as (3) the Entity responsible for the HIA, are as indicated below.

(1) Location of the Project

The scope of Miike Coal Mine and Miike Port inscribed on the World Heritage List extends across two cities in two prefectures, namely, Arao City, Kumamoto Prefecture and Omuta City, Fukuoka Prefecture. Of these, the places relating to the route change on the city planning road covered by this document are Manda Pit and its buffer zone, located in Arao City, Kumamoto Prefecture (Figures 1 and 2).

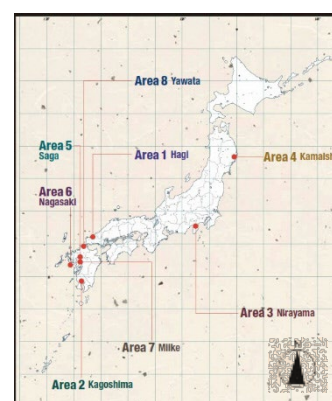


Figure 1: Location of Miike Coal Mine and Miike Port (Area 7/Component Part 7-1)

(2) Purpose of the Project

The city planning road Manda-Shimoide Line, in addition to its function as an access road to the Manda Pit that is one of the component parts of the World Cultural Heritage property, is a road of the highest importance positioned as part of the loop trunk road connecting the outskirts of Arao City in the 5th General Plan adopted

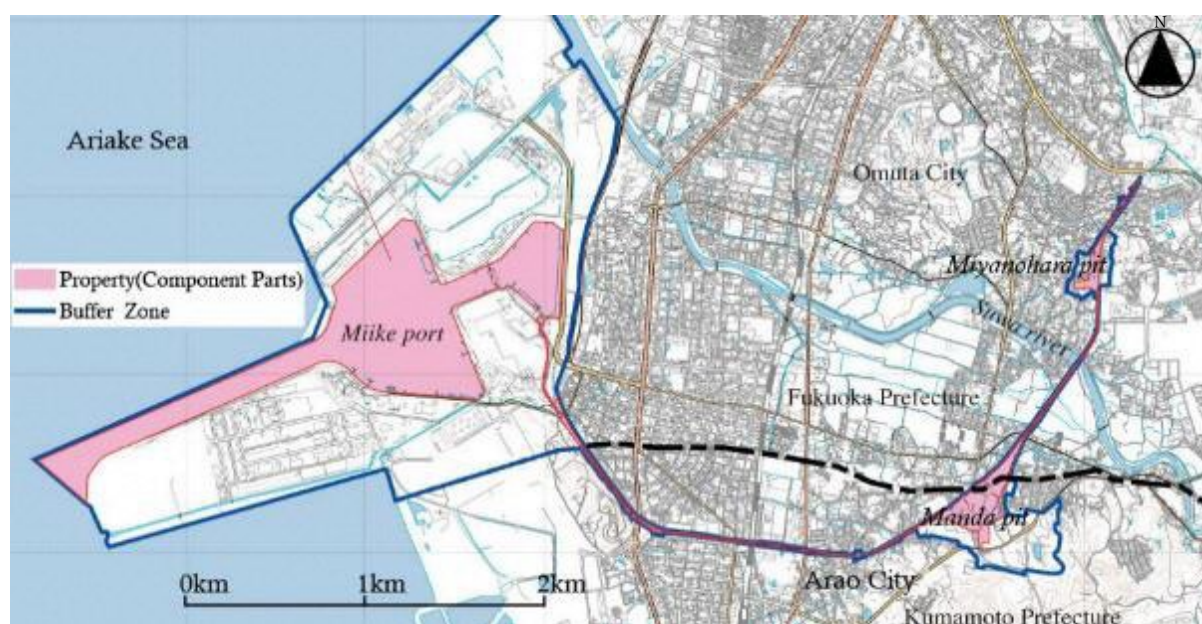


Figure 2. Miike Coal Mine and Miike Port (Area 7/Component Part 7-1) and its Buffer Zone

by the Arao City Government in 2018. Currently the further west section from a point approximately 1,000 meters west of Manda Pit has already been completed and begun service.¹ This is to be extended aiming for early completion of the entire road (Figures 3 and 4).

Since, however, the route for the uncompleted sections decided in the city plan of 1944, which remains unchanged from that plan, intersects the scope of the Manda Pit of the World Cultural Heritage component part and its buffer zone, we would like to change the route of the city planning road, through the HIA, to avoid crossing the component part, as well as to minimize to the extent possible any impact on the historical and archaeological remains and artifacts and landscape of Manda Pit and the coal railway.

Note that Kumamoto Prefectural Government plans to decide on the city planning road route change, and to begin detailed surveying and design work, in August 2021 and after.

(3) Entity Responsible for the HIA

The HIA was conducted by the City Planning Road Department and World Heritage Department of Kumamoto Prefectural Government and Arao City Government, which drew up this written summary of the HIA.

1. Development Projects Covered by the HIA

(1) Summary

The HIA applies to the route change draft to the city planning road Manda-Shimoide Line in the city plan adopted in 1944.

The city planning road Manda-Shimoide Line has important functions, being located on the loop trunk road network interconnecting two central points in Arao City, the area around Japan Railways (hereinafter referred to as “JR”) Arao Station and the Midorigaoka district. Moreover, being an arterial road linking north and south between Arao City and Omuta City, Fukuoka Prefecture, it is necessary for enhancing the role of the Manda Pit, the component part of Miike Coal Mine, as an interpretation center for visitors to the World Cultural Heritage property, and as a hub for Arao City community planning and human exchange in its tourism culture. (Figure 3)

The proposed changes to the city planning road Manda-Shimoide Line in the city plan adopted in 1944, as shown in Figures 3 and 5, apply to the places where the route intersects the component part and its buffer

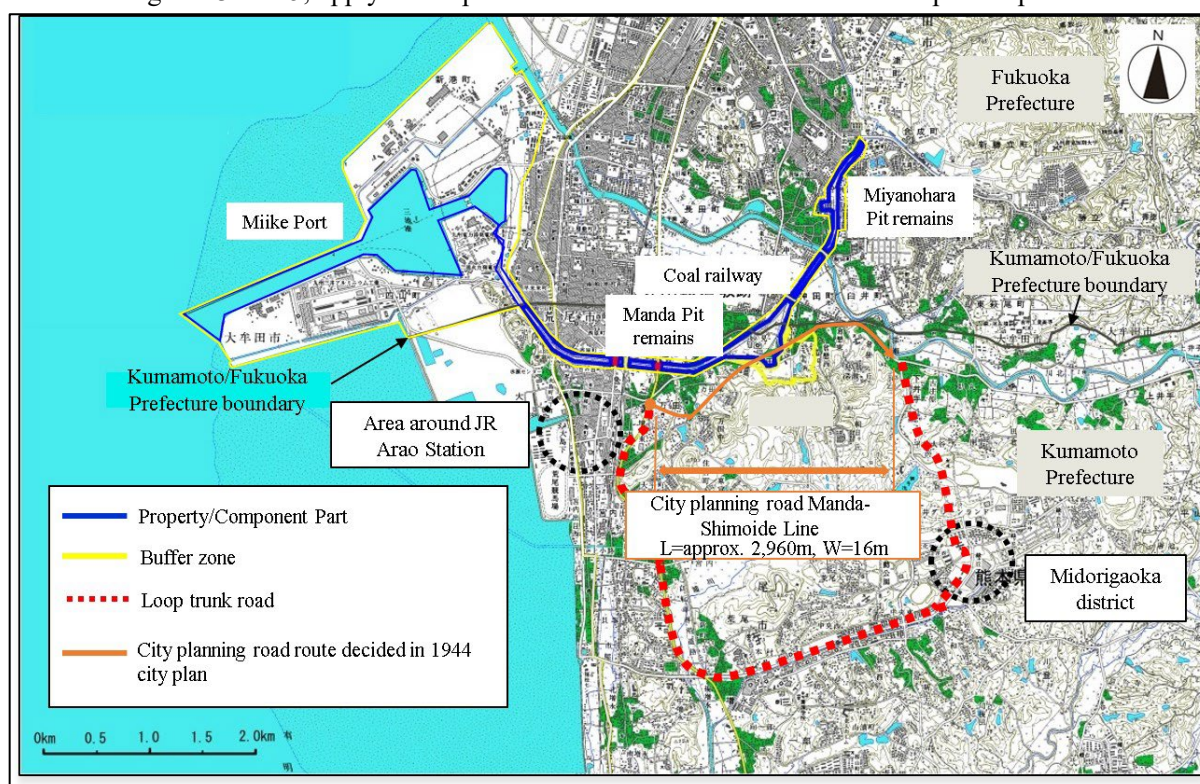


Figure 3. Relation of City Planning Roads to the Component Part and its Buffer Zone

¹ While World Heritage inscription of the “Sites of Japan’s Meiji Industrial Revolution” took place in 2015, the completion and start of service of the further west section of the city planning road Manda-Shimoide Line from a point approximately 1,000 meters west of Manda Pit happened prior to that, in 2008.

Appendix 2-5

zone. In deciding the changes, a “Study Committee on City Planning Road Development in the Area around Manda Pit of Miike Coal Mine” was established, and studied ways of proceeding without adverse impacts on the Outstanding Universal Value (hereinafter referred to as OUV) of the property.

Based on the HIA, assuming completion in the future of the new construction of the city planning roads of new-route Manda-Shimoide Line and Kuramitsu-Manda Line as well as of accompanying changes to the width of and improvements to existing roads, the roads other than city planning roads including Kumamoto Prefecture Road 29 and Arao City roads (Figure 4) will essentially remain as they are, maintaining their functions for movement of vehicles and people.

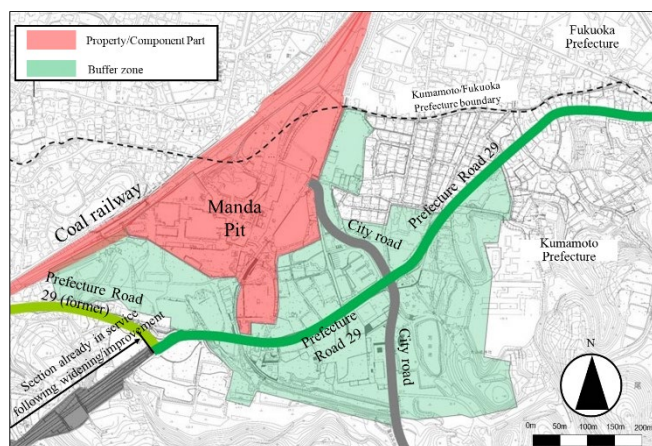


Figure 4. Relation of Existing Roads to Component Part and Buffer Zone

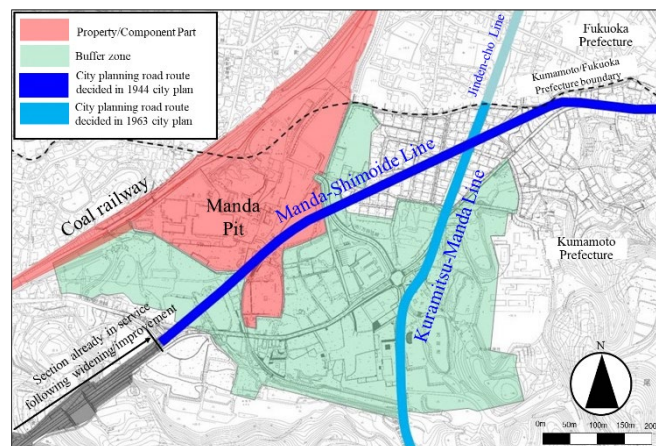


Figure 5. Relation of City Planning Road Route Decided in City Plans of 1944 and 1963 to Component Part and Buffer Zone

a. Road Specifications

- Planned length: Total of 3,060 meters (of which the section passing through the buffer zone will be 660 meters long)
- Planned width: Total width of 16 meters, including two vehicle lanes with pedestrian walkways, bicycle lanes, and planting strips on both sides
- Each side: 1 lane (vehicle lane width; 3.0 meters, bicycle lane width; 1.5 meters, planting strip width; 1.5 meters, pedestrian walkway width; 2.0 meters)
- Planned traffic volume: 6,100 vehicles/day
- Designed speed: 50 km/hour

b. Future Steps

Kumamoto Prefectural Government plans to decide on the city planning road route change, and to begin detailed surveying and design work, in August 2021 and after. At this time, the aim is to complete all work by 2031.

In case detailed survey and design work make it likely that the heritage impact will be greater than assumed in this report, an HIA will be conducted anew, and an information report summarizing the results will be submitted to the World Heritage Centre.

(2) Chronology

The chronology from the decision on the city planning road Manda-Shimoide Line in the city plan until the present is summarized in Table 1.

March 1944	Arao City Government adopted a city plan including construction of the city planning road Manda-Shimoide Line.
March 1963	Arao City Government adopted a city plan including construction of the city planning road Kuramitsu-Manda Line.
January 2000	The Miike Coal Mine site (Miyahohara Pit, Manda Pit, and coal railway) was designated as a National Historic Site as a whole.
March 2013	The area around the Manda Pit remains was given additional National Historic Site designation. (This additional designation meant the city planning road Manda-Shimoide Line would pass through the scope designated as a National Historic Site.)
July 2015	The decision was made to inscribe the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining,” including the Manda Pit, on the World Heritage List.

November 2015 and following	Arao City Government set up a “Study Committee on City Planning Road Development in the Area around Manda Pit of Miike Coal Mine”, which began considering changes to the route of the city planning road Manda-Shimoide Line.
December 2017	After four plenary meetings of the Study Committee and five working group meetings under it, a report on the study results was drawn up.
December 2017 and following	Kumamoto Prefectural Government and Arao City Government began deliberating route changes to the city planning road Manda-Shimoide Line together with the Agency for Cultural Affairs and Cabinet Secretariat of the Government of Japan.
May 2020	“The Miike Local Conservation Council of the World Heritage Sites of Japan’s Meiji Industrial Revolution (non-working properties)” approved the contents of the HIA report.
October 2020	The HIA report was further approved by the “National Committee of Conservation and Management of the World Heritage Sites of Japan’s Meiji Industrial Revolution” established by the Cabinet Secretariat.

Table 1. Chronology from the Decision on the City Planning Road Manda-Shimoide Line in the City Plan to the Present

2. OUV and the Attributes that Convey the OUV

(1) Aspects of the OUV demonstrated in the Statement of Outstanding Universal Value (SOUV)

Statement of Outstanding Universal Value (SOUV) was included in the Decision 39 COM 8B.14 made by the World Heritage Committee in 2015 approving inscription of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining” on the World Heritage List.² The aspects of the OUV of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining” indicated in the “Brief synthesis” of the SOUV consist of the following two points.

The 23 component parts of the property collectively represent:

- The three-phased process of rapid development in each of three industrial classifications; and
- the process of qualitative change that turned Japan into a major industrial society and profoundly influenced the wider development of the East Asian region.

Based on the two aspects above, the Manda Pit (1) belongs to the coal industrial classification and is one of the component parts showing third development phase, and (2) demonstrates the process of qualitative change that turned Japan into a major industrial society as well as had a material impact on the wider development of the East Asian region. Manda Pit is therefore indispensable in demonstrating the OUV of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.”

(2) Attributes in the component part that convey the OUV

The two aspects of the OUV above are reflected in each of the attributes included in the component part. A written response the Government of Japan submitted on November 5, 2014 in answer to the questions asked by the International Council on Monuments and Sites (ICOMOS) clarified as follows the attributes of the Miike Coal Mine and Miike Port conveying the OUV.

- Response to a request from ICOMOS for additional information (submitted on November 5, 2014) (excerpt of portions relevant to the Manda Pit and Miike Coal Railway)

Area 7 Miike	Attributes
7-1 Miike Coal Mine and Miike Port	7.1.2 Manda Pit –Two shafts, steel headframe, brick winding house (winding equipment in situ), brick fan houses, workshop and ancillary buildings and structures, standing and archaeological.
	7.1.3 Coal Railway – Track bed, embankments and bridges.

■ Attributes

The above attributes of the Manda Pit that convey the OUV are of the following two kinds.

- Historical and archaeological remains and artifacts of coal mining and coal transport facilities
- Historical and archaeological remains and artifacts showing the coal industry system

² The Decision on inscription of “The Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining” on the World Heritage List (39 COM 8B.14) can be downloaded from the following site: <http://whc.unesco.org/en/decisions/6364>

3. HIA on proposed route changes to the city planning road decided in 1944

(1) Presentation of basic framework of HIA

- Impact on historical and archaeological remains and artifacts of coal mining and transport facilities
- Impact on historical and archaeological remains and artifacts showing the coal industry system
- Impact on views and landscape
- Impact on related cultural properties (those not directly related to OUV but having regional value)
- Impact on visitor interpretation and utilization
- Sufficiency of function as city planning road

(2) Comparative Analysis of Route Proposals

In light of the basic HIA framework in (1) above consisting of six items, each of multiple route proposals were assessed by comparative analysis, after which the plan that diverts the road far to the south (hereinafter referred to as “change draft”; Figure 6) was adopted.

The reason for this choice is that the change draft avoids the component part and diverts the road all the way to the southern edge of the buffer zone, so that there will be no adverse impacts on the attributes conveying the OUV inside the component part. At the same time, while the route avoids passing through the historical and archaeological remains and artifacts as a World Heritage component part and the scope within which the coal mining and transport system is complete, it is also well able to achieve the functions for vehicle and pedestrian traffic.

Furthermore, telling the history of the Miike Coal Mine, related cultural properties indicating the everyday life of coal mine workers, including mine housing mainly from 1910 and after, remain on both sides of the current Kumamoto Prefecture Road 29; and the change draft can be appraised as one that avoids direct adverse impacts on these.

In the case of the change draft, the adverse impacts on the views and landscape from viewing points inside

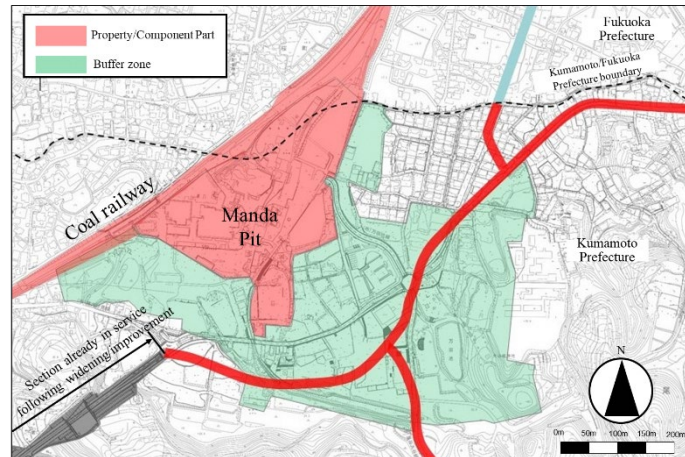


Figure 6. Proposal Diverting the Road Far to the South (Change Draft)

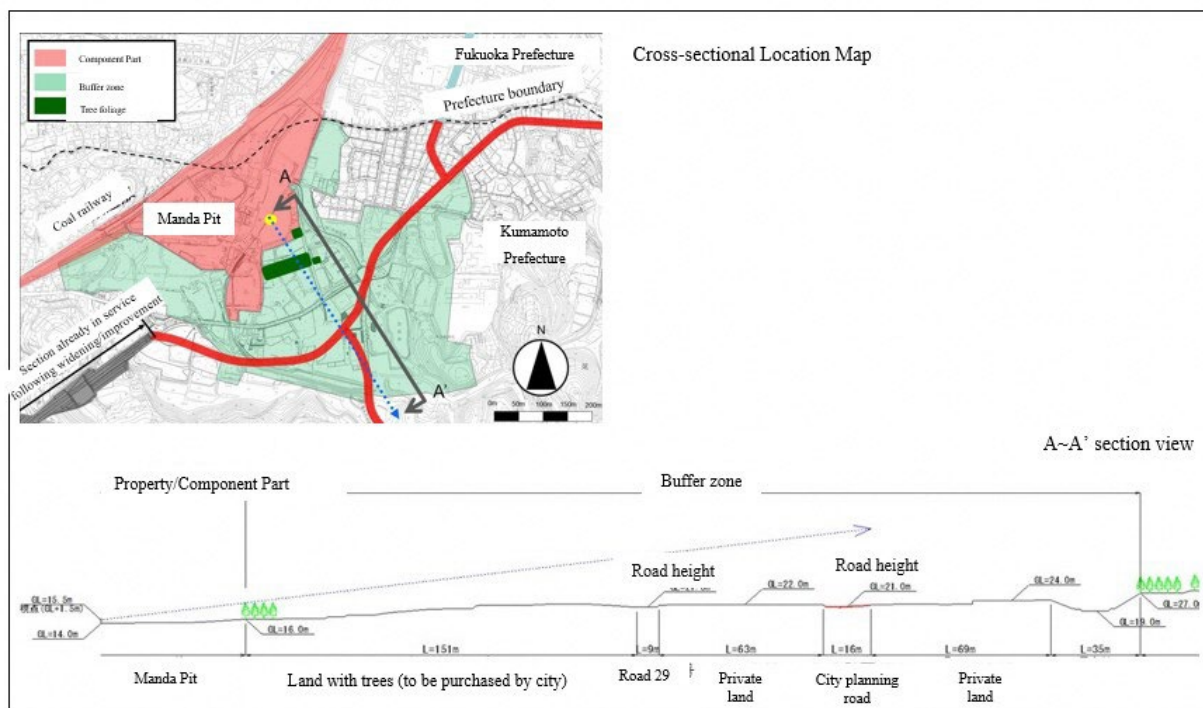


Figure 7. Cross-Section Drawing and View Lines of the Direction of the City Planning Road from the Inside of the Component Part

the component part are extremely minimal. The reason is that the forest on the line of sight to the southeast of the component part conceals the existence of the city planning road (Figure 7). Although the trees are currently on land owned by a private company, Arao City Government is negotiating on purchasing the land; and after it becomes city-owned land, from the standpoint of maintaining favorable views and landscape as a World Cultural Heritage, the City Government plans to prune existing trees, replace withered trees, and continue with other appropriate treatment for the trees.

The road route in the change draft does not impede the flow lines of visitors coming to the Manda Pit from the Manda Pit Station visitor center, and is not seen as having adverse impacts on interpretation and utilization from the World Cultural Heritage standpoint. Moreover, by separating pedestrian walkways and vehicle lanes, visitor safety and comfort should be improved while also making access by vehicle more convenient. Necessary roadside information will be provided properly, helping to enhance interpretation as a World Cultural Heritage.

4. Process for Managing Consensus Building among Related Parties

The City Planning Department of the Arao City Government, responsible for preparing the change draft to the road route, in November 2015 set up a “Study Committee on City Planning Road Development in the Area around Manda Pit of Miike Coal Mine”, made up of officials of Arao City Government and Kumamoto Prefectural Government and experts, which met four times. Working Group meetings of the Committee were also held five times (Table 1).

The approach drawn up by the Committee was approved by the Arao City Planning Council in July 2018. Then in May 2020, the “Miike Local Conservation Council of the World Heritage Sites of Japan’s Meiji Industrial Revolution (non-working properties)” approved the contents of the HIA report. The HIA report was further approved in October 2020 by the “National Committee of Conservation and Management of the World Heritage Sites of Japan’s Meiji Industrial Revolution” established by the Cabinet Secretariat.

Kumamoto Prefectural Government plans to decide on the route change to the city planning road Manda-Shimoide Line, and to begin detailed surveying and design work, in August 2021 and after. At the detailed design stage, every effort will be made to maintain and preserve the historical and archaeological remains and artifacts of attributes conveying the OUV, including the coal industry systems, and to adopt style designs and structures in the road and adjunct facilities that take all due consideration for the coal industrial landscape of the Miike Coal Mine.

As the project is carried out going forward, from the standpoint of a World Cultural Heritage, advice will be sought from the “Industrial Heritage Expert Committee (including Working Properties)” established by the Cabinet Secretariat; and from the standpoint of nationally designated cultural properties, advice will also be obtained from the “Council for Cultural Affairs, Subdivision on Cultural Properties” established by the Agency for Cultural Affairs.

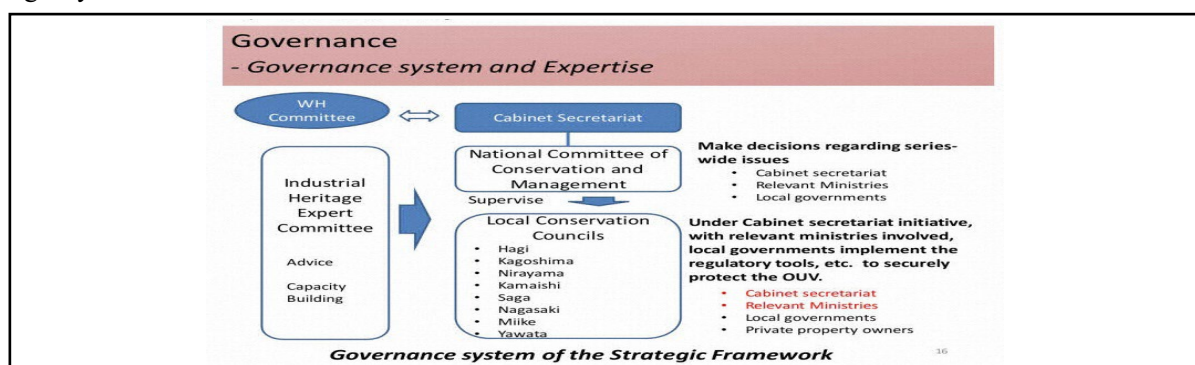


Figure 8. Governance System for the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining”

5. Conclusion

The route of the city planning road Manda-Shimoide Line adopted in the original city plan crosses the Manda Pit, a component part of the World Cultural Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining,” and its buffer zone. By adopting a plan that diverts the road far to the south, the attributes conveying the OUV can be preserved and adverse impacts on the regional value of related cultural properties remaining outside the component part can be minimized. The change draft will further be effective for enhancing the safety and comfort of visitors and for energizing flow lines on the OUV interpretation and utilization.

PROGRESS STATUS OF PROJECT PROPOSALS CONCERNING THE IMPERIAL STEEL WORKS (COMPONENT PART 8-1) AND ONGA RIVER PUMPING STATION (COMPONENT PART 8-2)

Project proposals for the Imperial Steel Works and Onga River Pumping Station, which are the component parts of the Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.

PREFACE

The purpose of this report is to give an update on the report given to the World Heritage Committee in 2019 concerning the project proposals in 2017 for the Imperial Steel Works and Onga River Pumping Station, which are the component parts of the *Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining*. While these projects are not regarded as having an adverse impact on the Outstanding Universal Value (OUV) of these properties, this report is submitted to notify the World Heritage Committee of possible impacts, including positive ones, on conservation of the OUV in response to the technical review given by the World Heritage Centre in April 2018 and in accordance with the stipulation in paragraph 172 of Operational Guidelines for the Implementation of the World Heritage Convention.

1. PROJECT PROPOSALS PREVIOUSLY REPORTED

These project proposals have an effect on four buildings belonging in two component parts of the *Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining*. Everything in the projects concerns preservation and exhibition of assets inside the steelworks, to which entry by the general public is currently restricted.

The two component parts noted above are the Imperial Steel Works and Onga River Pumping Station. The four buildings noted above are the First Head Office, the Former Forge Shop, and the Repair Shop of the Imperial Steel Works, and the Onga River Pumping Station.

Project outline

First Head Office: Conduct interior restoration (recovery and improvement) following the major seismic reinforcement completed in March 2014. This will also contribute to the understanding of values of historical buildings as World Heritage.

Former Forge Shop: Conduct exterior improvement works and seismic reinforcement works of the building.

Repair Shop: Conduct exterior improvement works and seismic reinforcement works of the building.

Onga River Pumping Station: Conduct exterior improvement works and seismic reinforcement works of the building.

2. PROJECT PROGRESS STATUS

First Head Office: Interior restoration (recovery and improvement) begun in May 2018, and the east side of the first floor was completed at the end of July 2019 (approximately one-fourth of the work in terms of total floor space). The remaining west side of the first floor and the second floor were completed at the end of September 2020.

Former Forge Shop: Aseismic design work was carried out in FY2018 based on the results of the aseismic diagnosis of the building performed in FY2017 and was reported to the World Heritage Centre in 2019.

Repair Shop: Aseismic design work was carried out in FY2018 based on the results of the aseismic diagnosis of the building performed in FY2017 and was reported to the World Heritage Centre in 2019.

Onga River Pumping Station: Aseismic design work was carried out in FY2019 based on the aseismic diagnosis of the building performed in FY2018. (Matters reported in this report)

Conservation and management of the buildings of the Imperial Steel Works and Onga River Pumping Station are carried out in cooperation with stakeholders, based on the “General Principles and Strategic Framework for Conservation and Management” formulated by the Cabinet Secretariat. Nippon Steel Corporation (renamed from Nippon Steel & Sumitomo Metal in April 2019), the owner of the property, drew up policies and plans in consultation with experts. After having obtained approval from the Yawata Local Conservation Council (Kitakyushu City and Nakama City, Cabinet Secretariat, etc.), they reported the project proposals to the World Heritage Centre and are now proceeding in response to the technical review they received from the Centre.

Thereafter, they will carry out the projects while reporting work progress to and gaining approval from the Yawata Local Conservation Council on a timely basis.

Representatives of these institutions as well as of the owner, Nippon Steel Corporation, are the members of the planning group responsible for drafting these project proposals.

3. SUPPLEMENTARY MATERIALS

3.1 Project description (progress)

These project proposals impact four buildings in two component parts of the *Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining*, namely, the First Head Office, the Former Forge Shop, and the Repair Shop of the Imperial Steel Works, and the Onga River Pumping Station. The progress of each project is as follows:

First Head Office: Interior restoration (recovery and improvement) begun in May 2018, and the east side of the first floor was completed at the end of July 2019 (approximately one-fourth of the work in terms of total floor space). The remaining west side of the first floor and the second floor were completed at the end of September 2020. The public display of the buildings is carefully studied and discussed, including ways of

avoiding any hindrance to the business activities of the owner, since the buildings are located in the steelworks in operation. There are many issues to be solved for public showing, however, detailed studies are therefore being conducted concerning methods for public showing within the scope that does not hinder the owner's business activities.

Former Forge Shop: Aseismic design work was carried out in FY2018 based on the results of the aseismic diagnosis of the building performed in FY2017 and was reported to the World Heritage Centre in 2019. The design limits the number of columns to be reinforced to the minimum necessary, considering interior reinforcement of this building for preserving the internal steel frame and exterior appearance, safety, usability, mitigation of quake damage, and provision of reinforcement methods enabling quick restoration in case of damage.

It should be noted that exterior improvement work of the building (reported in 2017 and approved by UNESCO in 2018) will be performed in synchronization with the seismic reinforcement work.

Repair Shop: Aseismic design work was carried out in FY2018 based on the results of the aseismic diagnosis of the building performed in FY2017 and was reported to the World Heritage Centre in 2019. The design limits the number of columns to be reinforced to the minimum necessary, considering interior reinforcement of this building for preserving the internal steel frame and exterior appearance, safety, usability of the interior of the building for operations and of the central wing crane (the cranes in the south and north wings and at the west in the annex will become inoperable, but the existing cranes with high historical value located in the south and north wings will be retained, while the three hoist cranes in the south wing and at the west in the annex which are relatively new and believed to be of low historical value will be removed to enable continuation of operations in the building), mitigation of quake damage, and provision of reinforcement methods enabling quick restoration in case of damage.

It should be noted that exterior improvement work of the building (reported in 2017 and approved by UNESCO in 2018) will be performed in synchronization with the seismic reinforcement work.

Onga River Pumping Station: Aseismic design work was carried out in FY2019 based on the aseismic diagnosis of the building performed in FY2018. Designing was done in consideration that this is an important facility in operation, so the reinforcement should not damage the value as a historical building. The design will be a plan with “safety level” that readies the building against earthquakes and will feature a reinforcement structure with priority to the reinforcement of the building and the inside of the bricks to preserve the building bricks, truss, and exterior view, safety, and usability at time of operation, and the preservation of the important building itself (the added-on south eave does not show relations with the main aspects of the history of steel works operation such as transition to the industrialization and will be removed considering the deteriorated condition of the eave and the impact the connection between the eave and the building gives to the building itself).

Exterior improvement work of the building is being considered to be performed in synchronization with the seismic reinforcement work (reported in 2017 and approved by UNESCO in 2018).



First Head Office
(north side exterior view)



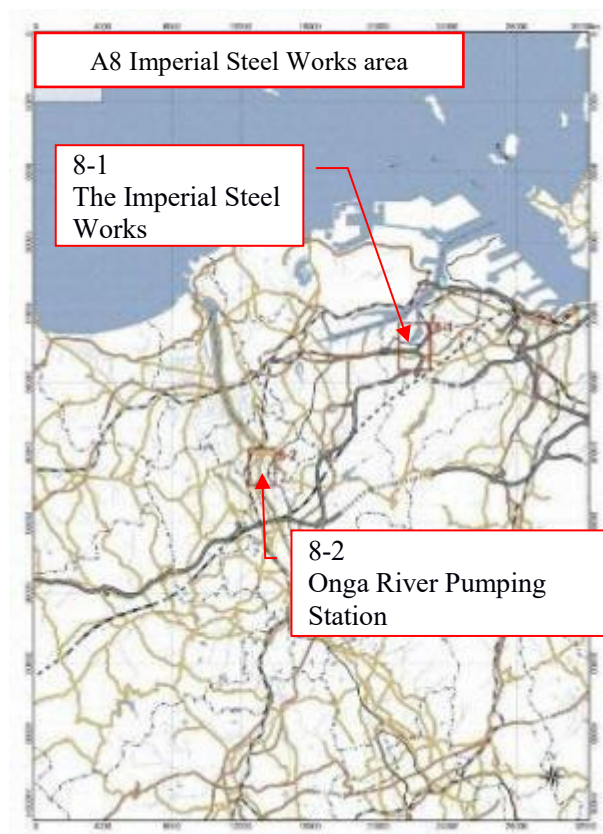
Former Forge Shop
(west side exterior view)



Repair Shop
(west side exterior view)



Onga River Pumping Station
(west side exterior view)



3.1.1. First Head Office (excerpted from report by Nippon Steel Corporation)

FY2019 project (progress report on interior improvement work in First Head Office)

I. Reported matters

The interior improvement work that started in May 2018 proceeded while receiving technical support by engineering advisors introduced by domestic experts and instruction by the site manager, confirming approaches, observing the site, and filing progress reports together with domestic and local experts, and was completed in September 2020.

The second interim and final reports were made to the municipalities on June 1, 2020 and September 28, 2020, respectively.

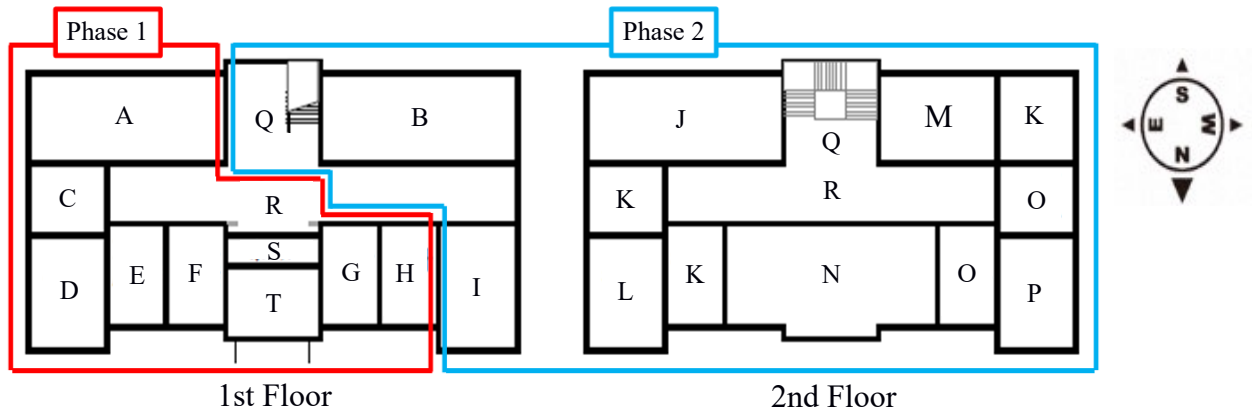
II. Work Descriptions

1. Basic policies

- (1) As a rule, the exterior (roof, walls) and existing seismic reinforcement members are to be retained as is.
- (2) The restoration work is to be based on remaining parts and materials, old photos, old drawings, and the initial First Head Office study report (September 1998, Dr. Hiroshi Katano, Kyushu Institute of Design, Department of Environmental Design). For portions for which such evidence is unclear, recovery, repair, and improvement will be carried out with reference to examples of buildings from the same era.
- (3) Certain functional measures will be reflected for the sake of readiness for facility maintenance and public utilization.
(waterproofing and anti-condensation measures, facility maintenance, exhibits, safety measures, etc.)

2. Scope of work and construction period

- (1) Phase 1: completed in July 2019, observation of east side of 1st floor resumed from September 2019 (not open to public) *reported in the previous SOC.
- (2) Phase 2: completed in September 2020.



A: General Affairs Section
 B: Procurement Section
 C: Director General Secretariat
 D: Director General's Office
 E: First Reception Room
 F: Second Reception Room
 G: Accounting Manager's Office
 H: Accounting Section
 I: Treasurer's Section

J: Drafting Room
 K: Engineer's Office
 L: Chief Engineer's Office
 M: Clark's Room
 N: Conference Room
 O: Foreign Engineer's Office
 P: Foreign Consultant Engineer's Office
 Q: Staircase R: Corridor
 S: Hall T: Entrance

III. Work completion status (as of the end of September 2020)

Exterior view (north side)



Exterior view (south side)



Exterior view (west side)



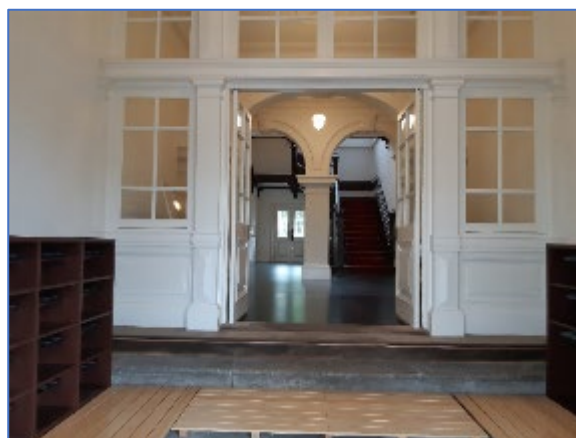
Exterior view (east side)



Entrance porch



Entrance



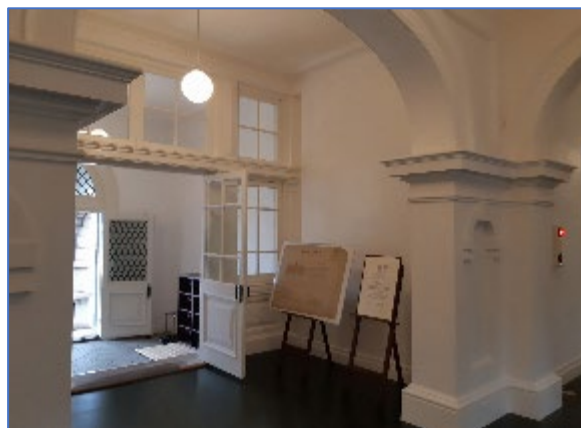
Entrance hall



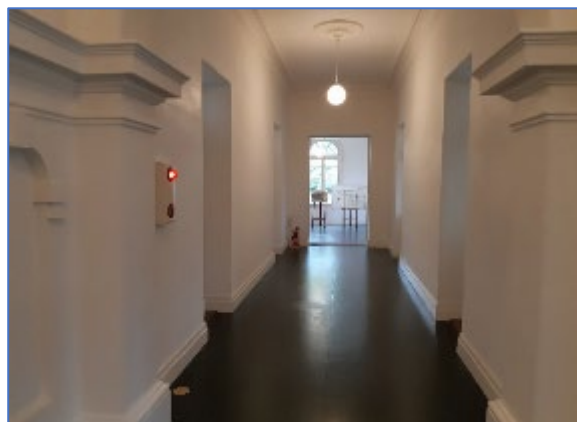
Entrance hall



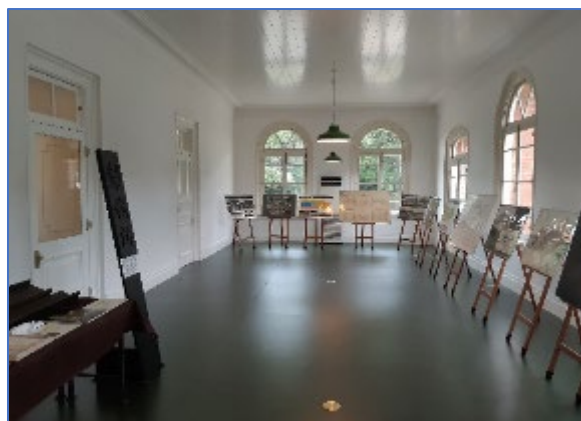
Entrance hall



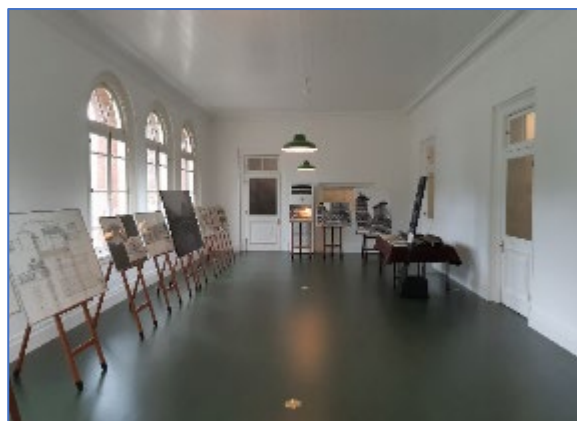
1st Floor East Corridor



General Affairs Section



General Affairs Section



Appendix 2-6

Director General Secretariat



Director General's Office



First Reception Room



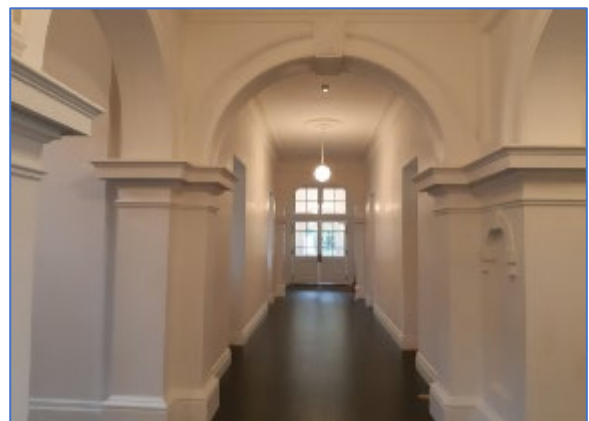
First Reception Room (with an exhibition of foundation structure under the floor)



Second Reception Room



1st Floor West Corridor



Procurement Section



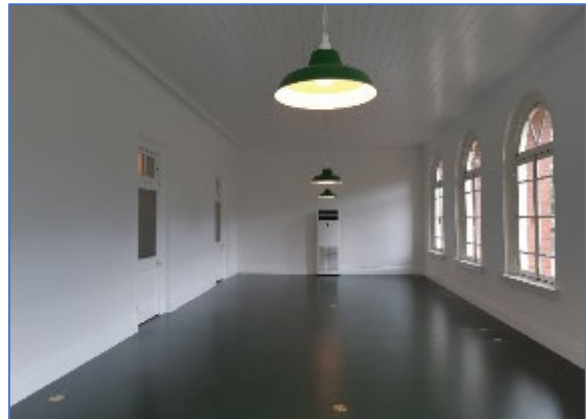
1st Floor West Corridor (door)



Accounting Section
(simple finish: use of staff room)



Procurement Section



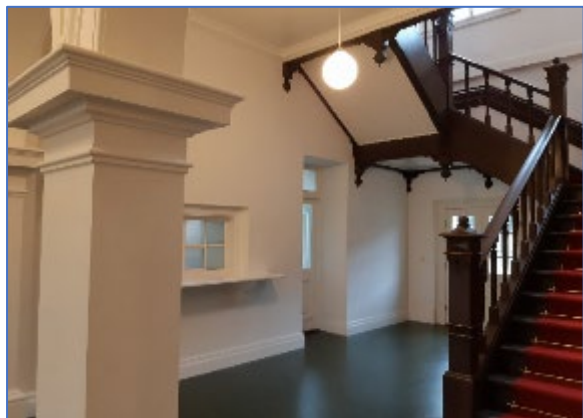
Treasurer's Section (simple finish: use of
stockroom)



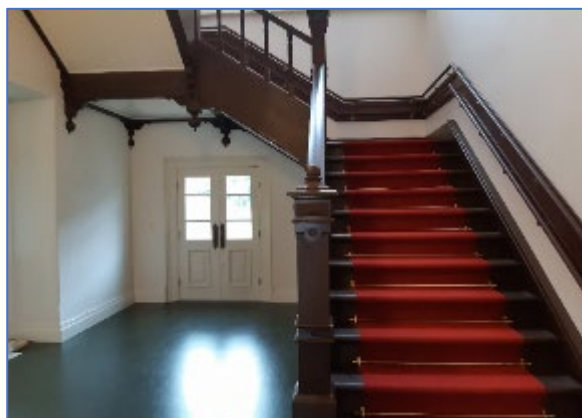
Accounting Manager's Office
(simple finish: use of electric room)



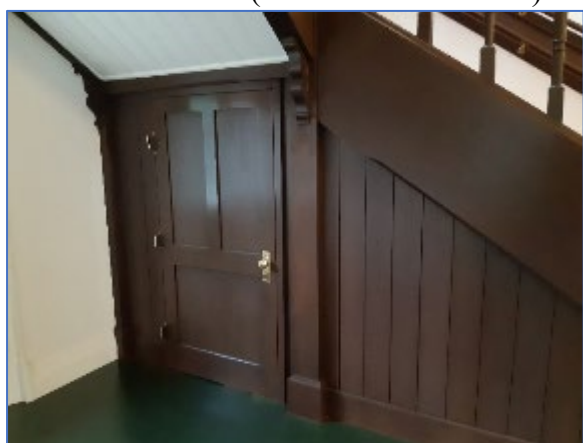
1st Floor Staircase



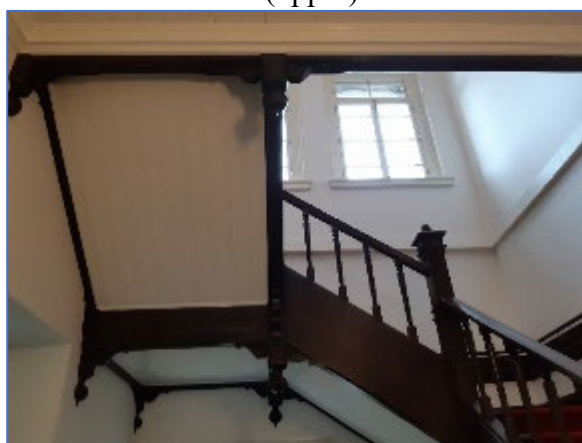
1st Floor Staircase



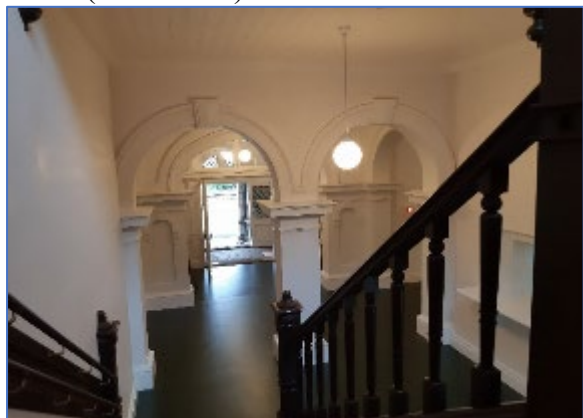
1st Floor Staircase (understair stockroom)



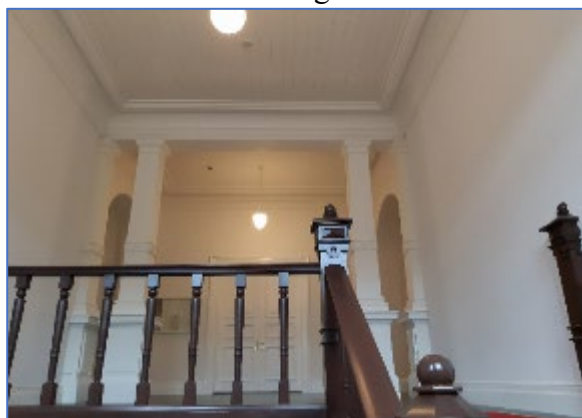
1st Floor Staircase (upper)



Stairs (downstairs)



2nd Floor Stairs Landing

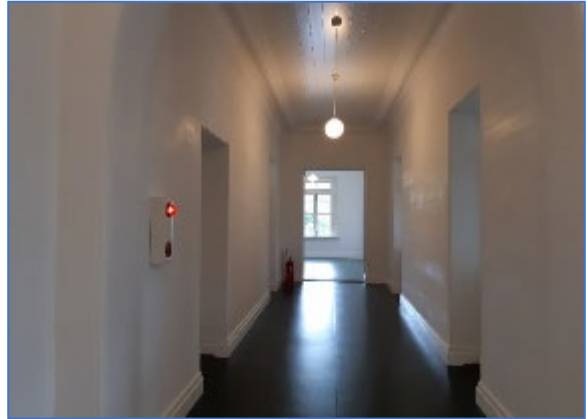


Appendix 2-6

2nd Floor Stairs Landing



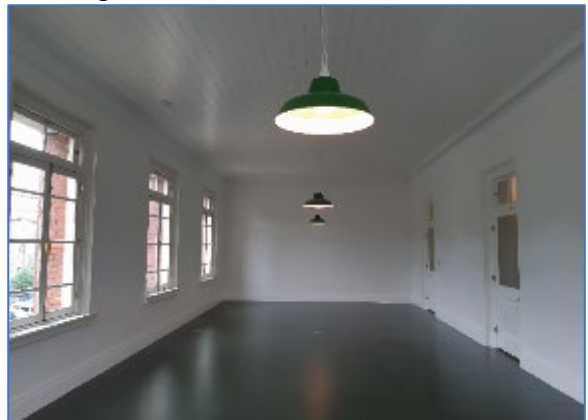
2nd Floor East Corridor



Drafting Room



Drafting Room



Engineer's Office (east)



Chief Engineer's Office



Appendix 2-6

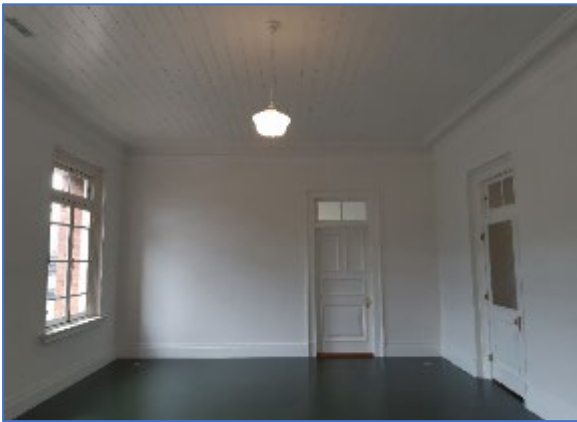
Engineer's Office (northeast)



2nd Floor West Corridor



Clark's Room



Engineer's Office (southwest)



Foreign Engineer's Office (west)



Foreign Consultant Engineer's Office



Foreign Engineer's Office
(northwest: exhibition of structure)



Foreign Engineer's Office
(northwest: exhibition of plaster wall finishing process model)



Foreign Engineer's Office

(northwest: exhibition of original cedar flooring)

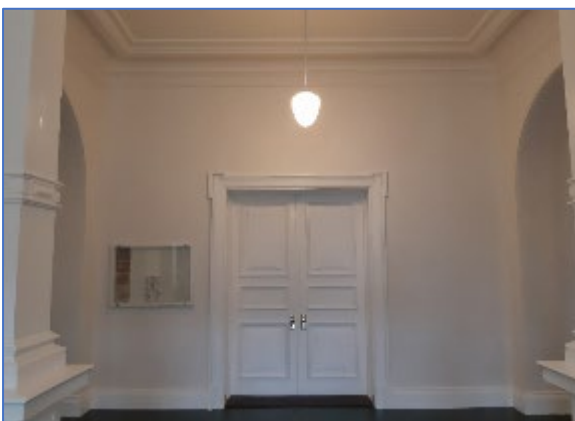


Foreign Engineer's Office

(northwest: exhibition of original roof truss)



In front of the Conference Room



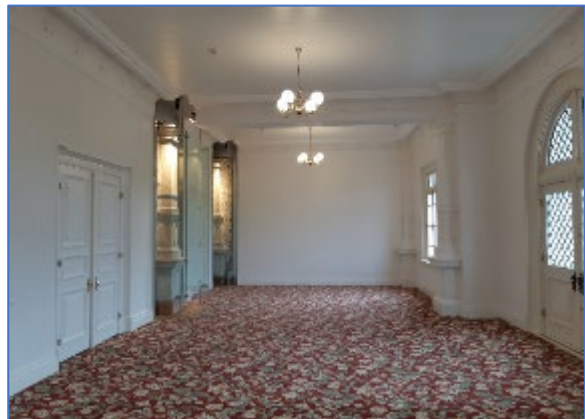
In front of the Conference Room
(exhibition of original trench cut in plaster wall)



Conference Room



Conference Room



Conference Room (exhibition of original pillar) Stoop Roof



Attic (inspection corridor, waterproof pan, etc.)



3.1.2. Onga River Pumping Station (from report by Nippon Steel Corporation)**FY2019 project (aseismic design of Onga River Pumping Station)****1. Timeline and objectives**

This facility was found to have inadequate aseismic performance as a result of building surveys in FY2016 and aseismic diagnosis in FY2017. Accordingly, additional detailed aseismic diagnosis for the brick structure properties was conducted in FY2018, and based on that, seismic reinforcement methods were studied with public funding in FY2019.

A reinforcement plan was drawn up through consultation with domestic experts on the study policy and proposed reinforcement methods, and the plan outline will be reported in this committee. The detailed plans have been reported to the municipalities. (Reported on January 27, 2020)

2. Basic policies

Taking into consideration that this is an important facility in operation, the reinforcement should not damage the value as a historical building.

(1) Level of reinforcement

- Since this is a remotely operated work facility, the workers come and go infrequently. But it is an important facility that provides water to about 70% of the Yawata and Tobata areas, so it should be reinforced to a “safety level” that readies the building against large scale earthquakes.

(2) Extent of reinforcement/plan

- Add reinforcements to the inside of buildings and bricks to preserve the “exterior view” while preserving the especially important building bricks and truss.
- Feature a reinforcement structure that considers the continued use of crane for north side pump maintenance and control panel for south side pump.
- South side eave part should be reinforced prioritizing preservation of the important building itself by taking into consideration the deteriorated condition of the eave and the impact the connection between the eave and the building gives to the building itself.
(The eave was added later for carrying out miscellaneous items, so there is no historical value showing transition to the industrialization. It will be removed while keeping a record of it.)
- Conduct reinforcement works to enhance the proof stress of the entire building and prevent brick walls from falling by replacing the openings of windows on the east side of the south wall, which were blocked later, with an earthquake-resisting wall. Replacement with the earthquake-resisting wall is limited within the area of the openings that were blocked later. Preserve the original design and changes over time, and avoid the impact on the structural and visual proofs and the historical value of transition to industrialization, which the existing openings of windows have.
- Reinforcement should consider the continued use of machinery and the original design of the interior of the building itself. Place an RC bearing wall in the central part of the building, use a steel truss to connect it to a horizontal plane of structure placed at the roof truss lower chord, and thereby transmit seismic force. This is to reinforce the central part of the building, which does not have adequate earthquake resistance as north-south brick walls are only in the two gable walls, and to preserve existing slag

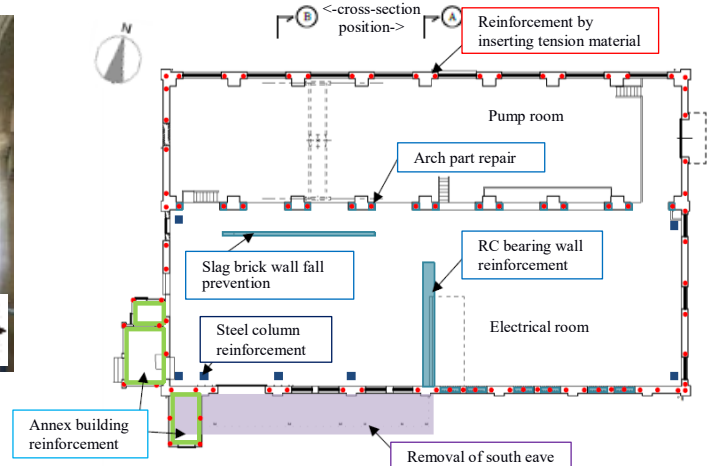
brick walls; this reinforcement structure preserves both the interior view of the building and the important building itself.

3. Proposed reinforcement method (Work period: to be decided later)

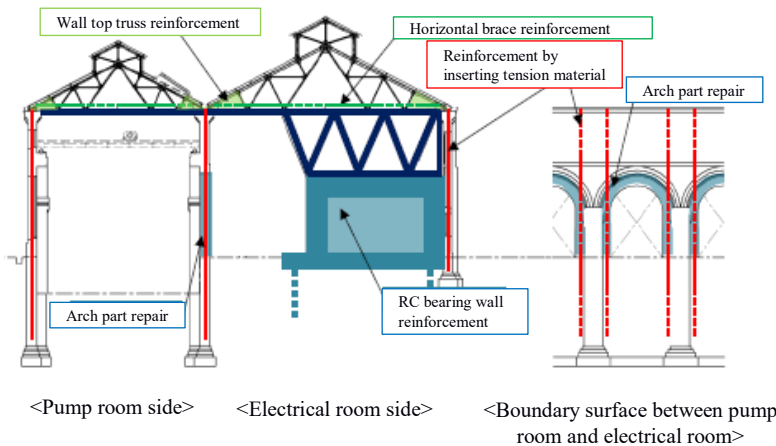
(1) Current status photo (east->west)



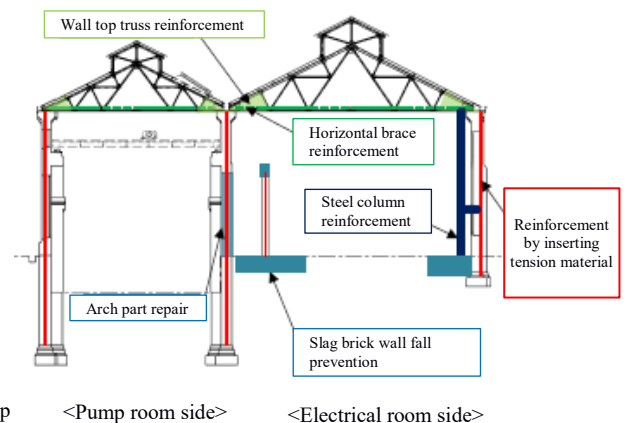
(2) Reinforcement schematic diagram (floor plan)



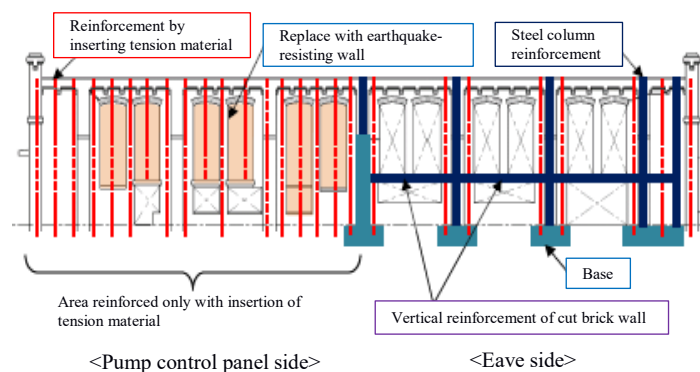
(3) Reinforcement schematic diagram (A cross-section)



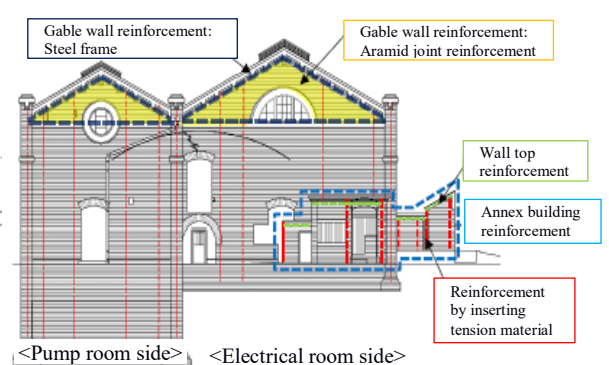
(B cross-section)



(4) Reinforcement schematic diagram (south wall)

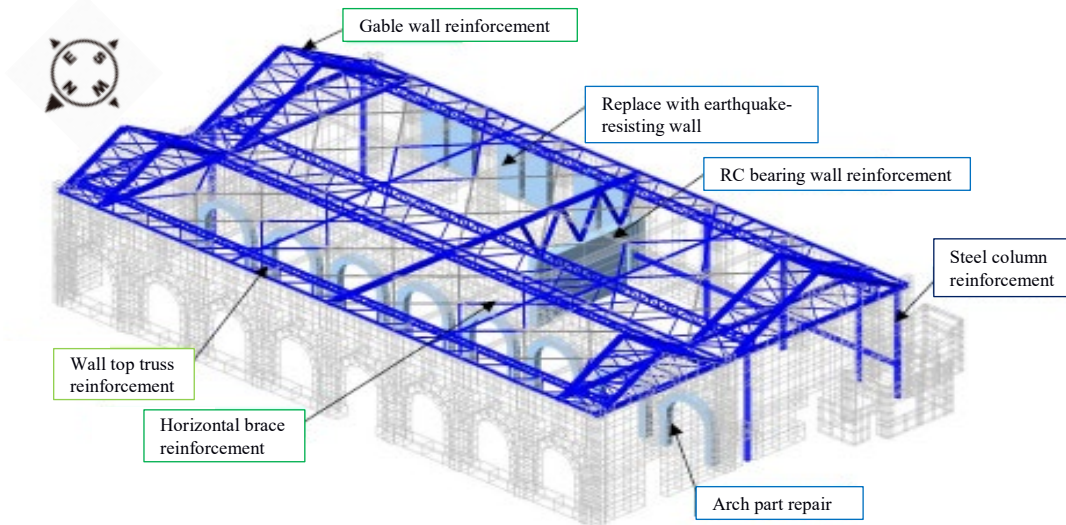


(5) Reinforcement schematic diagram (west wall)



Note: The coloring of reinforcement sections is to make it easy to understand work areas in the diagrams. The final color design will adopt colors that minimize the visual impact of reinforcement works.

(6) Reinforcement schematic diagram (overall construction)



(7) Reinforcement schematic diagram (electrical room perspective diagram)



Note: The coloring of reinforcement sections is to make it easy to understand work areas in the diagrams. The final color design will adopt colors that minimize the visual impact of reinforcement works.

4. Remaining issues

- Details of exterior improvement (approved by UNESCO in July 2018) are now under study to conduct it in synchronization with seismic reinforcement work for the purpose of keeping down costs.
- Details of realizing the work will be studied, such as the size of cost and the operation during the construction period for seismic reinforcement.
- Taking into consideration the conservation of World Heritage value and the positioning of important buildings necessary for business activities, burden of costs will be discussed with local municipalities.

3.1.3. Consultations with Experts (excerpted from Report by Nippon Steel Corporation)

Status of consultations with experts held between May 10, 2019 (the 7th Yawata Local Conservation Council) and September 2020 (work completion) are as follows:

1. Status of consultations with domestic and local experts

- | | |
|--|--|
| <div style="border: 1px solid black; border-radius: 5px; padding: 2px 5px; display: inline-block;">1st meeting</div> | <p>Friday, November 22, 2019</p> <p>Consultation with: Domestic expert (university director)</p> <p style="padding-left: 100px;">Engineering advisor on cultural properties (first-class registered architect/company CEO)</p> <p>Agenda: Confirmation of seismic reinforcement methods for Onga River Pumping Station</p> <p style="padding-left: 100px;">Confirmation of specifications for interior improvement work in First Head Office</p> |
| <div style="border: 1px solid black; border-radius: 5px; padding: 2px 5px; display: inline-block;">2nd meeting</div> | <p>Wednesday, January 15, 2020</p> <p>Consultation with: Local expert (emeritus professor at university)</p> <p style="padding-left: 100px;">Engineering advisor on cultural properties (representative of first-class registered architect office)</p> <p>Agenda: Observation of site of interior improvement work in First Head Office</p> |
| <div style="border: 1px solid black; border-radius: 5px; padding: 2px 5px; display: inline-block;">3rd meeting</div> | <p>Wednesday, February 12, 2020</p> <p>Consultation with: Local expert (industrial heritage researcher, Ph.D.)</p> <p style="padding-left: 100px;">Engineering advisor on cultural properties (representative of first-class registered architect office)</p> <p>Agenda: Observation of site of interior improvement work in First Head Office</p> |
| <div style="border: 1px solid black; border-radius: 5px; padding: 2px 5px; display: inline-block;">4th meeting</div> | <p>Friday, May 29, 2020</p> <p>Consultation with: Domestic expert (university director)</p> <p>Agenda: Second interim report on progress status of interior improvement work in</p> <p style="padding-left: 100px;">First Head Office</p> |
| <div style="border: 1px solid black; border-radius: 5px; padding: 2px 5px; display: inline-block;">5th meeting</div> | <p>Monday, June 1, 2020</p> <p>Consultation with: Local expert (emeritus professor at university)</p> <p>Agenda: Second interim report on progress status of interior improvement work in</p> <p style="padding-left: 100px;">First Head Office</p> |
| <div style="border: 1px solid black; border-radius: 5px; padding: 2px 5px; display: inline-block;">6th meeting</div> | <p>Monday, June 1, 2020</p> <p>Consultation with: Local expert (industrial heritage researcher, Ph.D.)</p> <p>Agenda: Second interim report on progress status of interior improvement work in</p> <p style="padding-left: 100px;">First Head Office</p> |
| <div style="border: 1px solid black; border-radius: 5px; padding: 2px 5px; display: inline-block;">7th meeting</div> | <p>Wednesday, September 23, 2020</p> <p>Consultation with: Local expert (industrial heritage researcher, Ph.D.)</p> <p>Agenda: Observation of completed interior improvement work in First Head Office</p> |

8th meeting	Monday, September 28, 2020 Consultation with: Domestic expert (university director) Agenda: Final report on interior improvement work in First Head Office (Observation of completed site to be planned separately)
9th meeting	Monday, September 28, 2020 Consultation with: Local expert (industrial heritage researcher, Ph.D.) Agenda: Final report of interior improvement work in First Head Office
10th meeting	Monday, September 28, 2020 Consultation with: Local expert (emeritus professor at university) Agenda: Final report of interior improvement work in First Head Office
11th meeting	Tuesday, September 29, 2020 Consultation with: Local expert (emeritus professor at university) Agenda: Observation of completed interior improvement work in First Head Office

2. Status of studies with engineering advisors on cultural properties

1) Interior improvement work in First Head Office

- Regular meetings 15 meetings (starting May 2019 until completion at the end of September 2020)

May 8, June 12, July 17, Aug. 21, Sep. 11, Oct. 9, Nov. 13, and Dec. 11 in 2019
Jan. 15, Feb. 12, Mar. 11, Apr. 8, June 10, July 8, and July 21 in 2020

Engineering advisor on cultural properties (representative of first-class registered architect office)

On-site survey, construction policy, decision of specifications, topics on recording and reporting, and other matters

2) Studying seismic reinforcement of Onga River Pumping Station

- Special meetings 4 meetings (July 4, Sept. 20, and Oct. 31 in 2019, and Jan. 27, 2020)

Engineering advisor on cultural properties (first-class registered architect/company CEO)

On-site survey and confirmation of seismic reinforcement methods and influence on operation

4. ASSESSMENT OF POTENTIAL IMPACT ON OUV BY MEANS OF HERITAGE IMPACT ASSESSMENT (HIA)

4.1. Contribution to the Outstanding Universal Value (OUV)

All four of the buildings that are objects of the projects are related to the establishment of the Imperial Steel Works, the first fully integrated steel works that was built successfully in Asia. These sites comprise two of the 23 component parts of the World Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining.” These World Heritage sites clearly show the first successful wave of industrialization from the West to a non-Western country and relate to accomplishments known as the Meiji Industrial Revolution.

The component parts of Yawata and the Onga River relate to the “iron and steel” aspects of this industrial revolution. Steelmaking took place in these facilities at the time Japan was emerging in the world as an industrial nation in the last stage of its ongoing industrial revolution.

As shown in Table 1, the management plans for these component parts make clear their contribution to the Outstanding Universal Value (OUV) of the properties.

Table 1 Elements of the Imperial Steel Works that show OUV

Element	Contribution to OUV
First Head Office	Demonstrates the adoption and adaptation of Western architectural technology and construction techniques in Japan. Reflects the nature of technological exchanges that underpinned the development of Japan's industrial transformation. It also demonstrates (as the headquarters of the Yawata Steel Works) the organizational style adopted by Japanese steel makers to achieve the local development of an integrated steelworks.
Repair Shop	Demonstrates the transfer of German technology, followed very rapidly by the extension of the building in the same style using Japanese materials and design skills. This is reflected particularly in the progression of steel framing, where the earliest frames have the label of Gutehoffnungshutte (GHH) and the subsequent expanded sections are labelled with Yawata nameplate.
Former Forge Shop	Reflects one of the original functions of the steelworks, the foundry function, necessary to the autonomous development of the steelworks, and the subsequent adaptation to products testing. While its structure changed over time, the core building can still be recognized. The changes of the building demonstrate the history of the continuing expansion and refinement of the steelworks and the adaptation of transferred technology to evolving local needs.
Onga River Pumping Station	Demonstrates the rapid growth of the steelworks and the increasing demand for water for steel managing purposes. The pumping station is an accomplished “modern” industrial design reflecting the rapid development of design skills within the steelworks based on Western precedents but modified to meet Japanese conditions.

4.2. Potential Impact of the Project Proposals on OUV

In the interior improvement work of the First Head Office, the same decoration that was implemented in the Meiji era and the subsequent important period will be applied, and the structure of the building, evidence of the fusion of techniques and skills between Japanese and Western architecture, will be restored. Therefore, there is no adverse impact on the OUV. Since the building is located in the working steelworks, the municipalities and property owner will carefully study and consult on how the asset will be used and the extent to which it should be shown to the public, within the scope that no hindrance arises to the business activities of the owner.

The seismic reinforcement work on the Former Forge Shop and the Repair Shop takes into account the usage by the owner as an operating facility and the exterior appearance as well as the conservation of the building. Such considerations will be efforts not to harm the buildings' contribution to OUV.

In light of the fact that Onga River Pumping Station is an important facility in operation, the reinforcement method is designed not to damage the value as a historical building and to consider the usage by the owner as an operating facility and the exterior appearance as well as the conservation of the building. Such considerations will be efforts not to harm the buildings' contribution to OUV.

4.3. Assessment of Impact on the World Heritage

In the project for the First Head Office, the decoration of the interior was restored to that of the Meiji era and the subsequent important periods so that this project conserves OUV and thus helps people to understand its values.

The work on the Former Forge Shop, the Repair Shop, and the Onga River Pumping Station is being conducted to conserve the value of the buildings as World Heritage. All the projects, by implementing conservation work to the extent no hindrance arises to the business activities of the owner so as to maintain the value as a working property, are necessary to receive proper recognition as showing the contribution to OUV.

The project proposals will by no means narrow the extent of the buildings' values as World Heritage nor will they reduce the contribution to OUV of the properties. Rather they are a sound foundation for conservation of the buildings and their use hereafter. Handling of visitors is currently being studied and discussed carefully between the local municipalities and the owner.

5. POLICY ON THESE PROJECTS AND MANAGEMENT PLANS AND SYSTEMS OF PROPERTIES

The projects to be implemented this time, in accordance with the *Conservation Management Plan: Imperial Steel Works* (Nippon Steel & Sumitomo Metal, Kitakyushu City, Nakama City, 2014), will be carried out while favorably conserving the component parts and respecting the heritage value of the component parts. The projects that may affect the component parts will be taken forward by asking for advice from experts with appropriate experience of management and conservation of the heritages and receiving technical support and carried out through a process of decision-making by the Local Conservation Council. Records will be kept of

Appendix 2-6

substantial modifications to or interventions in the component parts, and of maintenance actions.

“Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining” (No. 1484)

Screening report as part of a Heritage Impact Assessment process for a new train station in the Buffer Zone of the Shuseikan component part (Area 2 / Component 2-1).

1. Introduction

This document is prepared as a screening report as part of a Heritage Impact Assessment process ("Screening") for the construction of a new JR station planned for the Buffer Zone adjacent to Shuseikan (Area 2 / Component 2-1), one of the 23 components of the World Heritage " Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining ".

As noted in the state of conservation report¹ submitted to the World Heritage Centre in December 2020, the construction of a new train station was believed to be unlikely to have a direct, negative impact on the Outstanding Universal Value (OUV) of the component site. In response to the ICOMOS Technical Review sent from the World Heritage Centre in October 2021, a thorough analysis was conducted of the detailed design of the train station and its potential impact on the OUV of the property and the surrounding environment of Shuseikan. This document presents the results of the analysis.

The screening phase has resulted in modifications to the design proposal and the final proposal as presented here will have no adverse impact on OUV. It will have positive impacts for community and visitor use, traffic reduction, and sustainable development, including easier access to the site as part of wider strategic initiatives to support the Shuseikan World Heritage component. The assessment recognizes that the location of the proposed train station avoids potential archaeological heritage in the Buffer Zone which is related to the Shuseikan period, that it is already a road-rail transportation corridor, and that the station is minimal in size and height, its design is simple and unobtrusive, and its colors are subdued. It will also not affect the important views from within the property. As a result, it was determined that a further detailed Heritage Impact Assessment (HIA) is not necessary.

The following section explains (1) Location of the project, (2) Purpose of the project, (3) Key Information from existing plans, and (4) Main entity of screening, etc.

(1)Location of the project

Shuseikan - a component part of the Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining". World Heritage property is located in Kagoshima-shi, Kagoshima Prefecture. The train station that is the subject of this screening report will be constructed in the buffer zone to the south of the heritage site (see Figures 1, 2, 3).

¹ Available for download from the following URL (in Japanese):https://www.cas.go.jp/jp/sangyousekaiisan/seikaiisan_houkoku/201217.html

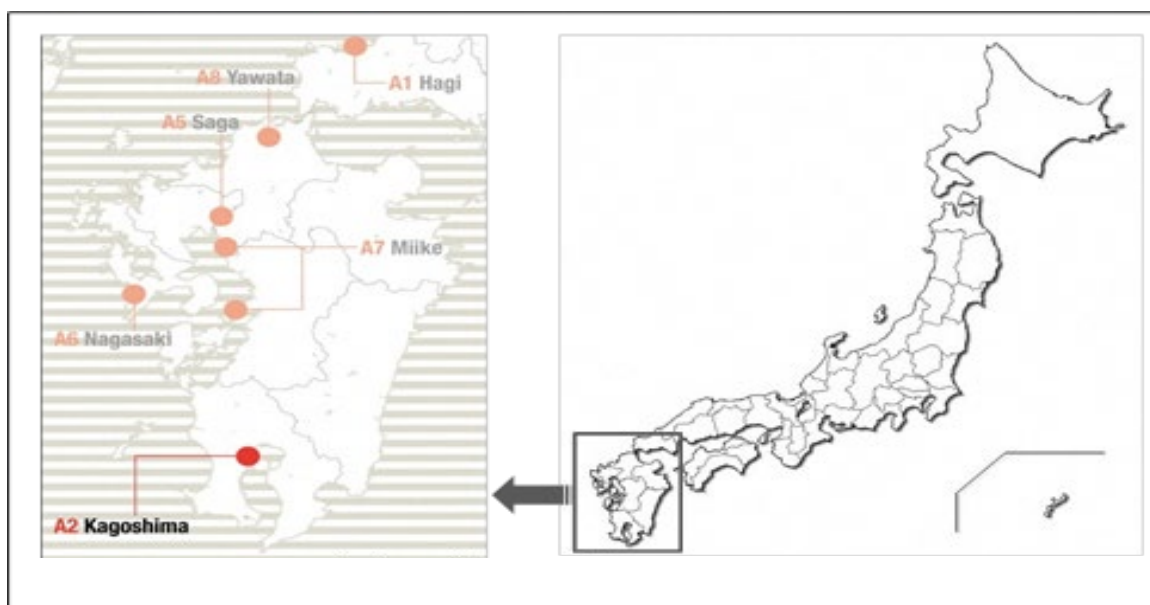


Figure 1. Location of Shuseikan (Area 2 / component site 2-1)

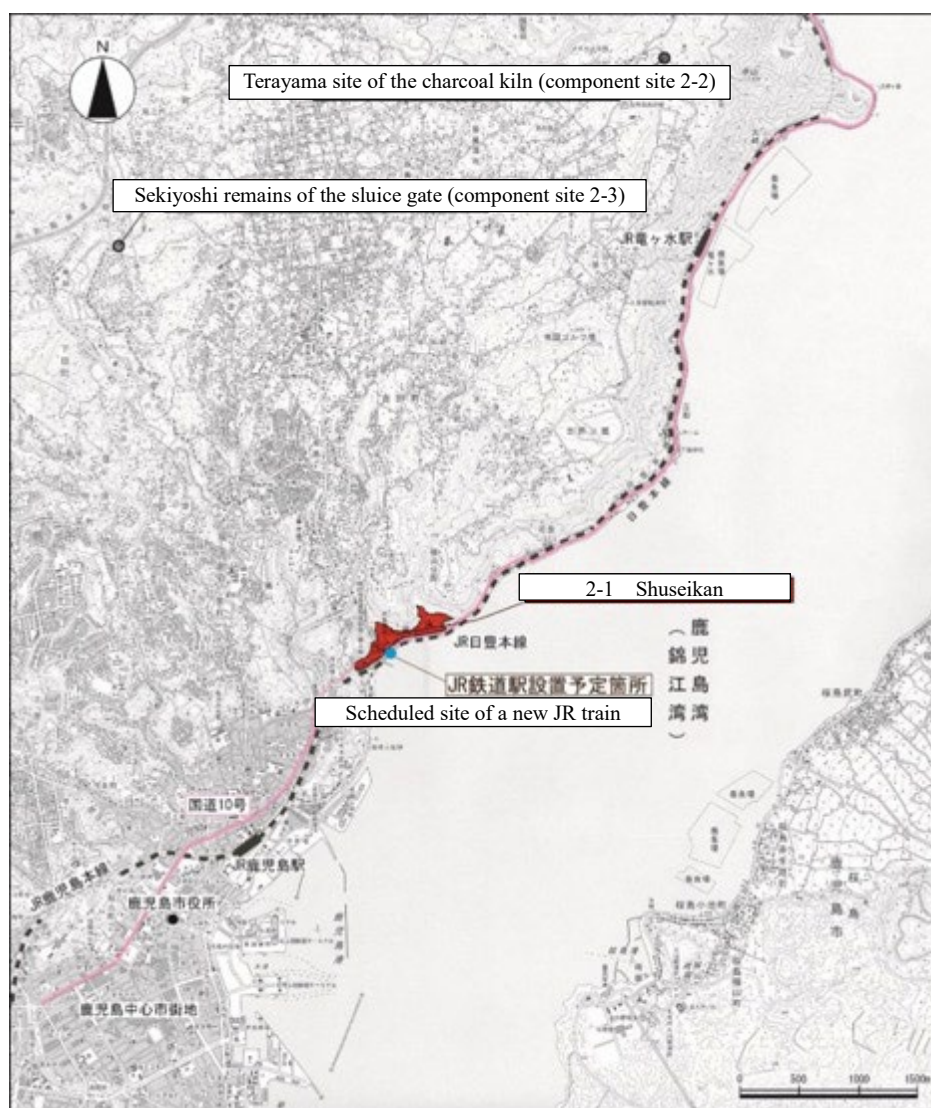


Figure 2. Location of Shuseikan (component site 2-1) in Area 2

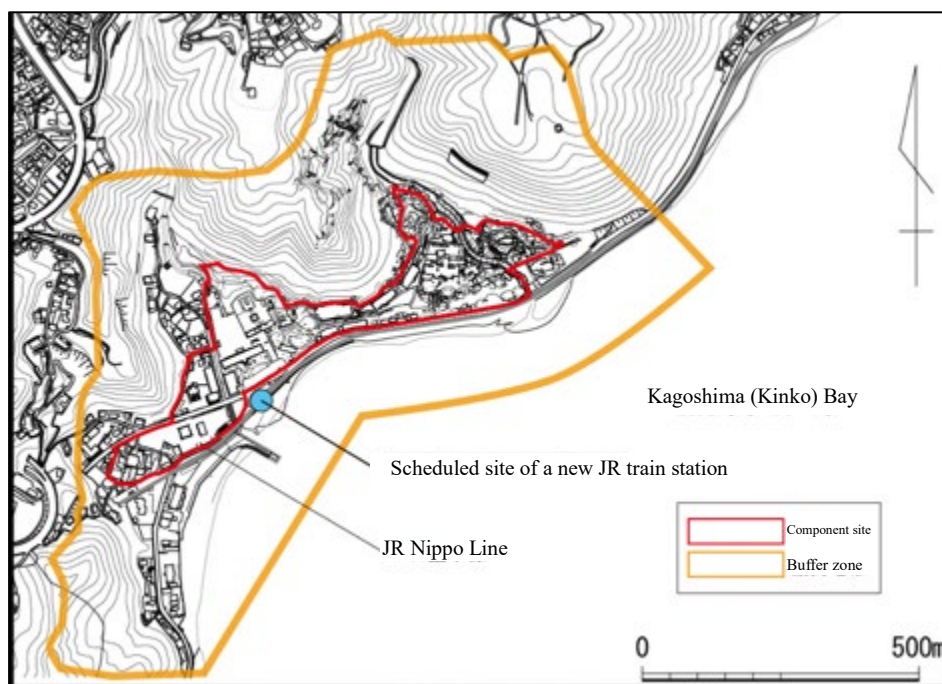


Figure 3. Shuseikan (component site 2-1) and its buffer zone

(2) Purpose of the project

The train station is to be built on the JR Nippo Line that passes through part of the buffer zone in the south of the component site. The New Iso Station Construction Council, which is the main project entity, is currently examining the project in consultations with the railway operator and the national agencies related to heritage conservation.

The project aims to utilize the existing railway as the principal means of access to the component site. The diversion of car-based visitors to railway access will allow a car parking area within the Property to be removed and enable the investigation of this area and the potential conservation and presentation of any underground remains related to the historical operation of the Shuseikan industrial complex. Furthermore, the project aims to improve the component site's interpretation by, for instance, creating a more direct access route to the component site including the Foreign Engineer's Residence.

The JR Nippo Line fulfills the important role of connecting major cities in Kyushu and promoting their economies, industries, cultures, and tourism. The construction of the new train station will enable on-time and speedy access to Shuseikan.

(3) Key Information from existing plans

Statements on the planned train station from key existing plans are as follows.

① Conservation Management Plan (Chapter 5, Part 6 (5) Response to Visitor Pressure)

The Iso area experiences a parking space shortage during peak tourism seasons. Due to its topographical restrictions, however, expanding its parking space is difficult. This necessitates measures to control visits by cars and to reduce temporary congestion. ...

Going forward, comprehensive research will be conducted to examine transport access and to implement concrete measures. Such research will examine issues such as enhancement to access from Kagoshima Station to inside the component site, allocation of functions with the area around Kagoshima Station, an increase in the existing public and tourist bus services, and the needs and possibility of building a new train station in the Iso area.

② Repair and Public Usage Plan (Chapter 2, Part 2, 9 (2) Request to Build a New Train Station in the Iso Area)

... In particular, road users will unlikely accept the traffic congestion deterioration on National Route No. 10 and on the Kamihonmachi-Iso municipal road which would result from the longer shutting time of the railway crossings. It was hence considered necessary to examine traffic plans linked to a National Route No. 10 bypass, with an eye on a long-term vision.

③ Total Traffic Environment Plan for the Conservation of the World Heritage in the Iso Area

Cars and buses are the main means to visit the Iso area. Due to the area's geographic and topographical restrictions, however, increasing the area's parking capacity is impossible. This situation is not favorable for the conservation of the site, visitor safety, visitor traffic lines, and site interpretation. In fact, overwhelmed parking capacity has in the past led to situations that could potentially have a negative impact on the attributes representing the site's OUV. In response to this, countermeasures have been taken such as a park-and-ride trial and an increase in sightseeing circular bus services. These measures, however, have not resolved the problems.

Against this backdrop, attention has been turned to *railway*, which did not exist at the time Shuseikan was conducting businesses but is currently functioning as part of important urban infrastructure. Building a new station in the area will facilitate a shift from cars to railway as the means of transport, thereby solving problems caused by the parking space shortage.

The Total Traffic Environment Plan for the Conservation of the World Heritage in the Iso Area defines its vision for the area's traffic environment as follows: maintain the World Heritage site and its surrounding environment in good condition into the future and strive to improve their values and attraction and the environment for visitors. To realize this vision, the Plan has established the following five basic policies: 1. Conserve remains and landscapes and uncover their values; 2. Change the means of transport; 3. Improve visitor traffic lines; 4. Improve the environment for visitors; and 5. Secure alternative routes. These policies will be acted on in phases from a long-term viewpoint.

The construction of a new train station, which is the subject of this screening as part of a Heritage Impact Assessment process, falls under basic policy 2. Change to the means of transport which will result from the construction of a new train station will help conserve remains and reduce parking within the World Heritage property. This will eventually help achieve basic policy 1, which aims to research remains which are thought to exist in the areas used as parking space within the site. It will also contribute to basic policy 3 as the new station will become another basis for site interpretation.

④ Station Building Concept (determined by the New Iso Station Construction Council on May 13, 2022)

Station building concept: **“Station that gently connects with history, nature and people”**

“History”: World cultural heritage, historic remains

“Nature”: Natural environment such as Sakurajima, Kagoshima (Kinko) Bay, and Isoyama Park

“People”: Tourists, residents, workers in related facilities

“Gently connects”: Improve, represent, and not damage the values of the world heritage and historic remains; able to use safely

The use of “to” in the Japanese sentence is designed to express mutual co-dependence instead of highlighting a specific main character.

Matters to pay attention as the basis of the concept

1. Appearance of the station building that takes into account the views and landscapes
2. Station construction work that does not have a negative impact on the conservation of historic remains [outside the World Heritage property]
3. Display of traffic lines to help improve visitors’ understanding of the site
4. Ensuring visitor safety and convenience

(4) Main entity of screening, etc.

The main entity of the train station construction project is the New Iso Station Construction Council that consists of local economic organizations, Kagoshima Prefecture, and Kagoshima City. Kagoshima City functions as the Council’s secretariat. Being the main entity of the station front square development project, Kagoshima City also organizes overall information including those on the train station and liaises with relevant organizations.

Accordingly, Kagoshima City has compiled the matters related to the project's potential impact on World Heritage, conducted an HIA screening process, and summarized the results in this report. Input has also been provided by international World Heritage advisors.

2. Train Station Facilities Subject to HIA Screening

(1) Overview

The intended location and size of the new train station are currently as below.

- Location: An area in the site of the existing Kagoshima municipal road along the Kagoshima (Kinko) Bay in the buffer zone to the south of the component site. (Proposed layout plan [Figure 4])
- Number of platforms: 1 Total length: 92.0 m
- Railway track: Use the current track.
- Station front square area: 660 sqm

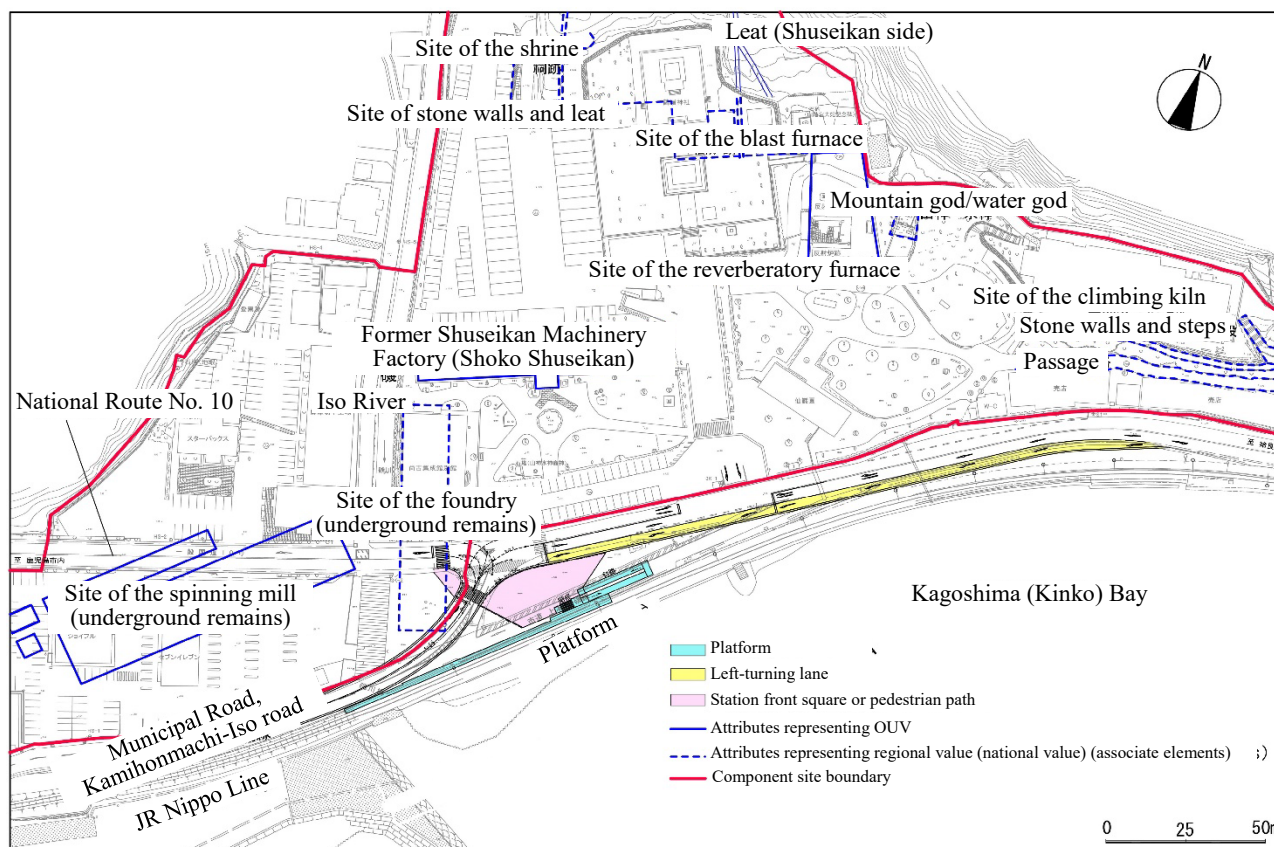


Figure 4. Layout plan for the train station platform and station front square (proposal)

(2) Chronicle

Table 1 below shows a chronicle related to the train station proposal.

July 2015	“Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining” including Shuseikan was inscribed on the World Heritage List
August 2016	The local neighborhood association and others submitted to the Kagoshima City council a petition requesting the establishment of a council for the construction of a new JR Iso station
September 2016	Economic groups and others submitted a request to the Kagoshima City council to establish a council to construct a new JR Iso station
March 2017	Kagoshima City established the New JR Iso Station Exploratory Investigation Council
August 2017	Consulted with the Agency for Cultural Affairs and Cabinet Secretariat on the exploratory investigation of a new Iso station
March 2018	Prepared the Repair and Public Usage Plan of the Shuseikan site
June 2018	The Kagoshima Association of Corporate Executives’ Kagoshima revitalization committee

	announced its recommendation, “Toward promptly constructing a new JR Iso station”
August 2018	The local neighborhood association and others submitted to Kagoshima City a request to promptly construct a new JR Iso station
January 2019	Reported to the Agency for Cultural Affairs and Cabinet Secretariat on the results of the examination conducted to this point, future plans, and so on
July 2019	Reported to the Agency for Cultural Affairs regarding future plans and so on
May 2020	Established the New Iso Station Construction Council with participation of economic groups, Kagoshima Prefecture, and Kagoshima City
December 2020	Submitted a state of conservation report pursuant to Article 172 of the <i>Operational Guidelines for the Implementation of the World Heritage Convention</i>
October 2021	Received the ICOMOS Technical Review
August 2022	Discussions at the first session of the Expert Committee on the Development and Usage of Shuseikan in FY2022
September 2022	Opinion hearings at the 13th session of the Industrial Heritage Expert Committee (including Working Properties)
October 2022	Interviews with members of the "Expert Committee on Industrial Heritage Including Operational Assets" regarding the contents of the HIA screening process

Table 1 Chronicle related to the train station proposal

(3) Current challenges

The train station and station front square are to be created in the buffer zone of the World Heritage site. Due to their proximity to the inscribed area, their locations need to factor in their potential impact on the OUV and attributes representing the OUV, and on the associated remains of national or regional significance.

It is also required to consider the impact on the landscape from the areas that visitors to the World Heritage site will actually experience.

Meanwhile, there is not much latitude in terms of the train station site because the current railway track faces the ocean and the location considered for the new station is constrained by the ocean and a nearby tunnel.

Despite this situation, it is necessary to produce ideas to meet the required functions of the train station.

Many of the local residents and economic groups have requested the construction of a new train station to improve the convenience of and safety for residents and visitors.

3. Heritage Value

(1) Statement of Outstanding Universal Value (SOUV)

The following is an excerpt from the “Brief synthesis” at the beginning of the “Statement of Outstanding Universal Value” adopted by the 35th session of the World Heritage Committee when it inscribed the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining” as World Heritage.

A series of industrial heritage sites, focused mainly on the Kyushu-Yamaguchi region of south-west of Japan, represent the first successful transfer of industrialization from the West to a non-Western nation. ... The sites in the series reflect the three phases of this rapid industrialization achieved over a short space of just over fifty years between 1850s and 1910.

The first phase in the pre-Meiji Bakumatsu isolation period, at the end of the Shogun era in the 1850s and early 1860s, was a period of experimentation in iron making and shipbuilding. ...

The second phase from the 1860s accelerated by the new Meiji Era, involved the importation of Western technology and the expertise to operate it; while the third and final phase in the late Meiji period (between 1890 to 1910), was full-blown local industrialization achieved with newly-acquired Japanese expertise and through the active adaptation of Western technology to best suit Japanese and social traditions, on Japan’s own terms. ...

Collectively the 23 components are an outstanding reflection of the way Japan moved from a clan based society to a major industrial society with innovative approaches to adapting western technology in response to local needs and profoundly influenced the wider development of East Asia.

After 1910, many sites later became fully fledged industrial complexes, some of which are still in operation or are part of operational sites.

(2) Characteristics of OUV and positioning of Shuseikan

The characteristics of the OUV stated in the “Brief synthesis” consist of the following two points:

The 23 components collectively show:

- a process of rapid development through three phases for each of the three industries; and
- a process of qualitative change that transformed Japan into a major industrial society and influenced the wider development of East Asia.

Based on the above two characteristics, Shuseikan belongs to the themes of iron and steel and shipbuilding among the three industries. In terms of phases, while the contribution of Shuseikan to iron and steel belongs to the first phase, which was a period of experimentation, shipbuilding at Shuseikan belongs to the first phase as well as the second phase, which was a period of direct introduction of western technology and the initial period of industrialization. It is therefore an essential component site justifying the OUV of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”

(3) Attributes that represent Shuseikan’s contribution to OUV

The Conservation Management Plan for the site identifies the following as the attributes of values that represent Shuseikan’s contribution to OUV: Site and remains of: the Reverberatory Furnace; the blast furnace; Former Shuseikan Machinery Factory; Kagoshima Spinning Mill; Foreign Engineers’ Residence; the Sekiyoshi sluice gate of the Yoshino water leat, and the Terayama Charcoal Kiln. The Plan also notes related attributes of other industrial developments of national and regional significance, such as the glassware and ceramics factory and steam engine research institute. All these attributes together constituted the Shuseikan Project. The Sengan-en villa of the Shimadzu family and related Daimyo garden are closely related to the Shuseikan Project, are of national significance, and are within the Property.

(4) Conservation measures for the buffer zone

The buffer zone conservation measures described in the Conservation Management Plan are as follows.

- ① Conditions of the buffer zone that are to be maintained (benchmark of regulation and protection)
 The Shuseikan component site in the Iso Area is framed by rugged forested land on its inland side, and by the waters of Kagoshima (Kinko) Bay to the south-east. The natural beauty of these dominant landscape features determined the location of Sengan-en, and hence of the site for the Shuseikan industrial developments. The regulation of the buffer zone will ensure the maintenance of the natural qualities and visual beauty of this traditional setting.
 The Shuseikan component site area commands a magnificent view of Sakurajima and the distant shores of Kagoshima (Kinko) Bay, which form the distant setting for Shuseikan. This distant setting is not included in the buffer zone, but is nonetheless protected through the Natural Parks Act.
- ② Regulation and protection policy and overall plan in the buffer zone
 In order to maintain the condition described in ① above, and hence protect the heritage values of the related component sites, appropriate buffer zone boundaries have been determined and protection measures described in Chapter 4 put in place.
 Activities within the buffer zones will be regulated and controlled by the Natural Parks Act, River Act, City Planning Act, Landscapes Act, and municipal ordinances based on them, as well as the Act on the Regulation of Housing Land Development.

4. HIA Screening of Proposed New Train Station

(1) Presentation of the basic framework of the screening process

In conducting the HIA screening, the *Total Traffic Environment Plan for the Conservation of the World Heritage in the Iso Area* required “sufficient consideration of the location, structure, and landscaping to minimize impacts on the landscape.” Based on this requirement, a basic framework was established consisting of the points in (i) to (iii) below.

(i) Determining the best location for the train station

The screening compared the potential impact of the construction of a new station in different locations.

1) Impact on attributes

Given the proximity of all of the potential station sites to the Property or Buffer Zone, the screening evaluated the degree of impact of each location on the aboveground and underground historical remains that are attributes representing the OUV.

2) Access to the attributes

The screening evaluated the degree to which each location had a potential impact on access to the attributes, given that the change in the means of transport of visitors would change visitor flow patterns.

3) Impact on the surrounding setting (views and landscapes)

The screening evaluated the degree of each of the potential station’s impacts on views and landscapes from viewing spots, as these relate to the appreciation of the property and its OUV.

4) Impact on associated remains – regional and national significance but not OUV

The screening evaluated the degree of impact of each potential station location on the associated remains of national or regional significance.

5) Functions of the train station

The screening evaluated whether there was any problem with the functioning of each potential site as a train station and entry point to the Property.

(ii) Determining the most appropriate platform structure

The screening compared various options for the platform's structure.

1) Impact on associated remains – regional and national significance but not OUV

Given the potential negative impact of the platform's structure and construction work on the associated remains of national or regional significance, the screening evaluated the degree of such impact.

2) Structure of the train station

The screening evaluated different degrees of safety of the train station depending on whether the train station was constructed as a permanent or temporary structure.

(iii) Determining an appropriate visual appearance for the proposed station

(iii)-1 Analysis of platform roof designs

The screening compared the impact of different platform roof designs.

1) Impact on the attributes and setting (views and landscapes)

Given the potential negative impact of the construction of a new train station on views and landscapes from viewing spots, the screening evaluated the degree of such impact for different types of platform roofs.

2) Functional requirements of the train station

The screening evaluated different impacts of different types of platform roofs on the proposed functions of the train station (hence assessing the practical feasibility of options).

(iii)-2 Analysis of the wall cladding of the platform

The screening compared the potential impact of the appearance of the platform.

1) Impact on the OUV

Potential negative visual impacts of various options on OUV were evaluated regarding the platform's wall materials.

2) Impact on associated remains – regional and national significance but not OUV

The screening evaluated potential impacts of different construction methods of the platform and wall cladding on any associated remains of national or regional significance.

3) Impact on the attributes and setting (views and landscapes)

The potential impact of the platform's wall cladding on the surrounding environment and the outlook landscape was evaluated.

(iii)-3 Analysis of the station front square

The screening assessed the impact of different designs for the station front square.

1) Impact on the attributes and setting (views and landscapes)

The screening evaluated the potential impacts of different designs of the station front square on the surrounding environment including the natural environment.

2) Impact on associated remains – regional and national significance but not OUV

The screening evaluated potential impacts of different types of construction work of a new station front square on any associated remains of national or regional significance.

(2) Result of the analysis of the potential location of the train station

Because of the proximity of the existing railway line to the Property and the sea, there were only three potential locations for the proposed railway station. Based on the basic framework for the HIA screening consisting of five issues shown in (1) (i) above, the three locations were compared, analyzed, and individually evaluated. As a result, a proposal was adopted to build a train station in the buffer zone adjacent to the Shoko Shuseikan Museum (hereinafter, the “Proposed Location” [Figure 5]).

This decision was made because the train station in the Proposed Location would be farthest from the Property and hence would not have any direct negative impact on the attributes representing the OUV. In addition, if the construction of a new train station changes the visitor’s preferred means of transport, this will improve access to the property and better conserve Shuseikan, part of which has been used as permanent and temporary peak-visit parking space. The subsequent ability to reduce the areas used for parking will enable ground investigations that are likely to bring to light further remains potentially contributing to OUV. Furthermore, it will create an improved access route to the Foreign Engineer’s Residence, which is an attribute of OUV, generating a positive outcome for site interpretation.

The potential visual impact of the Proposed Location has been assessed, and by careful selection of the platform and minimalist shelter design, negative impacts on OUV have been avoided.

Test excavations of the proposed location of the station front square have indicated the presence of associated remains of national and regional significance. However, this is not directly related to the OUV. The proposed design of the station front square requires no ground disturbance, so these remains will not be disturbed and can be accessed for research in future. The results of the exploratory survey of the proposed station front square site are outlined in attachment 1.

In the Proposed Location, achieving a minimum distance from the railway tunnel at the western end of the Shuseikan foreshore for safe operations, securing a sufficient length of the platform, and accommodating various security facilities will be possible. It will therefore satisfy the functional requirements for a train station. The analysis of potential station locations is outlined in attachment 2

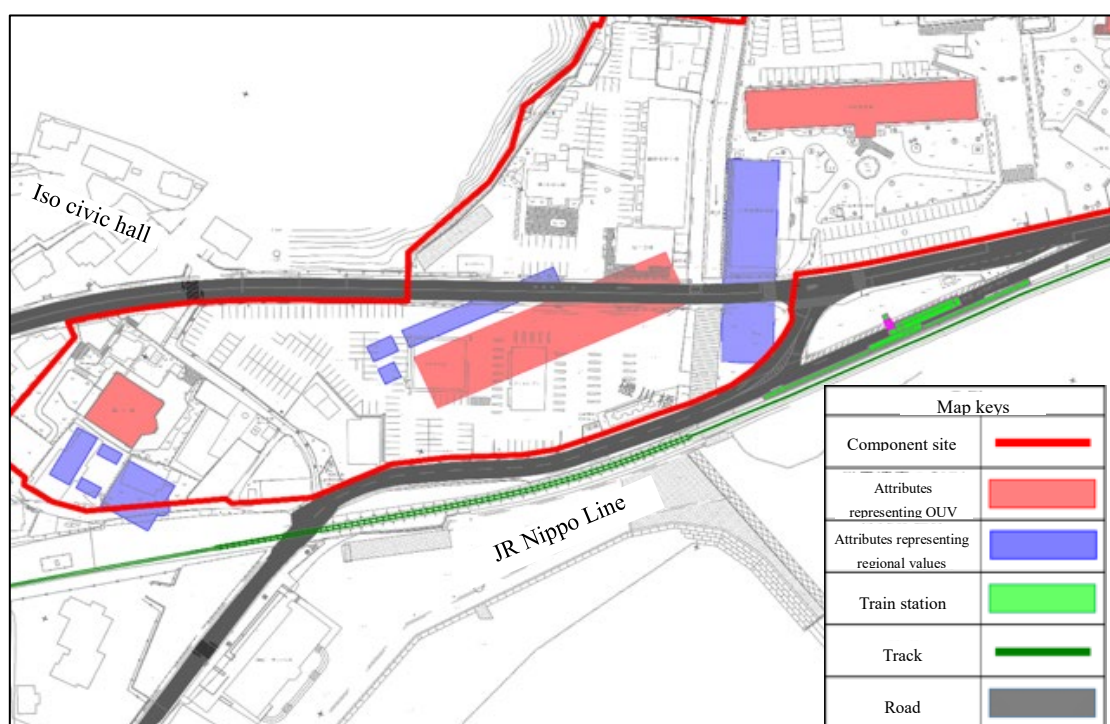


Figure 5. Proposal to build a train station in front of Shoko Shuseikan Museum

(3) Result of the analysis of the structure of the platform

Based on the basic framework for the HIA screening consisting of two items shown in (1) (ii) above, multiple options for the design of the platform structure were compared, analyzed, and evaluated. As a result, a proposal was adopted to build a platform in a gate-shaped culvert structure (hereinafter, the “Proposed Structure” [Figure 6]).

This decision was made because the impact on the surrounding associated remains (not related to OUV) could be mitigated.

The proposed structure will reduce the scope of construction and eliminate the need for temporary earth retaining structures impacting the ground. Furthermore, the amount of concrete required on site can be minimized, thereby reducing the number of construction vehicles traveling in the vicinity and potentially impacting related underground remains of national or regional significance found at the proposed station front square site.

This type of structure has been previously used for train stations and ensures safety as a passenger facility. The platform will be built as a permanent structure and an analysis of its structure is outlined in attachment 3.

Since the height of this platform is the same as the existing seawall installed on the bay side across the railway track from the proposed station, there is no impact on the surrounding landscape by the platform.



Figure 6. Example of a Platform built using a gate-type culvert structure (Proposed Structure)

(4)Result of the analysis of platform roof options

Based on the basic framework for the HIA screening consisting of two items shown in (1) (iii)-1 above, multiple types of platform roofs were compared, analyzed, and evaluated. As a result, a proposal was adopted to use a flat platform roof with Galvalume sheets (hereinafter, the “Proposed Roof” [Figure 8]).

This decision was made because this roof type would best minimize any obstruction of views and landscapes. In the photomontage based on the view from in front of the Former Shuseikan Machinery Factory, the train station does not obstruct the view of Sakurajima and Kagoshima Bay, so the impact on the landscape is negligible. From the main viewpoint of Senganen Garden, the train station does not have any impact on the scenery because it is not visible.

Furthermore, the thickness of the "Proposed Roof" was reduced and the walls around the ticket gates were eliminated in order to give more consideration to the landscape. In addition, by concealing beams, electrical wiring, etc. in the roof space, the station was made simpler. The station platform will provide a slightly elevated view point of both the Shuseikan complex and the view across the harbor to Sakurajima that is not available anywhere else, while not itself obstructing any other views.

The color scheme will be chosen from the following three options taking into account harmonization with the surrounding landscape: dark brown (10YR2/1), dark grey (10YR3/0.5), and galvanized steel treated with phosphoric acid. A final decision will be made in an assessment on site using samples of the colours.

The option of having no roof was assessed, but it was rejected as the shelter would be needed to provide protection from ash given the frequent minor eruptions of Sakurajima, the fierce sunlight in summer, and heavy rain. A similar problem would arise if the shelter roof was moved back over the front square instead of being over the platform itself, especially for users with mobility problems. The analysis of the platform roof is outlined in attachment 4.



Figure 7. View from in front of the Former Shuseikan Machinery Factory (current condition)



Figure 8. Photomontage from in front of the Former Shuseikan Machinery Factory (Proposed Roofs)

(5)Result of the analysis of options for the cladding of the walls of the platform

Based on the basic framework for the HIA screening consisting of the five items shown in (1) (iii)-2 above, multiple types of outer walls were compared, analyzed, and evaluated. As a result, a proposal was adopted to create platform outer walls by affixing steel plates (hereafter the "proposed outer walls").

The reason for this is that by finishing the exterior of the platform with steel plates, the train station can be finished as a simple modern structure, and the impact on the OUV can be avoided by clearly differentiating it from the attributes that contribute to the OUV.

Many of the buildings that comprise the Shuseikan project, as well as other historical buildings and historic sites, are composed of stone formed by volcanic eruptions. In contrast, finishing the exterior walls of the platform with steel plates can create a clear difference between the train station and the attributes that contribute to the OUV, thus avoiding any impact on the OUV.

In addition, since the steel plates in question are to be affixed to the exterior of the platform, there will be no impact on related archaeological sites of national or regional significance found at the proposed station front square site. The analysis of options for the cladding of the walls of the platform is summarized in Attachment 5.

(6)Result of the analysis of the station front square design options

Based on the basic framework for the HIA screening consisting of two items shown in (1) (iii)-3 above, multiple ideas for the station front square were compared, analyzed, and evaluated. As a result, a proposal was adopted to create a station front square as part of a garden (hereinafter, the “Proposed Square” [Figure 9]).

The reason for this is to promote the use of the railroad station and to avoid impact on related archaeological sites of national and regional significance that exist underground.

The proposed plaza is based on the image of a garden with a view of the azure sea of Kinko Bay and the majestic Sakurajima, which is a characteristic of the Senganen Garden. The slope in the square in front of the station was designed with curved lines so that it would be a passageway to the station as well as a passageway in the garden. In addition, as the station front square is located in the buffer zone of the World Heritage site, it was designed to be a simple square for the sole purpose of user traffic, with only facilities that function as a passageway, in order to reduce any potential negative impact on the view of the landscape. This is an effort to encourage the use of the train station, to promote traffic diversion, to reduce parking on the property, which is the goal of the project, and to increase the potential for preservation and public access to the underground remains associated with the OUV underneath parking areas.

Furthermore, there will be no vehicles entering the station front square, and since the facility will be used only by pedestrians, there will be no negative impact on related archaeological sites of national or regional significance that exist underground. In addition, since the proposed plaza will only involve fill but no excavation, there will be no impact from the construction on underground remains. The analysis of the station front square is outlined in attachment 6.



Figure 9. Photomontage of the station front square (Proposed Square)

5. Management Process of Consensus Formation Among Concerned Parties**(1) Iso Station Exploratory Investigation Council**

Discussions on the potential construction of a new train station and its challenges began at the examination council established by Kagoshima City in April 2017 which consisted of experts on heritage conservation, economic organizations, transportation organizations, railway operator (JR), Shimadzu Ltd. (component site owner), the Ministry of Land, Infrastructure, Transport and Tourism, Kagoshima Prefecture, and the local neighborhood association. During the fiscal years 2017 and 2018, deliberations of multiple proposals took place from the viewpoints of the layout plan of the platform and station front square, modification plan of the surrounding road, impact on the road traffic, component site, and their surrounding landscape, and cost performance. In this process, opinions were widely sought from relevant administrative organs, experts, citizens, and so on.

(2) New Iso Station Construction Council

In addition to local economic organizations, Kagoshima Prefecture and Kagoshima City participate in the New Iso Station Construction Council, which is the main entity for the construction of a new train station. The sections in which Kagoshima Prefecture and Kagoshima City take part include those in charge of heritage conservation. The Council therefore discusses the conservation of heritage as well.

Going forward, the Council will continue sharing information and having discussions with Shimadzu Ltd. (component site owner), Kagoshima Prefecture, Kagoshima City, the railway operator, the Ministry of Land, Infrastructure, Transport and Tourism, and traffic managers, in the process of discussing the construction of a new train station in stages at the Shuseikan Conservation Council (see (3)) for the World Heritage, "Sites of Japan's Meiji Industrial Revolution."

(3) Shuseikan Conservation Council

In the management system of the World Heritage "Sites of Japan's Meiji Industrial Revolution," a Management and Conservation Council has been established for each district based on the "General Policy and Framework for Management and Conservation of the Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining. In Area 2, the "Shuseikan Area Management and Conservation Council" has also been established, and the Council reviewed and decided on the "Overall Transportation Environment Plan for World Heritage Conservation in the Iso Area" prepared by Kagoshima City. The Council also approved the design of the railroad station and station square in this HIA screening phase.

(4) Expert Committee

In compiling this report, under the guidance and advice of the Cabinet Secretariat and the Agency for Cultural Affairs, the "Committee of Experts on the Development and Utilization of the Shuseikan Area" established by Kagoshima City discussed and examined the issue from an expert standpoint, and also sought advice from the "Expert Council on Industrial Heritage, including Operational Assets" established by the Cabinet Secretariat.

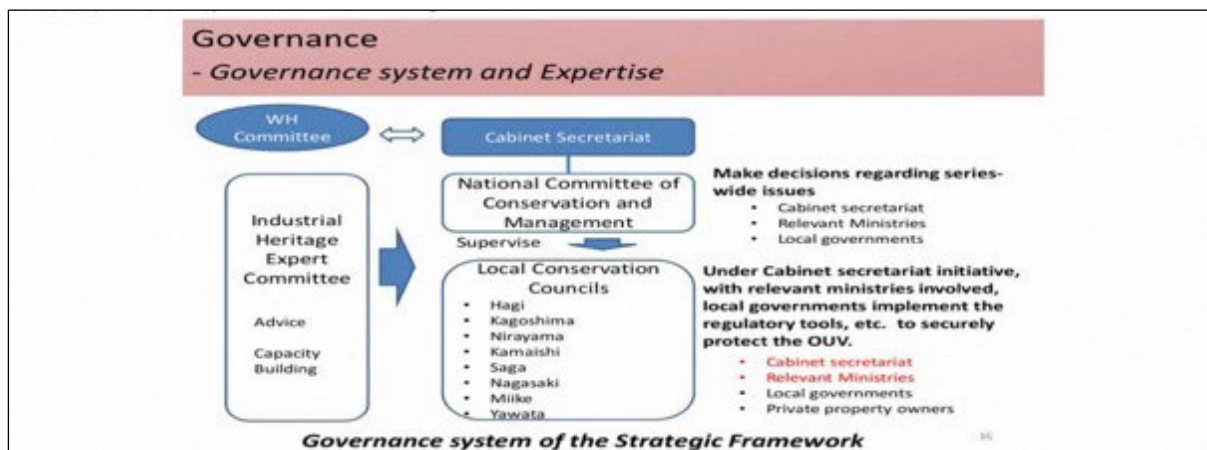


Figure 10. Governance system stipulated in the Strategic Framework

6. Conclusion

The proposed JR train station to be built in the buffer zone adjacent to Shuseikan, one of the 23 component sites of the World Heritage, “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining,” will provide a new and sustainable strategic means of visitor transport to the site. The diversion of car-based visitors to railway access will allow a car parking area within the Property to be removed and enable the investigation, conservation, and potential presentation of underground remains related to the operation of the Shuseikan industrial complex. Furthermore, by creating a more direct access route to the Foreign Engineer’s Residence, which is an attribute of OUV, the train station will have a positive impact on visitor flow and the interpretation of the site.

Positioning the train station in the buffer zone adjacent to the Shoko Shuseikan Museum places it at the furthest point from the property that is possible, which together with the design solutions will ensure that the train station will not have any impact on the attributes of OUV or the appreciation of the property.

On the other hand, excavations on land near the proposed station site have confirmed the presence of an archaeological site of national and regional significance. However, this archaeological site is not directly related to the OUV. In addition, this site will become a station front square and will only be used by pedestrians. Therefore, there will be no impact on the archaeological site.

In addition, a new train station will not adversely affect the view and landscape of Sakurajima and Kagoshima Bay from in front of the Former Shuseikan Machinery Factory.

The construction of the platform in a portal culvert will reduce the impact on related archaeological sites of national and regional significance, and the use of steel plates for the outer wall of the platform will avoid any impact on the OUV.

Furthermore, the station front square will be designed to resemble a garden and constructed an embankment to promote the use of the railroad station and avoid impact on related archaeological sites of national and regional significance.

As stated above, the construction of a new train station will improve the convenience for visitors to the World Heritage property and have benefits for the interpretation of components of the site and the flow of visitors. The new train station, in removing a car park area within the property, will also enable conservation of elements potentially reflecting OUV, and their presentation to visitors.

The remains confirmed during excavation in May 2022 under the site name “Former Shuseikan” are the remains of ground consolidation (jigyo), which are traces of ground improvement work, and the building assumed to be above it is highly likely to have been a “warehouse (built around 1872).

1 Overview of Excavation Survey

Survey site: 9685-5, Yoshino-cho (planned station front square development site *outside the scope of national historic sites (components))

Purpose of the survey: To determine in advance whether or not the construction of the train station and ancillary works will have a negative impact on the underground remains and their condition.

Survey period: May 16 – May 31, 2022

Survey scale: 2m (length) x 8m (width) = 16m2

Type of Remains: Ground consolidation remains (traces of foundation work associated with construction (jigyo))

*The total shape and scale have not been confirmed.

Depth from ground surface: 0.6 to 0.8 m

Mentoring Assistant: Professor Yoshiro Watanabe, Faculty of Law, Kagoshima University (Archaeology) (5/26)

Agency for Cultural Affairs, Cabinet Secretariat (7/20), Shuseikan District Development and Utilization Expert Committee (8/5)

2 Future handling

Based on the guidance and advice of experts and the government, etc., we request that the entities involved in each project related to the construction of a new train station (Iso-New Station Establishment Council, Kagoshima National Highway Office, City Road Construction Division, etc.) promote the project, taking the following into consideration.

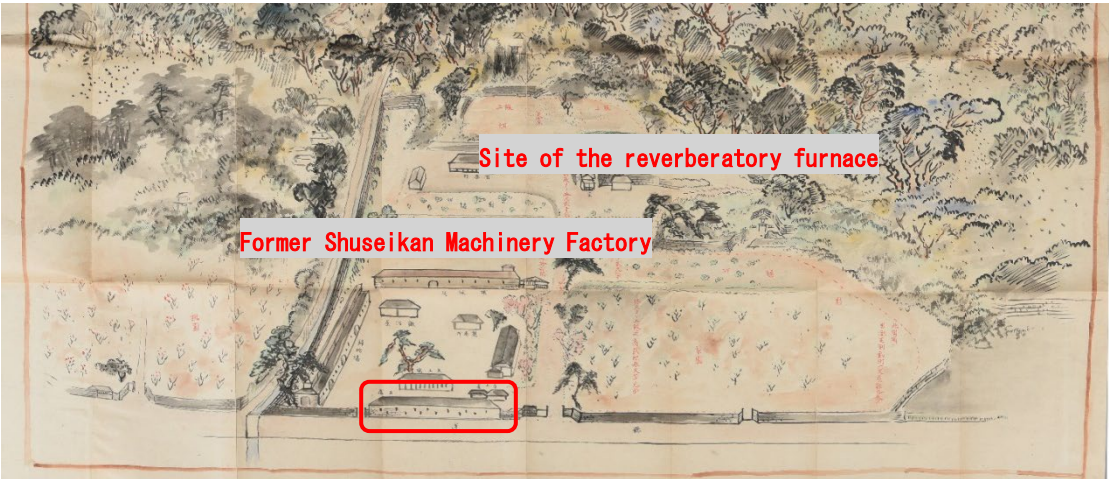
- The site is not included in the scope of the National Historic Site, but the site must have the same value as a National Historic Site.
- The “value equivalent to that of a national historic site” consists of the ground consolidation remains (jigyo) that indicate the site of a “warehouse” associated with the Shuseikan project, and the said remains should be preserved on the site.
- Further information on the “warehouse” site should be collected through excavation and other means.



Photo 1: Distant view of the surveyed area (planned station front square: red line) and the excavation site (from the southeast)



Photo 2: Photograph of the complete excavation status during the 2022 excavation (from the southwest)



Map of the Shuseikan area” before 1915 (Shoko Shuseikan collection)

*The red line indicates a warehouse.

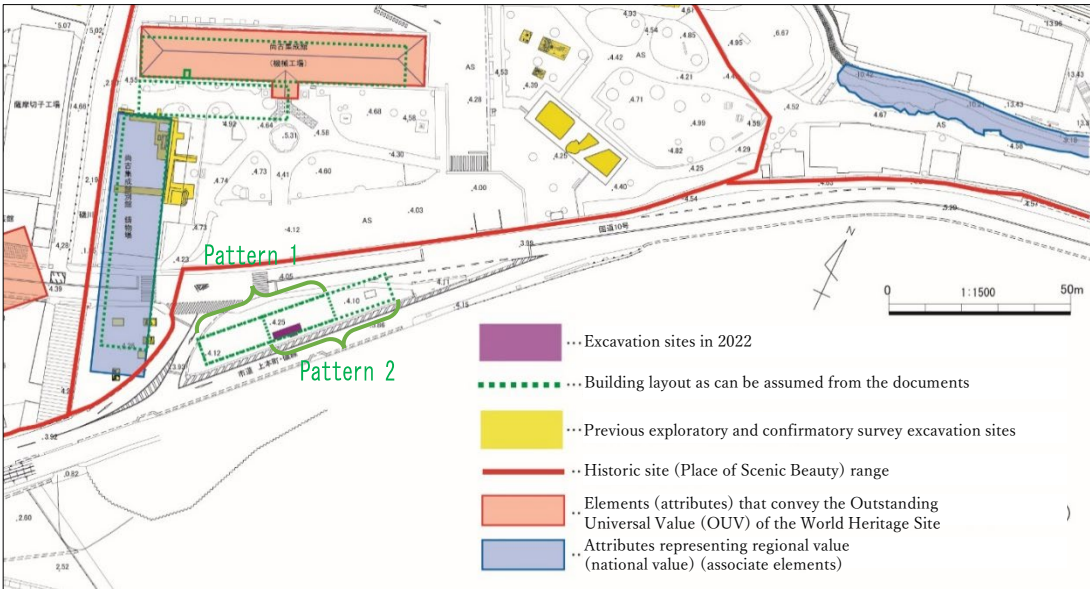
















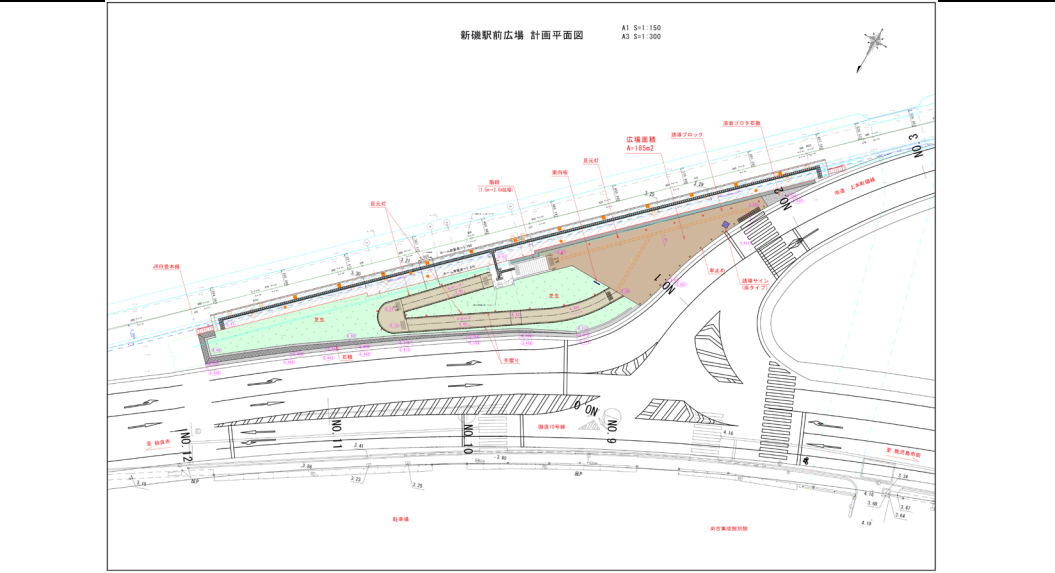
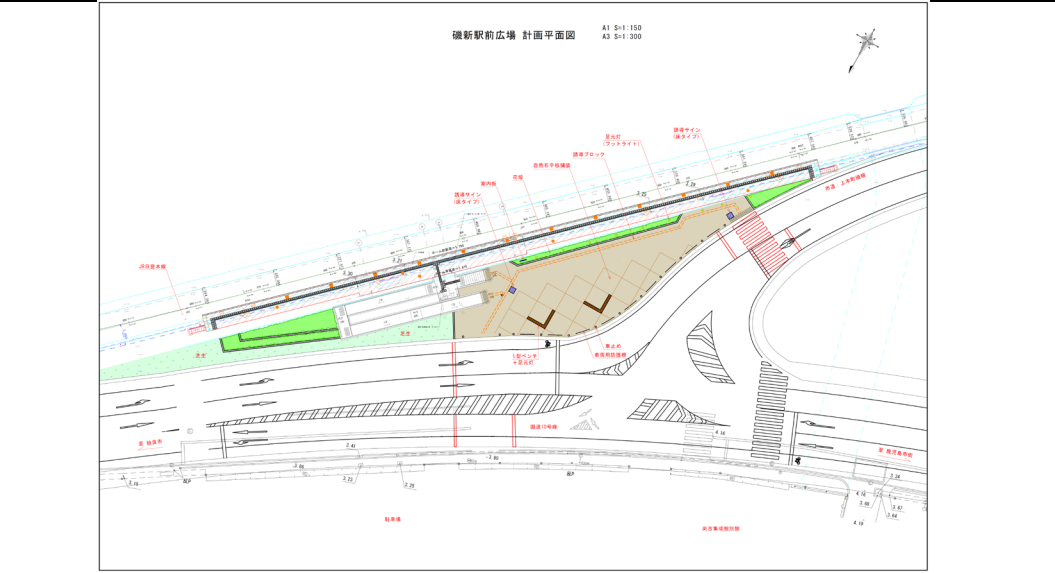
Figure: Map of the excavation site in 2022 (purple area) and the assumed building layout

Potential plans		Plan 1		Plan 2		Plan 3				
Basic information & comparison items										
Railway station location		Between Iso Kaido road crossing and tunnel		In front of Kagoshima Spinning Mill		In front of Shoko Shuseikan Museum				
Railway station specifications		Track: single track Platform length: 70 m Train cars: up to 3 cars		Track: single track Platform length: 92 m Train cars: up to 4 cars		Track: single track Platform length: 92 m Train cars: up to 4 cars				
Proposed development site										
Assessment items	1. Impact on attributes	The station will be built near the remains of the former Kagoshima foreign engineer's residence (Ijinkan). This is unlikely to have a direct impact on the resources due to limited space for developing a station square.		The station will be distantly located from the components, but the station square will be built within the property of the World Heritage site.		There is no direct impact as both the station and the station square will be distantly located from the components.				
	2. Access to attributes	The addition of a railway will result in a transport mode shift and will improve access to attributes. Shuseikan is used as temporary parking during peak season, so a railway will help preserve the site. At the same time, this allows to excavate potential heritage resources that may be buried under the temporary parking area. The establishment of an access route to Ijinkan, which is one of the component sites, has a positive impact on the WHS interpretation.		Same as on the left.		Same as on the left.				
	3. Impact on the surrounding setting (views and landscapes)	The train station would intrude into the view from the constituent assets, the Former Shuseikan Machinery Factory and Foreign Engineer's Residence, and may have an impact on the view of the landscape. However, the proposed roof design would reduce that impact.		Same as on the left.		Same as on the left.				
	4. Impact on associated sites	Associated sites exist in the surrounding area of the railway station. However, there is no direct adverse impact on them since a station square cannot be built in the area concerned. The construction work may have an adverse impact.		There is no adverse impact since there are no associated sites in the vicinity of the area where the station will be built.		Preliminary excavations revealed that there are related heritage sites in the proposed station front square site that are not directly related to the OUV, but are important to the national or regional significance. However, the proposed design of the station front square does not require excavation, thus reducing the impact on the archaeological sites.				
	5.Functions of the train station	Plan 1 has function problems. Trains have poor visibility of the platform because the station is located close to a tunnel. There is no space for setting up railroad signals on the premises. The problem cannot be solved as space is limited.		The platform can be easily seen from the train, and the platform length is sufficient. There are no function problems.		Same as on the left.				
Impact assessment	Individual assessment	The construction of the new station has no impact on the attributes of the site. A new railway station improves access to the attributes and allows to preserve components as well as expose potential heritage resources. It has a positive impact on the WHS interpretation. However, the station's function presents problems, such as poor visibility and the inability to set up railway signals. They pose a threat to passenger safety, and the facility fails to function as a station.	Impact on attributes	Good	A new station improves access to the attributes and allows to preserve components as well as expose potential heritage resources. It has a positive impact on the WHS interpretation. However, the station is close to the World Heritage property area, and the square in front of the station will be within the said area. The location of the station may have an adverse impact on the landscape.	Impact on attributes	Poor	There will be no impact on the attributes due to the establishment of the train station and station front square. The establishment of the train station will improve accessibility to the site and preserve its attributes. There will also be a positive impact on the Interpretation. However, there is a potential impact on the related heritage of national or regional significance that is present in the proposed station front square.	Impact on attributes	Good
			Access to attributes	Good		Access to attributes	Good		Access to attributes	Good
			Impact on the surrounding setting	Fair		Impact on the surrounding setting	Fair		Impact on the surrounding setting	Fair
			Impact on associated sites	Fair		Impact on associated sites	Good		Impact on associated sites	Fair
			Station function	Poor		Station function	Good		Station function	Good
	Overall assessment		Poor		Poor		Good			

Potential plans		Plan 1			Plan 2			Plan 3		
Basic information & comparison items										
Platform structure		Gravity platform			Box culvert			Iron frame (temporary structure)		
Reference image of platform										
Assessment items	1. Impact on associated remains	<p>- Temporary sheet pile earth retaining walls are required to protect the track ballast during excavation, and the vibration caused by the press-in and extraction of the sheet piles may have a negative impact on related archaeological sites of national or regional significance located in the proposed station front square area.</p> <p>- This type of platform requires greater volume of concrete than box culvert platforms, which would result in frequent traffic of agitator vehicles and may have a negative impact on related archaeological sites of national or regional significance located at the proposed station front square site.</p>			<p>- Box culvert platforms do not require temporary earth retaining walls to protect the track ballast during foundation excavation, since the excavation area is smaller than gravity platforms. Therefore, there will be no impact on associated archaeological sites of national or regional significance located in the proposed station front square.</p> <p>- This type of platform requires less concrete than gravity thus, negative impacts on associated archaeological sites of national or regional significance located in the proposed station front square can be mitigated.</p>			<p>- Same as on the left</p> <p>- It is a simple structure, but requires vehicles for transporting iron frames. It also needs crane trucks for assembling the parts. Therefore, the project may have a negative impact on related archaeological sites of national or regional significance located in the proposed station front square site.</p>		
	2. Structure of the tran station	Safety is guaranteed as a passenger facility since many railway stations use this structure.			Same as on the left.			Safety is not guaranteed as a passenger facility since it is a temporary structure. It may collapse during an earthquake or a storm. The station will be dismantled and will cease to operate as a station if underground heritage resources are to be exposed.		
Impact assessment	Individual assessment	Vibration caused by the press-in and extraction of sheet piles and vehicle traffic could have a negative impact on associated archaeological sites of national and regional significance located on the proposed station front square site. However, it is credible as a train station and ensures passenger safety.	Impact on associated sites	Poor	There is less adverse impact on the sites than gravity platforms. It is credible as a train station and ensures passenger safety.	Impact on associated sites	Fair	It has least adverse impact on the sites. However, it lacks credibility as a passenger facility due to its temporary structure. The station will be dismantled and will cease to function as a station if underground heritage resources are to be exposed.	Impact on associated sites	Good
			Station structure	Good		Station structure	Good		Station structure	Poor
Overall assessment		Fair			Good			Poor		

Potential plans		Plan 1			Plan 2			Plan 3			Plan 4		
Basic information & comparison items													
General description of platform shelter		Roof material: galvalume (folded plates) Pillars and beams: iron frame Color: 10YR2/1			Roof material: galvalume (flat plates) Pillars and beams: iron frame Color: 10YR2/1			The shelter of plan 2 is located at the station square and not on the platform.			No shelter		
Photomontage from in front of the Former Shuseikan Machinery Factory													
Assessment items	1. Impact on the surrounding setting (views and landscapes)	In the view from in front of the Former Shuseikan Machinery Factory, an attribute that contributes to the OUV, the train station does not overlap with Sakurajima, and the impact of the new train station on the scenic view is minimal. Due to the thickest roof among the proposed roofs and the walled ticket gate, obstruction to the view is the largest. In addition, since this proposal does not install panels in the roof space, beams supporting the roof, electrical wiring, etc. would be exposed in the space inside the station.			As with Plan 1, the view from in front of the Former Shuseikan Machinery Factory shows that the impact of the new train station on the view of the landscape is minimal. The area that obstructs the view is reduced compared to Plan 1 due to the reduced thickness of the roof and the elimination of the wall around the ticket gate. In addition, this proposal also makes the space inside the station simpler by installing panels on the back side of the roof and concealing the beams supporting the roof and the electrical wiring, thereby taking into consideration the scenic view for station users.			The roof will be the same as in Plan 2, but the open space in front of the station front square will be lower than the platform, further reducing the impact on the view of the landscape. However, since the roof will be moved to the Sakurajima side, it will overlap Sakurajima more than Proposals 1 and 2.			Since no roof will be installed, there will be no impact on the scenic view.		
	2. Functional requirements of the train station	The shelter protects passengers from Sakurajima's volcanic ash falls, rain, and sunlight.			Same as on the left.			The shelter protects passengers from Sakurajima's volcanic ash falls, rain, and sunlight. However, wheelchair users need to go through the ticket gate well in advance of the train's arrival time since the shelter and the ticket gate will be separated. There will be a slope connecting the shelter and the ticket gate. As a result, they will be exposed to volcanic ash falls, rain, and sunlight during their waiting time.			Passengers will be exposed to volcanic ash falls, rain, and sunlight. Direct sunlight during the summer is especially dangerous.		
Impact assessment	Individual assessment	In terms of views from the site, the impact of the new train station is minor, but obstruction to the view is the largest due to the thickest roof and the wall around the ticket gate. However, the roof will protect users from ash fall, etc.	Impact on the surrounding setting	Fair	Plan 2 uses a lighter roofing material than plan 1, and a panel is added at the back to hide the beams, etc. This reduces the adverse impact on the landscape. The roof protects passengers from volcanic ash falls, etc.	Impact on the surrounding setting	Fair	The height of the shelter is lower than plan 2. This reduces the adverse impact on the landscape. However, it will be inconvenient for some users.	Impact on the surrounding setting	Fair	Plan 4 has the least adverse impact on the landscape because there is no shelter. However, this plan cannot protect passengers from volcanic ash falls, etc. Direct sunlight during the summer is especially dangerous.	Impact on the surrounding setting	Fair
	Overall assessment	Fair			Good			Fair			Poor		

Potential plans		Plan 1			Plan 2			Plan 3			Plan 4			Plan 5		
Basic information & comparison items																
Platform exterior walls		Stone slabs (natural stones formed by volcanic eruption)			Cement boards (design finish)			Steel wall panels (Galvanized steel treated with phosphoric acid)			Security fences			No entry fences & greenery		
Reference image of platform exterior walls																
Assessment items	1. Impact on the OUV	Because some of the attributes contributing to the OUV are masonry buildings, the masonry finish on the exterior of the platform could affect the appreciation of OUV if some people confuse what is genuinely heritage.			Concrete slabs, which did not exist in the historical period, are used, but the surface is hammered to make the surface finish, which could be mistaken for stone slabs, which could affect the OUV, as on the left.			The use of steel plates that are not related to the attributes that contribute to the OUV will lead to the train station being finished as a modern workpiece, and the difference from the attributes will be obvious. Therefore, it will not affect the OUV.			The use of off-limits fences, which are not related to the attributes that contribute to OUV, will not affect OUV as in Plan 3.			Same as on the left.		
	2. Impact on associated remains	Since the stone slabs are simply attached to the platform, no excavation or other work is required. Therefore, there will be no impact on related archaeological sites of national or regional significance that exist on the proposed station front square site.			Same as on the left.			Same as on the left.			Although it is necessary to install a foundation for the security fence, the scope of construction is small and will not affect related archaeological sites of national or regional significance that exist in the proposed station front square site.			Same as on the left.		
	3. Impact on the surrounding setting (views and landscapes)	Since it will be made up to the same height as the platform, it will be the same height as the existing sea wall behind it. Therefore, there will be no obstruction to the landscape, and there will be no impact on the views and landscapes.			Same as on the left.			Same as on the left.			Since only the security fence will be installed, the inner space of the platform will not change from its bare state. Since this station is planned to be unmanned, trash and weeds in the inner space will be visible to users and may affect the view and landscapes.			In contrast to Proposal 4, greening will reduce the impact on the scenic view. However, since this station is planned to be unmanned, day-to-day maintenance is difficult, and if the plants die, the situation could be similar to Plan 4.		
Impact assessment	Individual assessment	The use of the same stone material as the site attributes may have an impact on the OUV because the train station could be mistaken for an attribute. There are no other impacts to the associated remains or landscape.	Impact on the OUV	Fair	Reduced impact on OUV compared to Plan 1. There are no other impacts to associated remains or landscaping.	Impact on the OUV	Fair	The use of steel plates will have no impact on the OUV because the difference between the train station and the attributes will be obvious. No other impact on the associated remains or landscape.	Impact on the OUV	Good	As with Plan 3, there would be no impact to OUV and no impact to associated remains. However, weeds and debris entering the platform inner space would enter the landscape and could impact the view.	Impact on the OUV	Good	In contrast to Proposal 4, greening can reduce the impact on the scenic view. However, if daily maintenance is difficult and greening cannot be maintained, the situation would be the same as Plan 4.	Impact on the OUV	Good
			Impact on associated remains	Good		Impact on associated remains	Good		Impact on associated remains	Good		Impact on associated remains	Good		Impact on associated remains	Good
			Impact on the surrounding setting	Good		Impact on the surrounding setting	Good		Impact on the surrounding setting	Good		Impact on the surrounding setting	Poor		Impact on the surrounding setting	Poor
	Overall assessment	Poor			Fair			Good			Poor			Poor		

Potential plans		Plan 1		Plan 2	
Basic information & comparison items					
Reference image of station front square					
Proposed development plan of station front square					
Assessment items	1. Impact on the attributes and setting (views and landscapes)	This plan envisions a simple garden overlooking Kinko Bay and the grand Sakurajima. The slope in the square has a curved design. This acts as a passage to the station. The square will be built inside the buffer zone of the World Heritage site, therefore features a simple design intended for only people to pass through and is equipped with a facility that only serves as a passage to avoid disturbing the surrounding landscape. The height of the station front square will be less than the height of the platform and less than the existing sea wall behind it, so the existing landscape will not be disturbed.		The square will be built inside the buffer zone of the World Heritage site, therefore will have minimum function to avoid disturbing the surrounding landscape. The ground alone will be covered with greenery, and the slope will be built as a general concrete structure to keep to a bare minimum. As a result, this creates an open space. The height of the station front square will be less than the height of the platform and less than the existing sea wall behind it, so the existing landscape will not be further disturbed.	
	2. Impact on associated remains	The station front square itself will be a facility for human use only, with no vehicular access, so there will be no impact on related archaeological sites of national or regional significance that exist underground. In addition, since the square will be constructed with fill, there will be no impact on related archaeological sites of national or regional significance.		The station front square itself will be a facility for human use only, with no vehicular access, so there will be no impact on related archaeological sites of national or regional significance that exist underground. However, excavation and other construction work will be required to install the concrete structures that make up the ramp, which may affect archaeological sites of national or regional significance.	
Impact assessment	Individual assessment	The height of the station front square will be less than the height of the platform, and therefore, there will be no impact on the landscape. In addition, since the station front square will be composed of embankment, there will be no impact on the associated remains that exist underground.	Impact on the attributes and setting Good Impact on associated remains Good	In contrast to Plan 1, there is a potential impact on an associated remains because the foundation of the structure comprising the ramp would have to be placed in the ground.	Impact on the attributes and setting Good Impact on associated remains Poor
	Overall assessment	Good		Poor	

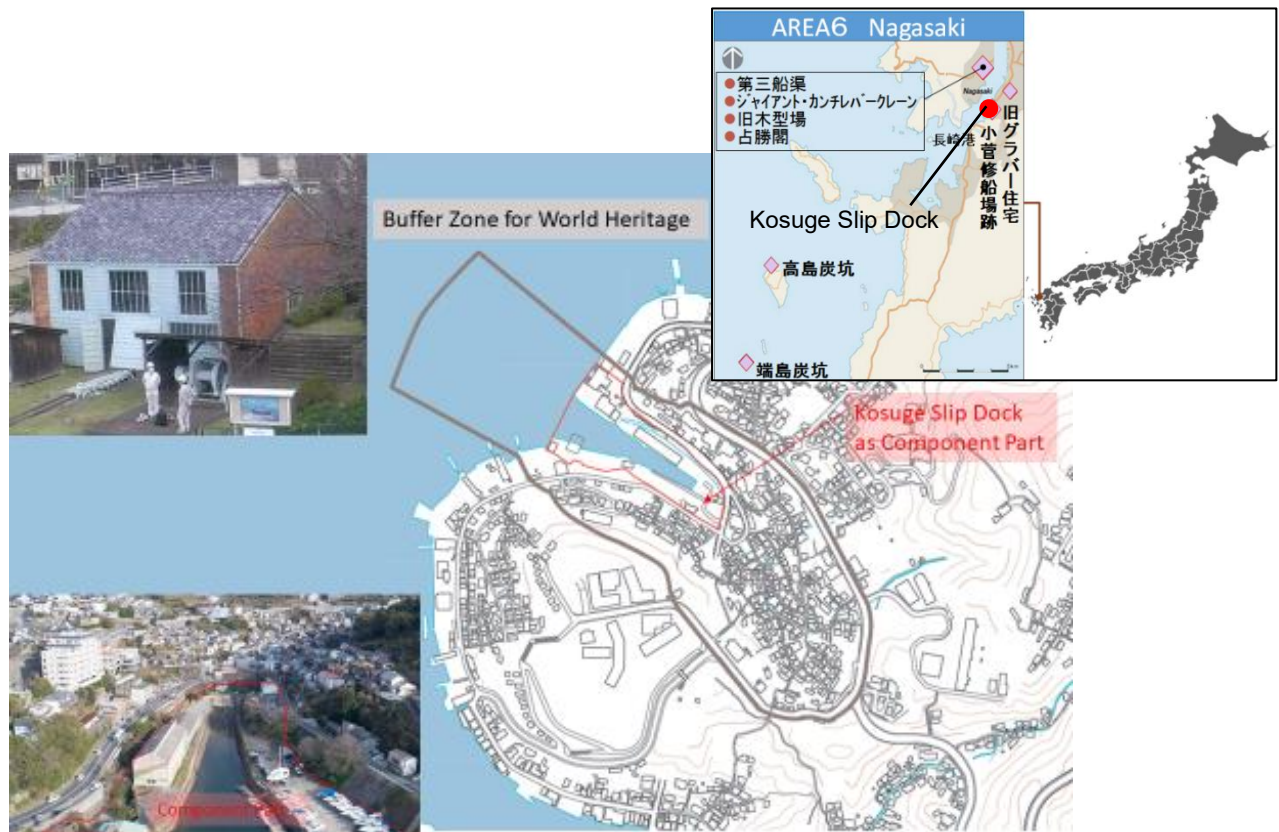
Report on the Kosuge Slip Dock Preservation and Maintenance Work**1 Current status of Kosuge Slip Dock****(1) Introduction**

Kosuge Slip Dock, which is one of the constituent assets of the World Cultural Heritage Sites of Japan's Meiji Industrial Revolution Iron and Steel, Shipbuilding and Coal Mining, will be preserved and maintained based on the CMP.

The attributes that contribute to the OUV of the Kosuge Slip Dock are the elements of intact masonry-faced quays, wharfs and slip dock elements including rails and the brick and timber hauling hut containing original winch, steam engine and boiler. These should be conserved properly.

In 2018, we conducted a seismic diagnosis of the hauling hut, and found that the hauling hut lacked adequate aseismic performance, and that countermeasure construction was necessary. This report presents the results of the diagnosis and the review process of countermeasure construction methods based on the results of the diagnosis. This process paid careful regard to the OUV of the site and the potential impacts of the proposed works, in order to address significant conservation issues as well as protect OUV.

During the study, we held several discussions with the Agency for Cultural Affairs, the Cabinet Secretariat, Nagasaki Prefecture/City, and domestic experts.



(2) Earthquake risk

The hauling hut (brick wall) was built in 1868, so it was not built according to the modern seismic design concept.

Nagasaki Prefecture is an area with a low possibility of a large-scale earthquake even in Japan, which is an earthquake-prone country. However, according to the Earthquake Hazard Station (National Research Institute for Earth Science and Disaster Resilience), as shown in Table 1, even in the vicinity of the Kosuge Slip Dock, there is a 69.5% probability of seismic intensity 5-lower or higher in the next 30 years, and for seismic intensity 5-upper or higher the probability is 29.2%, for seismic intensity 6-lower or more the probability is 9.6%, and for seismic intensity 6-strong (large-scale earthquake) or more, the probability is 2.5%.

Therefore, it is possible that the hauling hut, which is an attribute that contributes to OUV, may collapse and, in the process, damage the boiler and hauling machinery inside the building when an earthquake occurs, so it is necessary to improve earthquake resistance.

Table-1 Probability of possible earthquakes in the next 30 years
near the site of Kosuge Slip Dock

large-scale earthquake	Earthquake intensity	Situation of shaking	Probability
	Seismic intensity 5 lower or more	Unsecured furniture may move, and unstable items may topple over.	69.5%
	Seismic intensity 5 upper or more	Brick walls that are not reinforced may collapse.	29.2%
	Seismic intensity 6 lower or more	In wooden buildings with low earthquake resistance, roof tiles may fall and the building may tilt. Some fall.	9.6%
	Seismic intensity 6 upper or more	Wooden buildings with low earthquake resistance tend to lean or collapse.	2.5%

(3) Setting seismic performance targets

Historically, there are countless buildings that have collapsed due to earthquakes, and many buildings have been damaged by earthquakes in recent years. Therefore, we conducted a seismic diagnosis of the hauling hut and confirmed its seismic performance.

In examining the seismic diagnosis and the seismic performance targets for the hauling hut, we examined the level that would be the minimum necessary intervention from the viewpoint of preserving the value of the World Heritage Site. The examination was conducted based on the Agency for Cultural Affairs' "Important Cultural Properties (Buildings) Earthquake Resistance Diagnosis Guideline" and implementation guidelines.

In order to protect the hauling hut and the hauling machinery inside the building, which are attributes that contribute to OUV, it is necessary to prevent the hauling hut from collapsing. Therefore, the level of restoration as a Cultural property building (recoverable level), which may collapse in the event of the largest possible earthquake, in Table 2 is not sufficient.

For this reason, the level was set so that it would not collapse in the event of the largest possible earthquake (safety assurance level).

Note that "the largest possible earthquake" means the largest possible earthquake on the site of a building. Based on the earthquake risk mentioned above, a large-scale earthquake with a seismic intensity of upper 6 or higher is assumed.

Table 2 Required level of seismic performance
for cultural property buildings

level		explanation
adoption	high	Function maintenance level
		A level that can maintain functions in the assumed largest earthquake
		Safety assurance level
		A level that does not collapse in the assumed largest earthquake.
	low	Restorable level
		A level that collapse in the assumed largest earthquake, but can be restored as a cultural property building. (When judging that the main cultural property value will not be lost even if the cultural property building collapses.)

(4) Seismic diagnosis result

As a result of conducting a seismic diagnosis, it was found that the brick walls of the hauling hut were likely to be deformed greatly when force was applied during a large earthquake. In particular, it was found that the brick walls on the south and north sides are likely to be damaged due to extensive deformation during a large-scale earthquake.

Figure 2 shows an example of analysis results of seismic diagnosis.

It shows the amount of deformation when a seismic force is applied in the X direction. The parts shown in red and yellow show particularly large deformation, and it can be seen that the risk of deformation is high for the brick walls on the south and north sides. It was diagnosed that there is a high possibility that this deformation will spread to the entire building and lead to damage.

The main reasons why the hauling hut is likely to be severely damaged during an earthquake are that the structure is masonry and that it has a large opening on the west side, with damage especially likely in the brick walls on the south and north sides. It is thought that the original structural problem such as the fact that force is easily applied is a major factor.

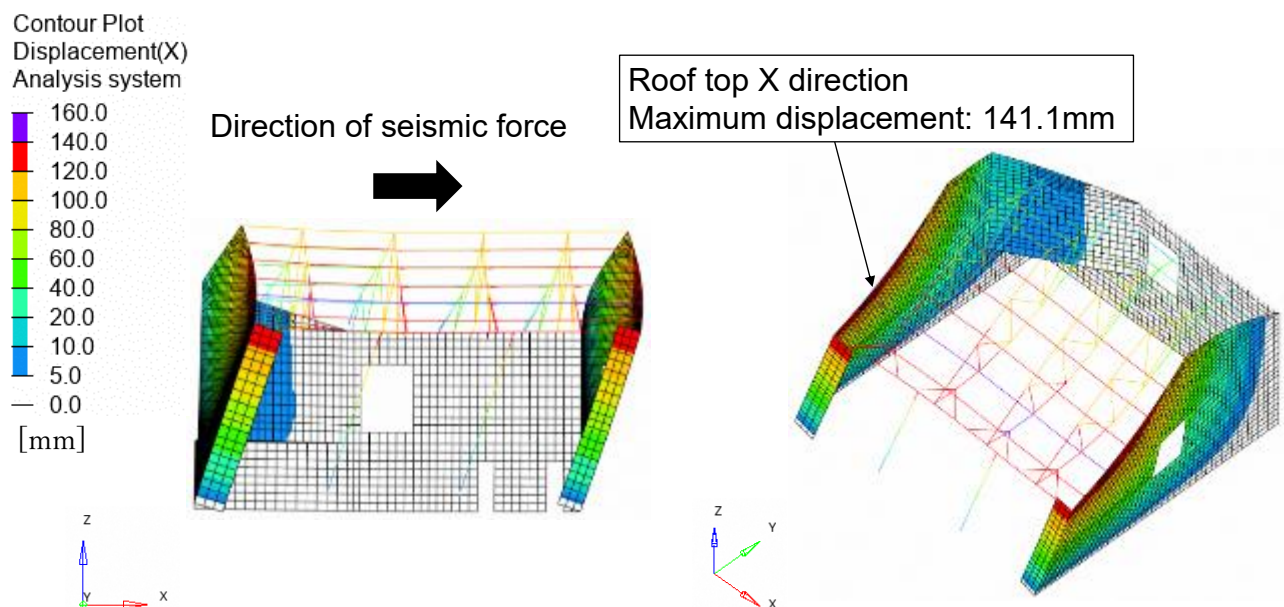


Figure-2 Deformation state during an earthquake
(in the case of the X direction)

(5) Impact on attributes contributing to OUV and necessity of countermeasure construction

As mentioned above, the hauling hut has been diagnosed as being potentially severely damaged during large earthquakes, and should an earthquake occur, the hauling hut, an attribute that contributes to OUV, may collapse. Also, collapsing brick walls, pillars, beams, etc. of buildings may cause significant damage to the hauling machinery (steam engines, boilers, etc.), which are also attributes.

In order to prevent adverse impacts on attributes that contribute to OUV, it was decided that it was necessary to take measures including seismic reinforcement.

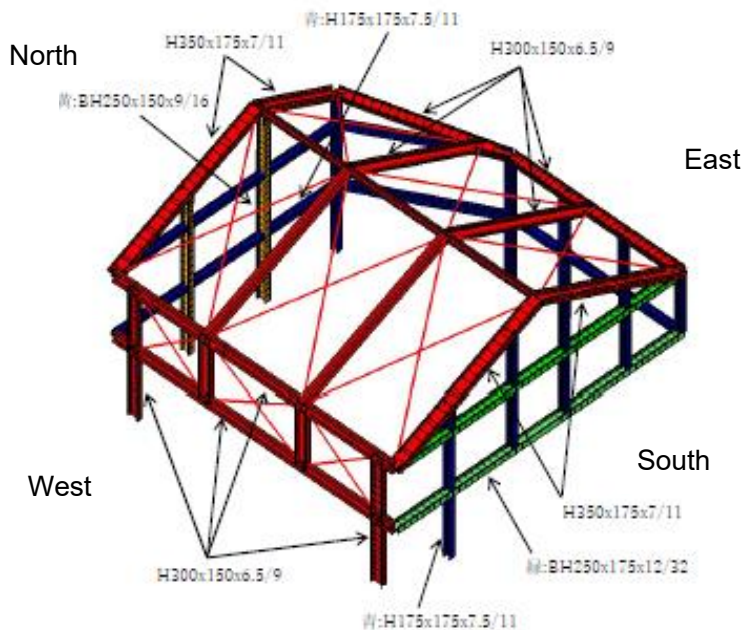
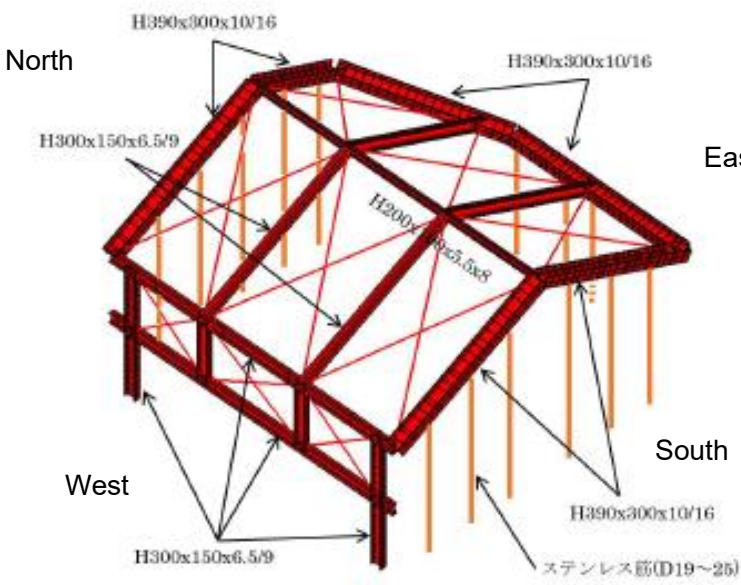
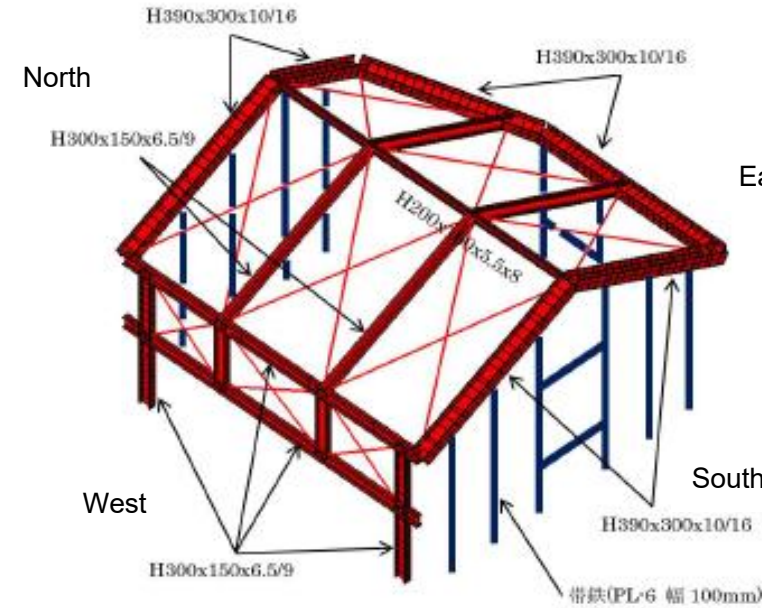
2 Consideration of countermeasures

(1) Seismic reinforcement

① Comparative examination of construction plans

As a reinforcement method to meet the seismic performance target "safety assurance level", three plans were considered: Plan A: Reinforce the inside of the hut with a steel frame; Plan B: Plan to insert stainless steel bars into the brick wall; and Plan C: Wrapping steel bands around the inside and outside of the hut to reinforce it. In the study, we compared the impact on attributes that contribute to OUV, reversibility, and visual impact (Table 3).

Table-3 Comparison of reinforcement construction methods

	Plan A (reinforcing the inside of the hut with a full steel frame)		Plan B (inserting stainless steel bars into the brick wall)		Plan C (reinforcing the inside and outside of the hut with a band)		
Reinforcement plan image							
Reinforcement policy	A plan to receive the seismic force in the out-of-plane direction with a reinforced steel frame. A steel frame suppresses the deformation of bricks and prevents the bricks from bending and breaking. The out-of-plane bending strength of the brick wall is borne only in the horizontal direction, and the force is transferred to the steel frame.		By inserting stainless steel bars into the brick wall to add tensile strength, the bending strength of the brick wall is increased.		The bending strength of the brick wall body itself is increased by sandwiching the brick wall with steel straps to add tensile strength.		
Supplement	The steel frame members and bricks are joined with Post-constructed anchors. Since it is difficult to reinforce the boiler side (southern inner wall surface), partial damage will occur, but the steel frame will prevent total collapse.		Use D19-25 stainless steel. In order to insert the rebar, it is necessary to drill a hole approximately 50 to 70 mm in diameter from the top of the brick.		The band iron is 100mm wide and 6mm thick. In order to insert the through bolt, it is necessary to drill a hole with a diameter of 20 mm. Similar to plan A, there is a possibility that the inner wall of the boiler will be partially damaged.		
Visual impact	○	The exterior is almost unchanged, but the steel frame is exposed inside.	◎	The exterior and interior are unchanged.		△	Belt iron materials are exposed both in the exterior and interior.
Reversibility	○	The steel frame is relatively easy to remove, but the Post-constructed anchor remains inside the brick wall.	△	The inserted stainless steel bar cannot be pulled out.		○	Removing the strap material is relatively easy, but the inserted bolt cannot be pulled out.
Reinforcing effect	△	Since there are places where the brick walls themselves cannot be reinforced, there is a high possibility that the bricks will be partially damaged.	○	It is possible to increase the tensile strength by inserting stainless steel bars.		○	It is possible to increase the tensile strength by using a steel band material.
Impact on attributes	○	The area affected by the anchor on the brick wall is about 0.32m2 in surface area and about 0.06m3 in volume, and the area affected by grout injection is about 18.75m2 in surface area. There is also an impact on the boiler remains due to the installation of the foundation.	△	The range of impact on the brick wall by inserting the stainless steel bar is 0.02m2 in surface area and 0.11m3 in volume.		○	The area affected by bolt insertion on the brick wall is about 0.13m2 in surface area and about 0.05m3 in volume, and the area affected by grouting is about 12.83m2 in surface area.
Construction problems	Increase the number of the Post- constructed anchors.		It is necessary to confirm the effectiveness of the construction method for konnyaku bricks by conducting bending tests, etc.		It is difficult to attach steel straps to the inner wall of the boiler, and it is necessary to install only the outer wall with post-constructed anchors.		
Common subject matter	Regarding the tensile strength of the Post-construction anchor, a strength test has been conducted with konnyaku bricks of the same age as the hoisting machine shed on the premises of Mitsubishi Heavy Industries.						

Plan A: Reinforcing the inside of the hut with a steel frame

In plan A, it is necessary to join the steel frame and the brick wall, but it is possible to limit the impact on the bricks by, for example, placing the connections in the center of the mortar joints, and the effect on the appearance can be almost eliminated, so it is adopted.

However, since the steel frame is exposed inside, we examined how to reduce the size of the steel frame in consideration of the appearance of the interior.

Plan B: Inserting stainless steel bars into the brick wall

Plan B does not show reinforcement on the outside and inside from a design standpoint, but because it is necessary to drill holes in the important konnyaku bricks and insert reinforcing materials inside the brick wall, there is a lot of brick loss.

For OUV, it is important that the attributes remain in their original form. This also impacts on National significance, as this is the oldest European-style brick building surviving in Japan. Hence Plan B was not adopted because the impact on the bricks through drilling and insertion of the bars is too great.

Plan C: Reinforcing the inside and outside of the hut with a band

In Plan C it would be necessary to attach steel belts to the outside and inside of the hut, and since the iron plates are visible on the exterior and interior, it has a significant impact on the appearance of the building, so it was not adopted.

② Examination of reducing the steel frame of plan A

The original design was re-examined, and it was determined that lighter steel members would provide the necessary degree of seismic performance. As a result it was assessed that the minimum necessary size of the steel frame could be reduced from the original 300 mm wide (red), to 244 mm wide (green).

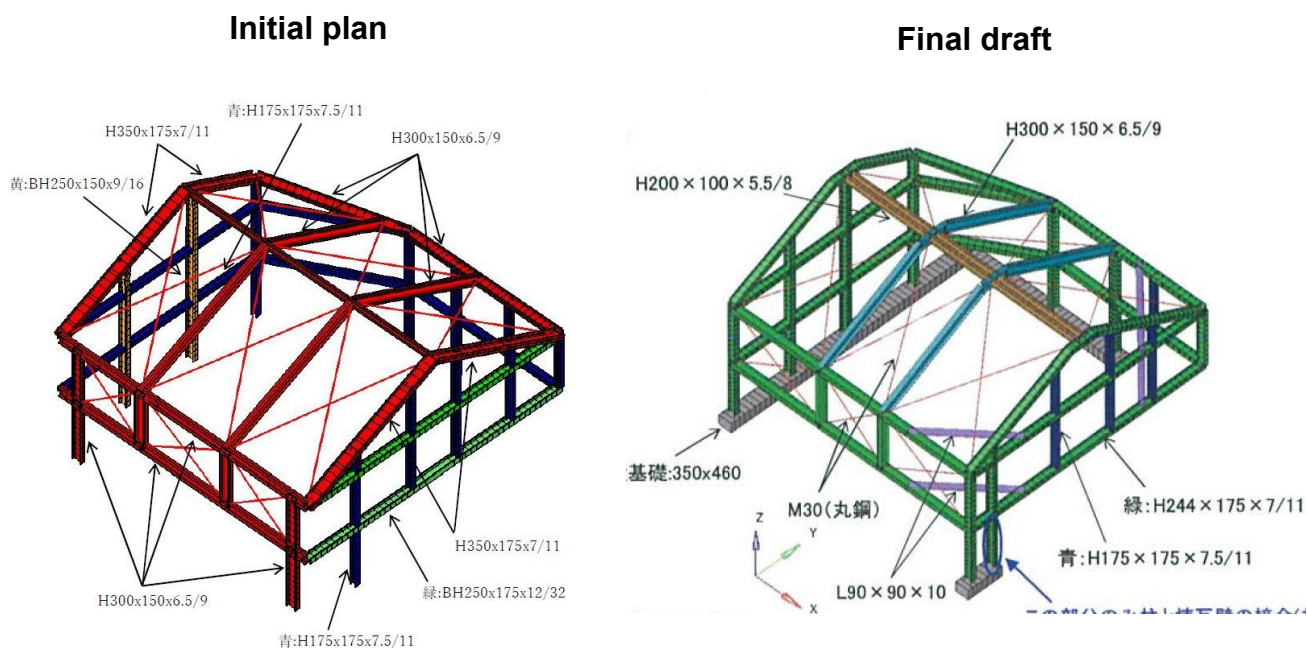


Figure-3 Reinforcing steel frame size comparison

It has been confirmed that the deformation that leads to damage during an earthquake can be suppressed if the seismic reinforcement of Plan A is carried out.

Figure 4 shows an example of analysis results after seismic reinforcement.

Before reinforcement, when seismic force was applied in the X direction, the brick walls on the south and north sides were shown in red and yellow, indicating that they would deform greatly. However, after seismic reinforcement, it is shown in blue even at the maximum, and it is confirmed that the reinforcement can suppress deformation due to a large earthquake.

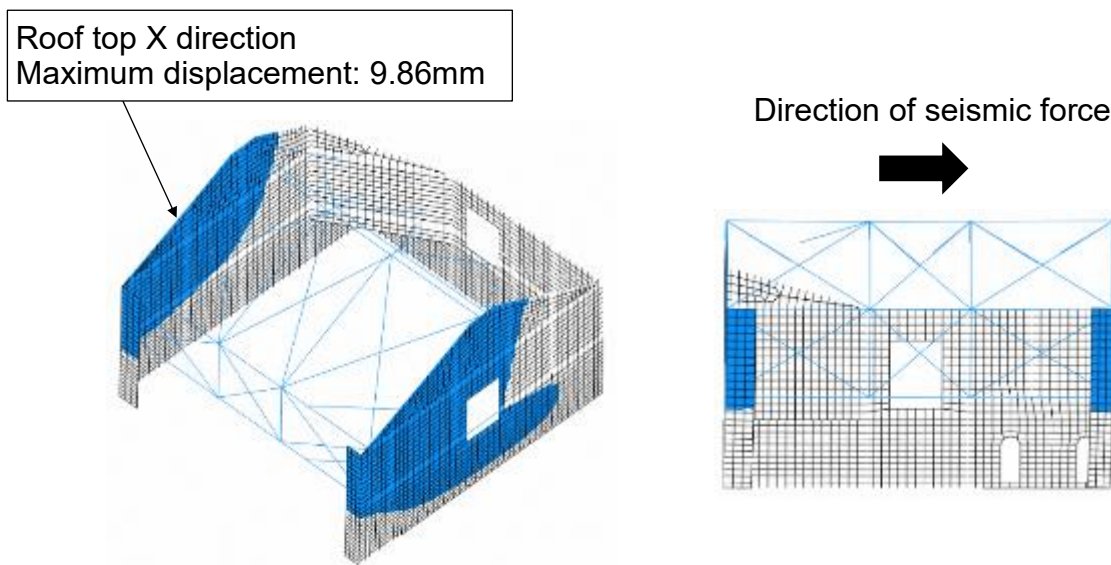


Figure-4 Deformation during an earthquake after seismic reinforcement (X direction)

- (2) Repairing cracks in brick walls (countermeasures against penetrating cracks in the outer wall on the east side)

Since the seismic diagnosis is performed on the assumption that the walls are all sound, if there are cracks in the existing walls, they will need to be repaired. If repairs are not carried out, the force will not be evenly distributed to the wall during an earthquake, and there is a possibility that the brick wall will collapse.

In determining the repair method, we compared three plans: plan a (injection method of filling cracks), plan b (inserting reinforced aramid rods), and plan c (partially re-laying bricks).

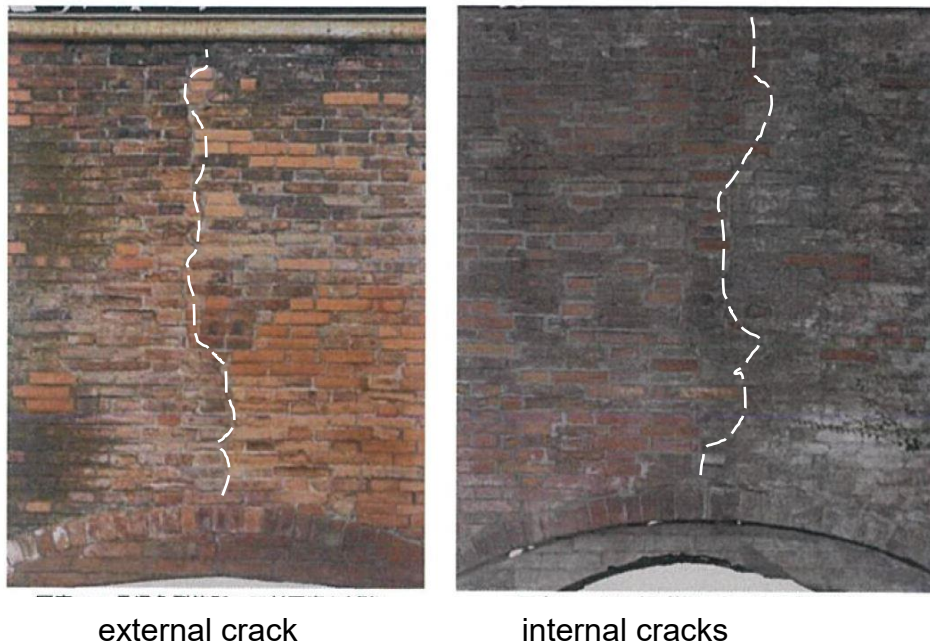

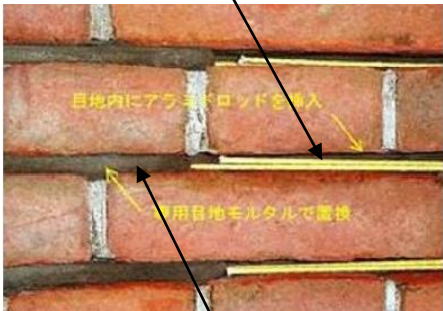


Figure-5 Current condition of the east face of the brick wall

Table-4 Comparison of crack repair methods

	Plan a	Plan b
Method	Crack injection method Inject inorganic injection material	Insert aramid rod into existing joint
Construction method image	 <p>Example of reinforced concrete wall</p>	<p>Insert an aramid rod into the joint</p>  <p>Replace with dedicated joint mortar</p>
Construction method overview	The cracked part is sealed so that the injection material does not leak, and an inorganic filler such as fine particle polymer cement is injected from the injection jig installed in the joint part.	By removing the existing joint mortar near the crack (only the horizontal joint that is perpendicular to the crack) and inserting a straight aramid rod with a diameter of about 2.7 mm, the integrity of the bricks on both sides of the crack is secured.

Plan a (Injection method of cracked material)

By adding an inorganic filler similar to the existing joint filler to the cracked part, the gap can be filled and the crack can be eliminated. However, there is a possibility that the filler will enter into gaps other than the cracks, making it difficult to construct and causing unnecessary effects, so it was not adopted.

Plan b (Aramid rod reinforcement)

Insert an aramid rod into the joint to prevent the crack from spreading further. Although some of the brick jointing mortar will be lost, the brick itself will not be affected, and construction is possible. In order to stop cracks, plan b was adopted.

Plan c (Partial re-laying of bricks)

The original brick walls are one of the attributes, and unnecessary dismantling and re-laying of the brick work is not desirable, and impacts on authenticity. It was judged that this would impair the value of the World Heritage site and was rejected.

(3) Drainage measures

There are places inside and outside the hut where rainwater and groundwater accumulate, affecting the brick walls, gears inside the pit, and boiler preservation, which are attributes that contribute to OUV. Therefore, it is necessary to control external drainage and prevent ingress of water into the hauling hut. Water ingress occurs from multiple directions, and the cause is not yet clearly understood. Therefore, we considered a step-by-step approach to drainage control to clarify and possibly solve the problem in the least intrusive way.

It has been confirmed that one of the routes of water ingress is flowing in from the south side of the hauling hut. Therefore, first, measures to prevent water ingress outside the building were examined.

Figure 6 shows the current accumulated water condition of the hauling hut.

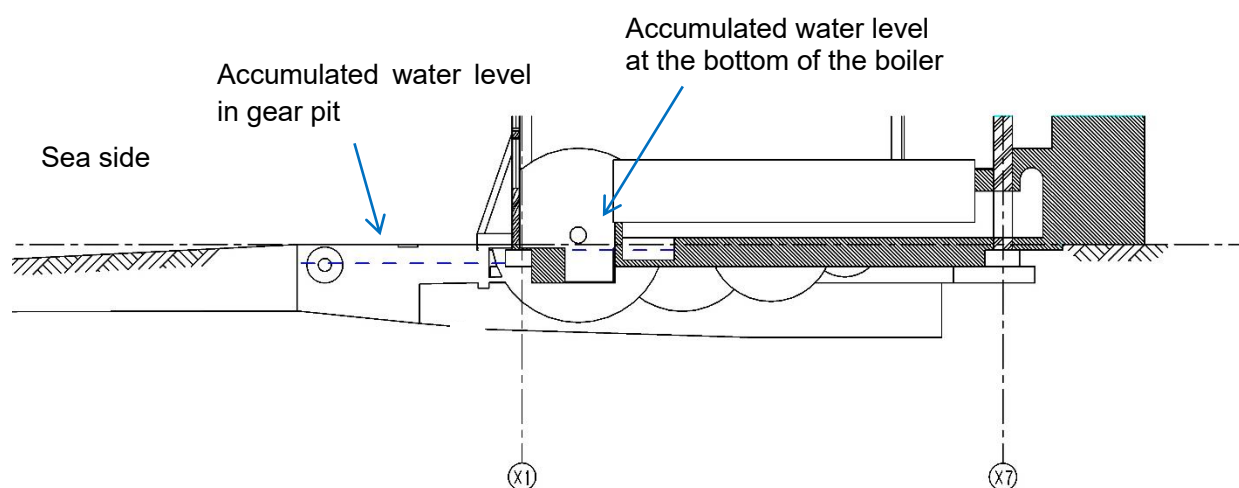


Figure-6 Current accumulated water situation in the hauling hut

After the consideration of several options to directly drain the internal engine pit, it was decided to first improve external drainage, and monitor if that work reduced or stopped the flow of water into the hauling hut, particularly from the southern side.

If water ingress into the building continues, then options to drain the internal engine pit will be considered. These options may involve drilling drainage pipes through original fabric, so all options to avoid such intervention will be tested and monitored.

The currently proposed works are as follows: On the south side of the hauling hut a drainage pipe would be laid in a drainage ditch that guides water above the level of the existing foundations and the drainage pipe is extended in the direction of the sea. The location of the drainage pipe adjacent to the hut wall

and down the slip way to the sea will be decided and constructed after archaeological testing and supervision to confirm that there would be no impact on the underground remains.

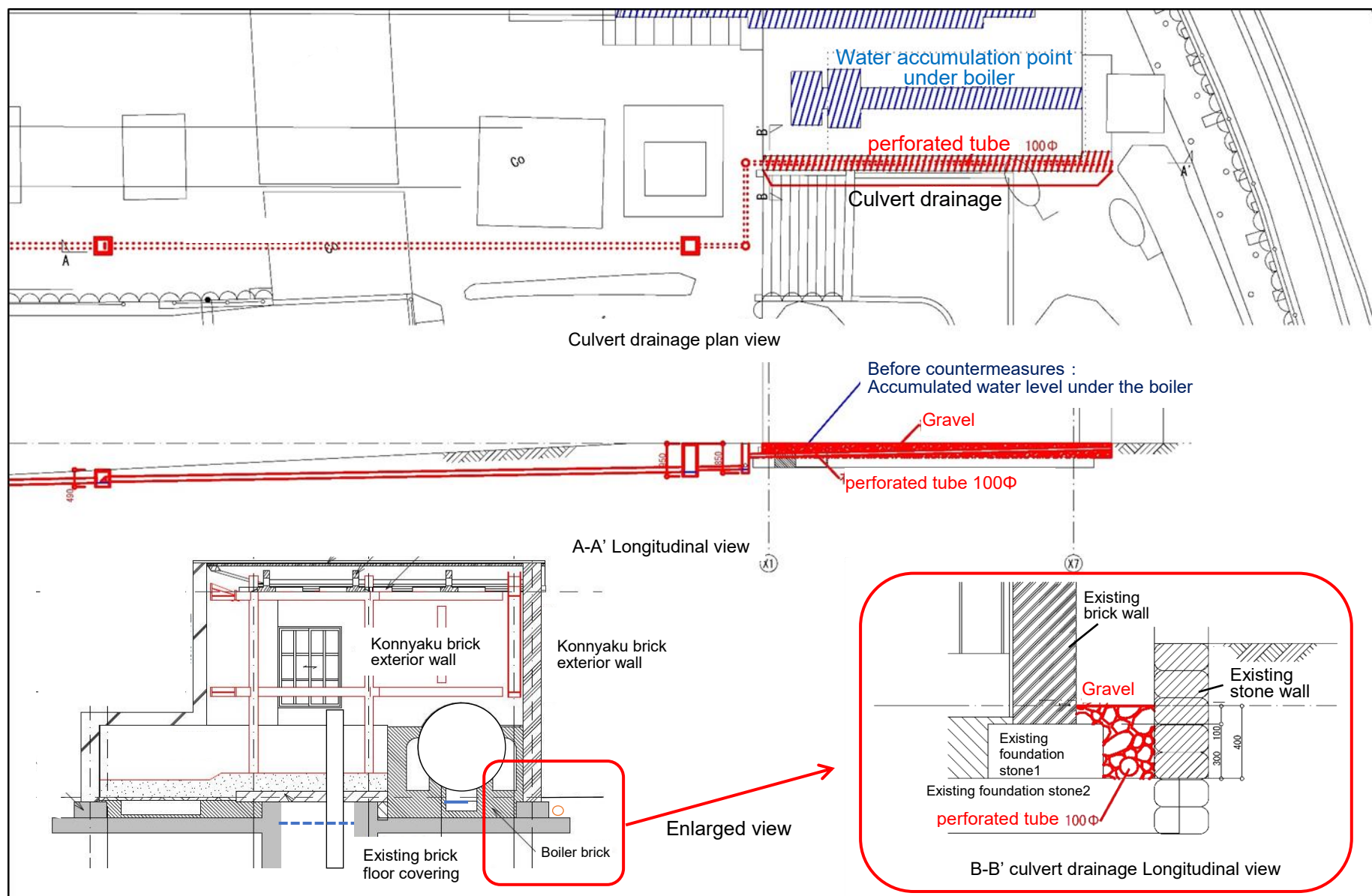


Figure-7 Drainage measures to be implemented this time

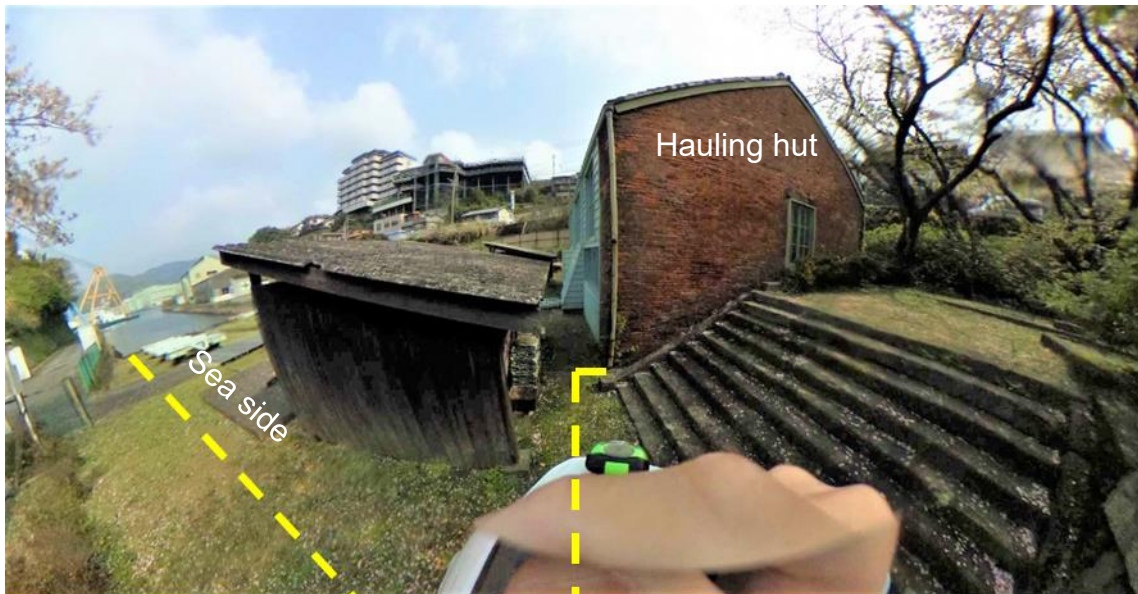


Figure-8 Drainage route

3 Assessment of impact on OUV by seismic reinforcement

The design of the proposed works has been undertaken in parallel with the screening process. The heritage values of the site have informed the design, and there has been an iterative process seeking to both address significant conservation issues as well as protect OUV. As demonstrated in this report, various options have been considered in order to determine the best possible conservation outcome, including the minimization of impacts. The process has also involved external expert review.

By implementing the necessary seismic reinforcement, it is possible to prevent damage to the boiler and the hauling machinery due to the collapse of the hauling hut, which is one of the attributes. And the adverse impact on OUV can be avoided.

The new seismic reinforcement will be a very visible new element inside the haulage hut, and efforts have been made to minimise that impact. It should also be noted this work is reversible, should circumstances or superior and less visible reinforcement techniques become available.













In addition, when considering the construction method, as mentioned above, in order to keep the impact on OUV to a minimum, we considered the optimal option from multiple options.

4 Phased drainage measures and monitoring

The drainage measures to be implemented this time will be implemented by selecting the minimum necessary measures that do not affect the remains, and the effects of these measures will be continuously monitored.

If further measures are required as a result of monitoring, coordinate with relevant organizations as necessary and consider measures to avoid impacts on OUV.

5 Construction schedule (planned)

Component	Element	Counterplan	2022	2023	2024
Hauling hut	Hauling hut	Drainage			Monitoring Consider the next measures depending on the situation
		Seismic reinforcement	Scheduled for December		
		Brick coservation	Scheduled for December		Consider the next measures depending on the situation
		Fire protection measures			
Hauling machinery	Boiler, Steam engine, Machine, Pits, Chain	Preservation work			Preparation/Consideration
Slip dock	Rail	Preservation work			Preparation/Consideration
	Ship cradle	Preservation work			
	Ground	Preservation work			Preparation/Consideration
Masonry work remains	Masonry-faced quays	Preservation work			Preparation/Consideration

Revetment construction work at Hashima Coal Mine (Area 6/Component Part 6-7)

Overview

The Hashima Coal Mine, which is one of the World Heritage Sites of Japan's Meiji Industrial Revolution Iron and Steel, Shipbuilding and Coal Mining, will be stabilised and restored based on the "Restoration and Public Utilization Plan" over a period of 30 years from 2018. Maintenance will be carried out at the same time. In the restoration process, priority will be given to protection and conservation of components which are attributes of OUV, such as early revetment remnants and coal production facilities, and physical improvement methods will be taken in stages. The revetment that circles the island and protects the reclaimed land within it from typhoon damage is the top priority, as if the revetment fails the island is at severe risk of substantial damage.

Nagasaki City has so far conducted a survey of the current state of the revetment on Hashima Island, simulated the wave power of the sea area, prioritized the most at-risk sections, and has developed a design for the stabilisation of the revetment, and plans to start construction work in 2023. This document describes the research results and design policy so far. By stabilising the revetment, it will be possible to preserve the remains of coal production facilities from the Meiji era, which are an attribute of OUV, together the Meiji sections of the revetment itself, over the long term. The design policy is being studied with advice from related organizations such as the Ministry of Land, Infrastructure, Transport and Tourism and the Port and Airport Research Institute, a research institute under the jurisdiction of the government.

It is planned to stabilise two small sections of the revetment from late 2023 until 2024 which are in urgent need of attention. The remaining parts of the revetment will be stabilised after 2024 over a period which is likely to take some years.

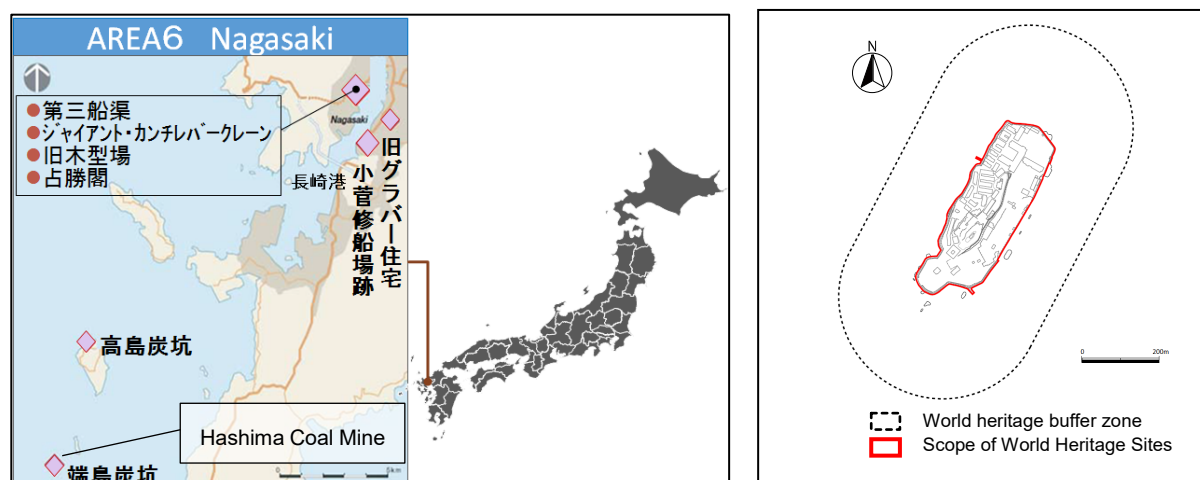


Figure-1 Asset location and planning scope

1 Current status of Hashima revetment

(1) Introduction

Hashima Coal Mine is surrounded by a revetment of about 1.2 km around the island. 48 years have passed since the coal mine closed in 1974 and the island became uninhabited. Reinforced concrete structures on the island and the revetments facing the sea are exposed to the harsh natural environment, including frequent violent typhoons, and have deteriorated to a considerable extent.

The revetment of Hashima protects the remains of the island from high waves and protects the island itself from erosion and collapse. However, since maintenance has not been done for several decades after the coal mine closed, serious deterioration such as cracks in the revetment and hollowing of the foundation have been confirmed, and recent typhoons have become more powerful and the island is threatened by heavy rain, as a result of climate change.



Figure-2 Hashima during a typhoon approaches

The photo below shows Building No. 70 (former Hashima Elementary and Junior High School) on the north side of the island, where the revetment was destroyed by a typhoon in 1991 (Fig. 3). When the revetment collapsed, the earth and sand from the foundation of Building No. 70 flowed out of the island, exposing the foundation piles of the building that were supposed to be buried in the ground, creating a very dangerous situation. In 2018, Nagasaki City carried out emergency construction such as submerged concrete filling, and the situation is now stable (Fig. 4). If such a situation arises again, it could lead to major damage to the island

itself.

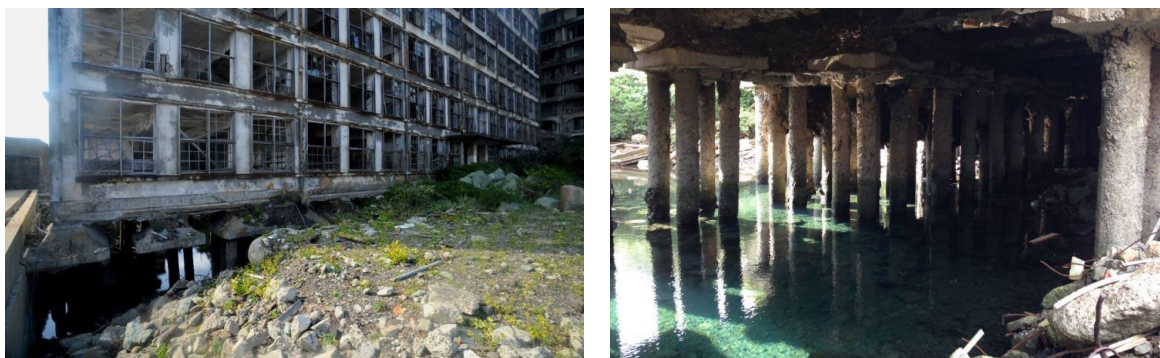


Figure-3 Pictures after the 1991 typhoon destroyed the revetment



Figure-4 Photographs before and after the emergency construction of the damaged area in 1991

For this reason, in order to avoid impacts on OUV, based on the results of a survey of the current state of revetments conducted in fiscal 2021, we decided to implement measures with a high degree of urgency due to particularly significant deterioration. We would like to implement countermeasure construction in two places.

Below, we report on the results of the survey of the current state of the revetment and the review process of the proposed countermeasures.

(2) Revetment condition survey overview

Surveys of the current condition of revetments were conducted in 2015, 2016, and 2021.

Structural calculations were carried out in 2015 and 2016 to determine whether the protruding part of the revetment could withstand waves. As a result, it was found that 80% of the entire revetment could collapse due to the largest wave that could occur in 30 years (Fig. 5).

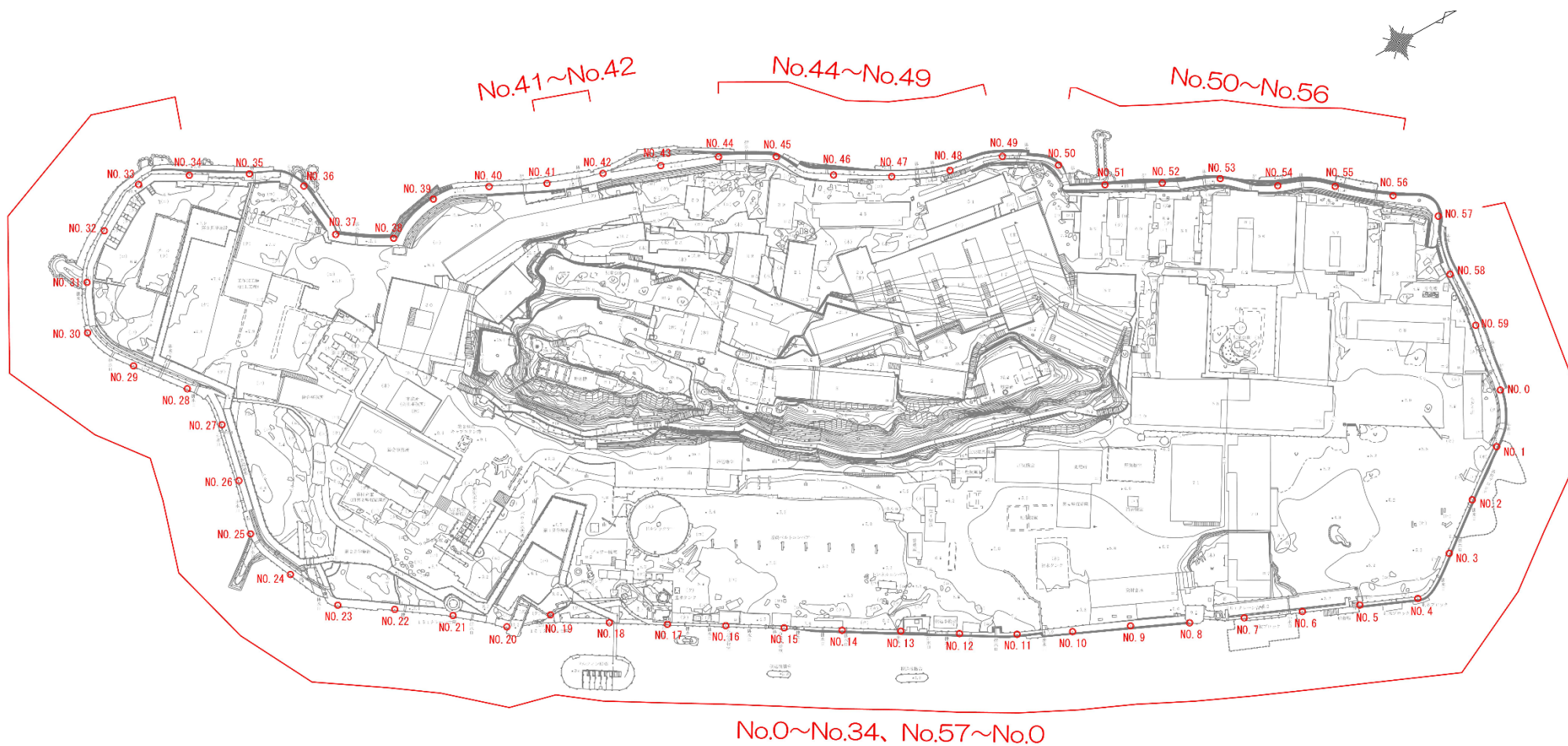


Figure-5 Area with insufficient strength of revetment overhang

In 2021, we investigated the state of deterioration of the revetment based on the inspection items and evaluation criteria created by applying various inspection standards (Table 1).

The survey was divided into 60 spans, with each span approximately 20m long (Fig. 6). The contents of the survey are as follows.

① Onshore visual inspection

The side and crown of the revetment on the land side were visually inspected for damage, and the damage was recorded in diagrams and photographs.

② Maritime visual inspection (inspection by drone)

A drone was used to photograph the sides and crown of the revetment on the sea side, and the damage status was investigated by analyzing the photographs and recorded in the damage diagrams.

③ Dive visual inspection

The base of the levee body of the revetment was visually inspected by divers to investigate the damage status, and the damage diagrams and photographs were recorded.

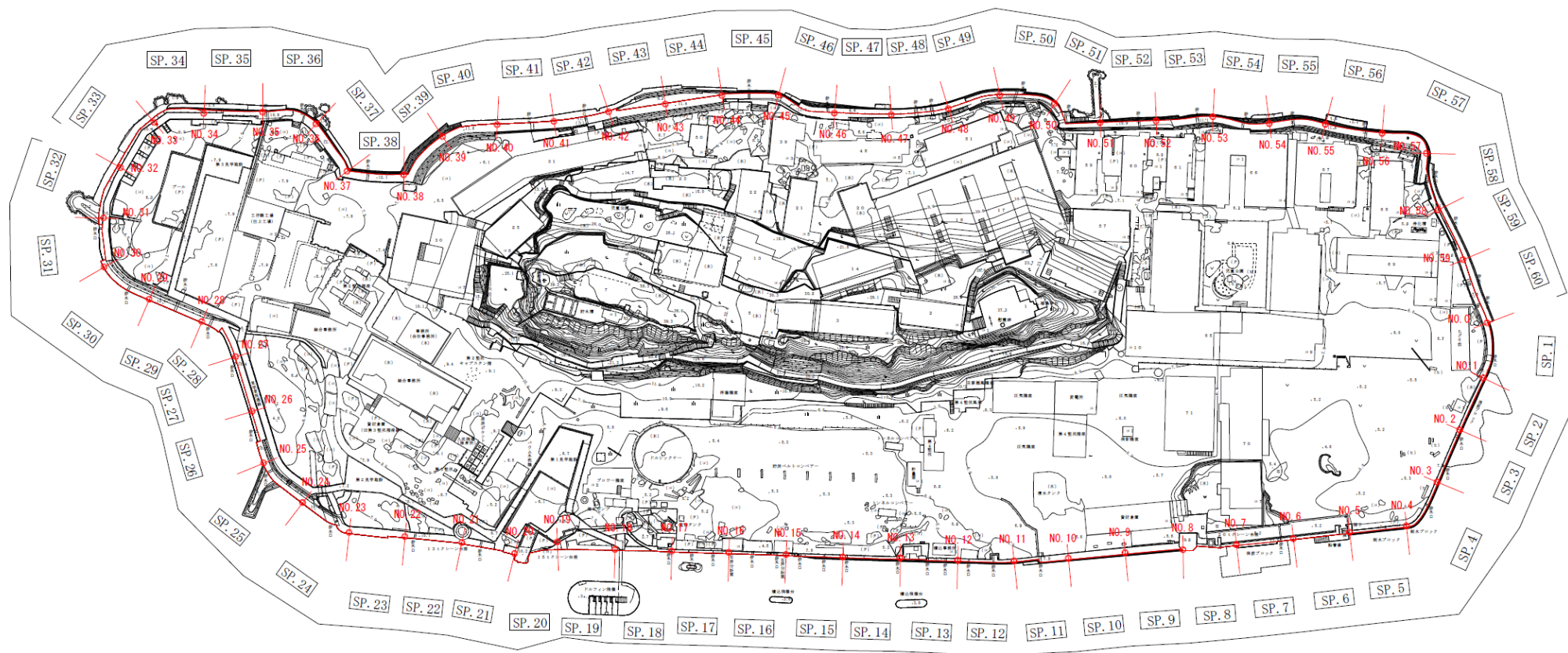


Figure-6 Hashima Revetment Section Map

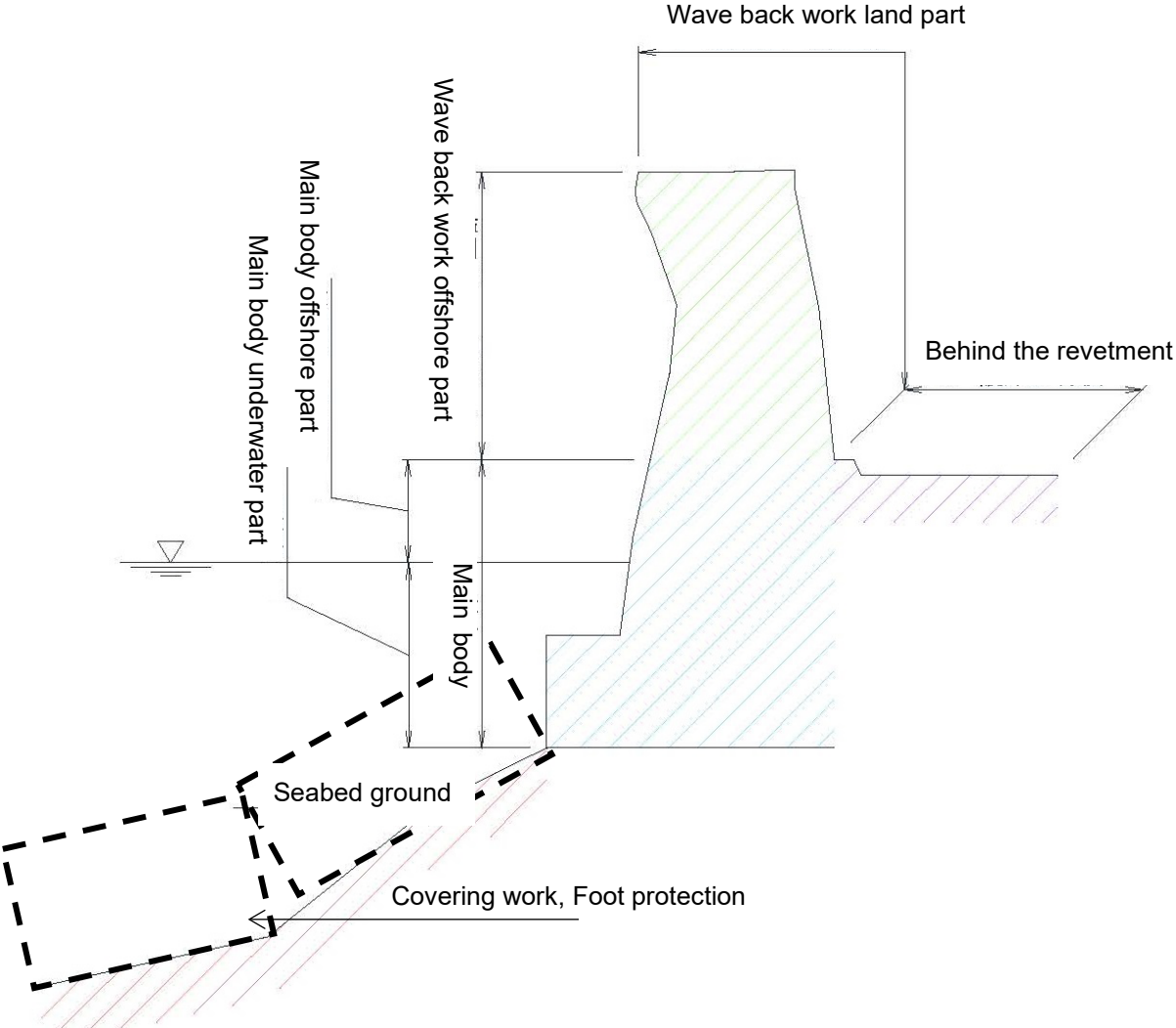


Figure-7 Diagnosis item division chart

Appendix 3-3

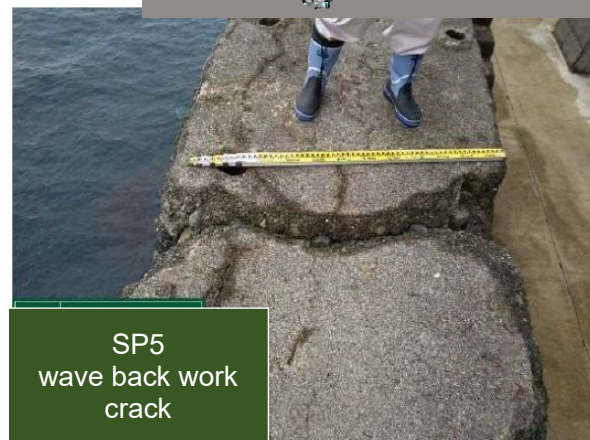
Table-1 List of inspection items and evaluation criteria

style	Classify -cation	Inspection diagnosis items		Inspection method	Evaluation criteria	
General	I	Movement throughout the entire facility		Visual inspection (including measurement with tape measure, etc. Same below) · Amount of movement	a	There is a gap of 20 cm or more between adjacent spans. There is normal deformation that impairs performance.
					b	Deformation of the normal line is observed. There is a gap of about 10 to 20 cm between adjacent spans.
					c	Otherwise, there is a gap of less than 10 cm between adjacent spans.
					d	No deformation.
		Subsidence of entire facility		Visual inspection · Revetment subsidence	a	Significant subsidence (about 1 m) can be confirmed visually.
					b	There is a step of several tens of centimeters between adjacent spans.
					c	There is a step of several centimeters between adjacent spans.
					d	No deformation.
		Behind the revetment/levee or body of the revetment	Sinking, suck out	Visual inspection (places where subsidence, depression, joint displacement, etc. have occurred) · The condition behind the revetment · Open joints and misalignment	a	Sediment is flowing out behind the revetment/levee or from the revetment itself. The ground behind the revetment/levee or the main body of the levee has subsided.
					b	There are significant openings and gaps in revetment joints.
					c	There are slight openings and gaps in revetment joints.
					d	No deformation.
		Wave back work	Concrete deterioration/damage (For unreinforced concrete)	Visual inspection · Cracks, damage, defects · Signs of deterioration, etc.	a	There are indications that sediment is washed away from penetrating cracks. There is a defect of 10% or more in area ratio to the member surface.
					b	There is a defect of less than 10% in area ratio to the member surface.
					c	Although there are penetrating cracks, there is no sign of soil washout. There is a non-penetrating crack with a width of 1 cm or more.
					d	No deformation.
	II	Main body (gravity type) (underwater part)	Concrete deterioration/damage (For unreinforced concrete)	Visual inspection · Cracks, damage, defects · Signs of deterioration, etc.	a	There are defects to the extent that they affect the performance of the breakwater.
					b	There is a crack with a width of 1 cm or more. There is a small defect.
					c	There are cracks less than 1 cm wide
					d	No deformation.
detail	I	main body (gravity type) (underwater part)	Concrete deterioration/damage	Diving survey · Cracks, peeling, damage, defects · Rebars exposure · Signs of deterioration, etc.	a	There are holes, cracks, or defects that allow the filling material to flow out. Extensive rebars are exposed.
					b	There are cracks with a width of about 3 mm in multiple directions.
					c	There is a crack with a width of about 3 mm in one direction. Rebars are exposed locally.
					d	No deformation.
		Foundation	Movement, subsidence, damage	Diving survey · Protrusion to the front, inclination, subsidence · Joint misalignment, steps · Concrete damage	a	Foundation is lost or damaged. Extensive movement or subsidence. There are large gaps and steps in the joints.
					b	Minor displacement or subsidence in foundations. There are small gaps and steps in the joints.
					c	---
					d	No deformation.
		Seabed ground	Scouring, sedimentation	Diving survey, bathymetric survey · Ups and downs of the sea floor · Is it a scouring trend or a sedimentation trend?	a	There is scouring with a depth of 1m or more in front of the slope of the rubble mound. As a result of scouring, the impact on the mound, etc. and the main body of the levee can be seen.
					b	There is scouring with a depth of 0.5m or more and less than 1m in front of the slope of the rubble mound.
					c	There is scouring or sedimentation less than 0.5m deep.
					d	No deformation.
	II	Covering work	Movement, scattering, subsidence	Diving survey, leveling · Deformation of slopes, shoulders, buttocks, etc. · The movement and scattering of stones and blocks	a	There is movement, scattering or subsidence with a damage rate of 5% or more.
					b	There is movement, scattering or subsidence with a damage rate of less than 1-5%.
					c	There is movement, scattering or subsidence with a damage rate of less than 1%.
					d	No deformation.
		Foot protection	Movement, scattering, subsidence	Diving survey, leveling · Deformation of slopes, shoulders, buttocks, etc. · The movement and scattering of stones and blocks	a	There is movement, scattering, or subsidence over a wide area of 50% or more of the inspection unit length.
					b	There is movement and scattering in the range of 10 to 50% or more of the inspection unit length.
					c	There is movement and scattering within a range of less than 10% of the inspection unit length.
					d	No deformation.

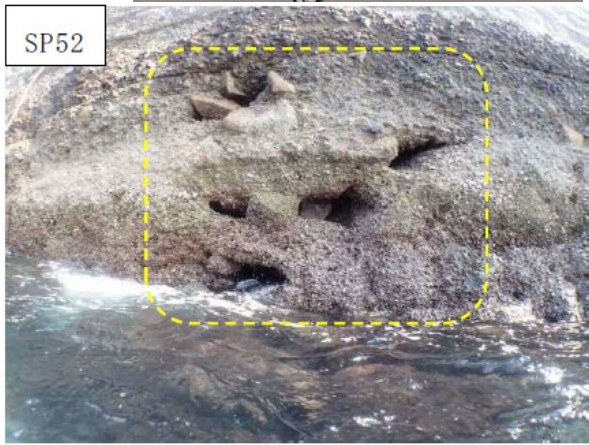
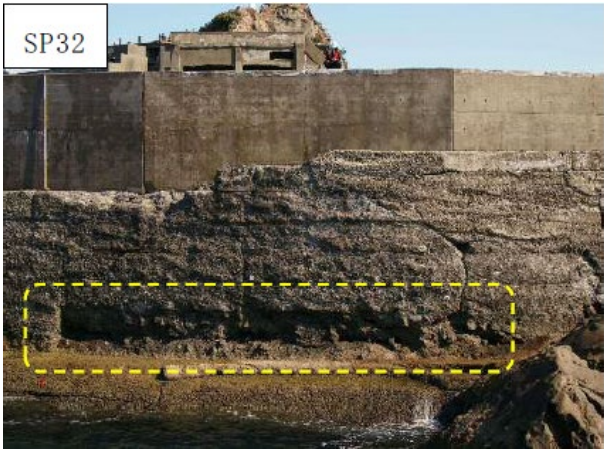
(3) Revetment deterioration survey results

As a result of the investigation, the following deterioration conditions were confirmed.

① Cracks of 10 mm or more in the revetment (Longitudinal cracks, penetrating cracks)



② Defect of revetment



③ Sediment runoff and subsidence behind the revetment



④ Hollowing behind the revetment



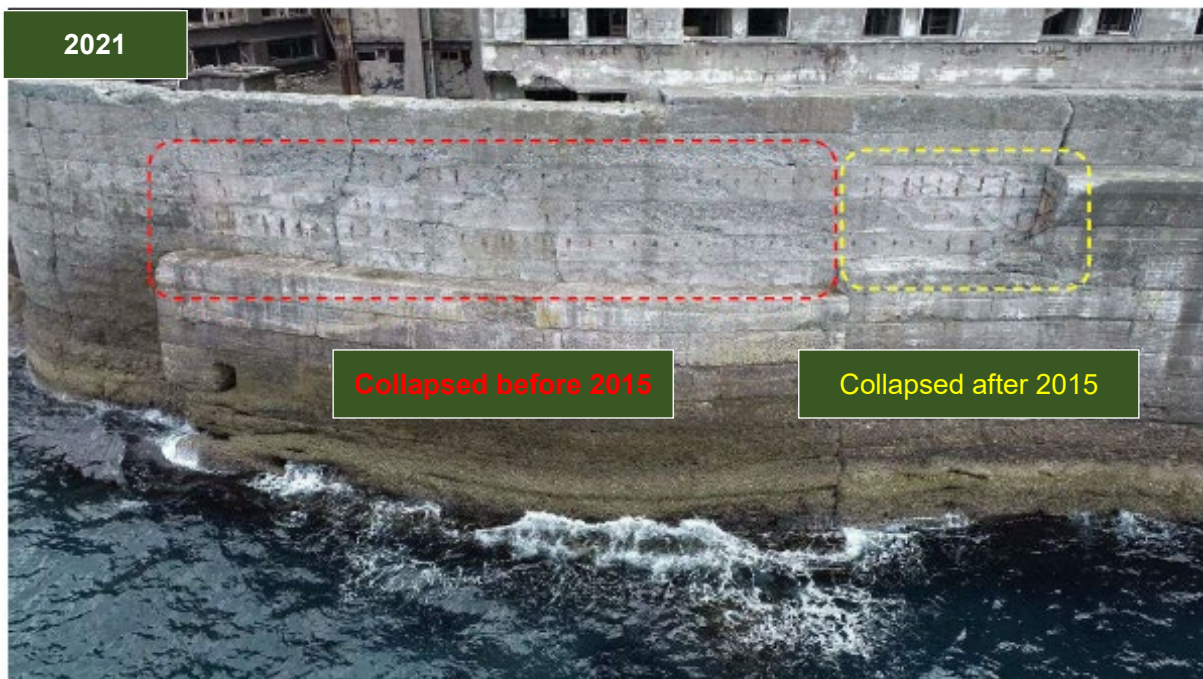
SP53
wave back work
cavity



SP58
wave back work
cavity



⑤ Collapsing/collapse of revetment
(Concrete part that was reinforced
in the past separated and collapsed)



2021

Collapsed before 2015

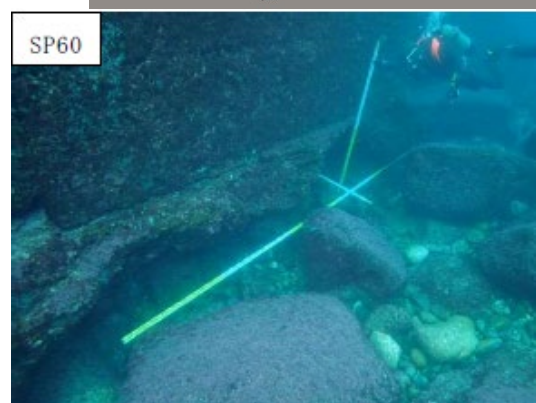
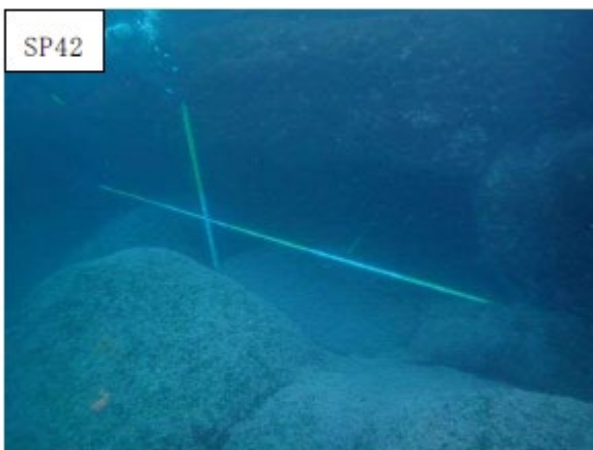
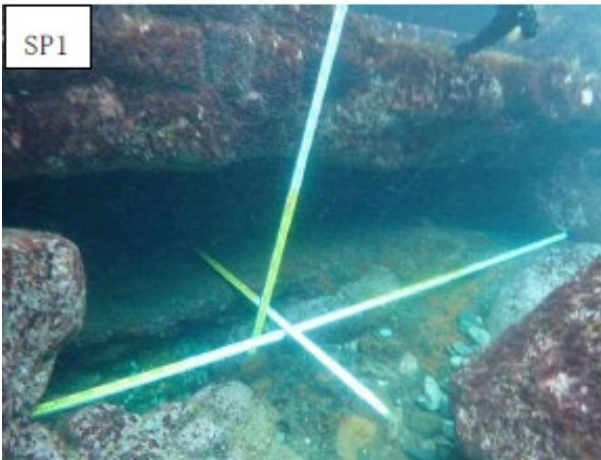
Collapsed after 2015

⑥Inclination, opening, and movement of the revetment

(The original masonry revetment was reinforced with concrete in the past, and the revetment has separated, and the bank body is leaning toward the land.)



⑦Hollowing of the base of the revetment



(4) Maintenance priority

For each span (SP.1 to SP.60), based on "Table-1 List of inspection items and evaluation criteria", an evaluation of the state of revetment deterioration was undertaken and an overall priority was determined.

Based on the priority of maintenance and conservation, the areas judged to require the highest priority maintenance in FY2023 are listed in Figure 8.

The construction sites for FY2023 will be selected from the high-priority A-rank and B1-rank sites. However, SP.4, SP.56, and SP.58 out of the four A-ranked locations require additional ground surveys and a re-examination of the reinforcement cross-section according to the ground structure, before conservation work is possible. On the other hand, work on SP.12 (B1 rank) and SP.49 (A rank) can start in FY2023. Especially in SP.49, penetrating cracks have occurred in the revetment, and the reinforced concrete wall has collapsed. There is also a cavity (5m wide, 2.3m high, 3.2m deep, etc.) at the base of the bank (Fig. 9). Also, in SP.12, two cavities at the foundation of the revetment are connected at the back, reaching 5m at the deepest point (Fig.10). Since both SP.12 and SP.49 are in a critical situation, there is an urgent need to deal with them. SP.50 is also ranked A, but in Hashima, where the weather conditions are harsh, the weather conditions differ between the east and west sides of the island. For the purpose of grasping the impact of, and confirming the extent to which construction can be carried out at one time, we have selected one location each from the east and west sides, and SP.50 is not included in the construction locations for 2023.

Table-2 Criteria for maintenance priority

rank	priority	situation	
A	Highest priority	Locations where B1 and multiple deterioration are observed	
B	Second highest priority	B 1	A hollowing of the foundation of the levee with a depth of 3.0 m or more was observed, and the hollowing of the foundation of the levee may have caused the ground behind the levee to subside.
		B 2	Locations where cavities of 1.0m to 3.0m in depth were found in the base of the revetment.
		B 3	Locations where cavities were found in the base of the revetment with a depth of less than 1.0m.
C	3rd highest priority	The back of the revetment is scoured by overtopping waves. Due to this scouring, the back ground tends to subside, and the lower edge of the covering concrete is floating.	
D	4th highest priority	Places that do not correspond to the above	

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[Legend] Maintenance priority determination

rank	priority
A	highest priority
B	B 1
	B 2
	B 3
C	3rd highest priority
D	4th highest priority

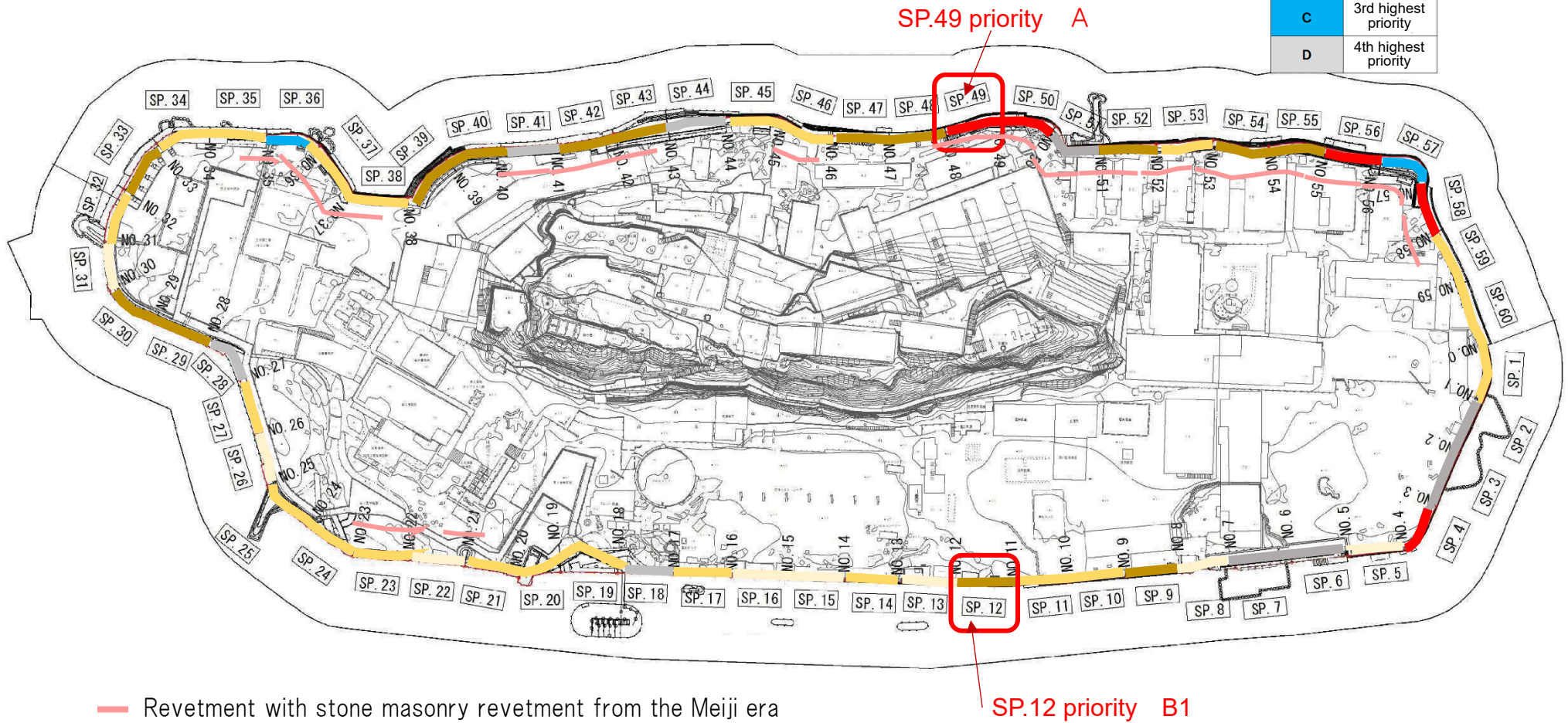


Figure-8 Maintenance priority judgment chart and selected areas for maintenance in 2023

Appendix 3-3

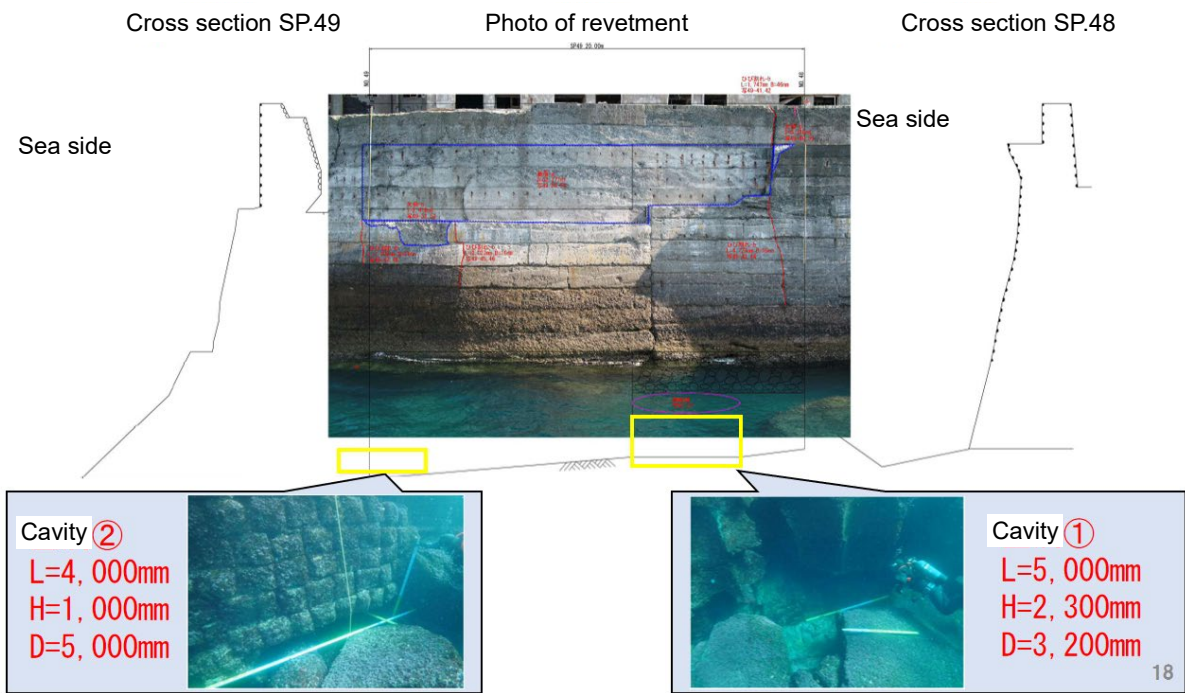


Figure-9 Locations scheduled for maintenance work in 2023 (SP.49, priority A)

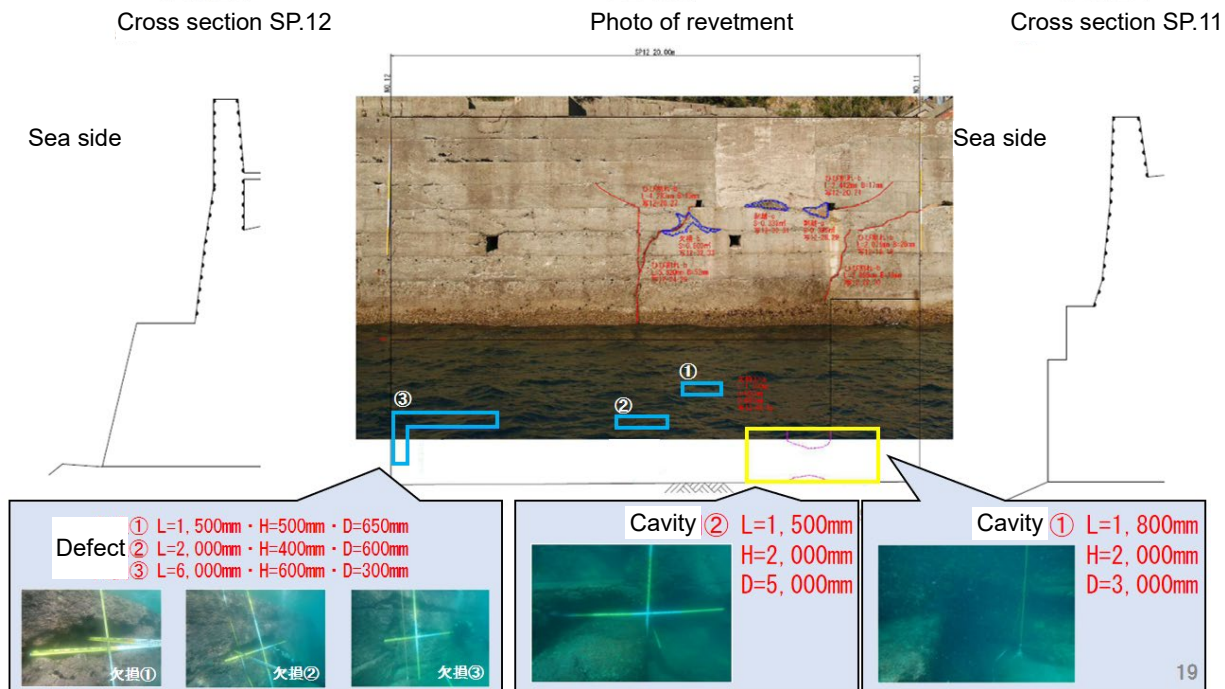


Figure-10 Locations scheduled for maintenance work in 2023 (SP.12, priority B1)

Appendix 3-3

2. Factor analysis (mechanisms of revetment damage)

In considering countermeasures, we analyzed the mechanism of revetment damage.

We believe that there are two main factors in the leading to damage to the revetment: "Destabilization of revetment (Factor A)" and "Decreased strength of the revetment (Factor B)." Revetment collapse due to each factor, and then wave action directly on the remains on the island, may lead to the destruction of the revetment. The following diagrams explain the mechanisms of revetment damage, the countermeasure construction method considered (Fig. 11), and the details of the two mechanisms (Figs. 12 and 13).

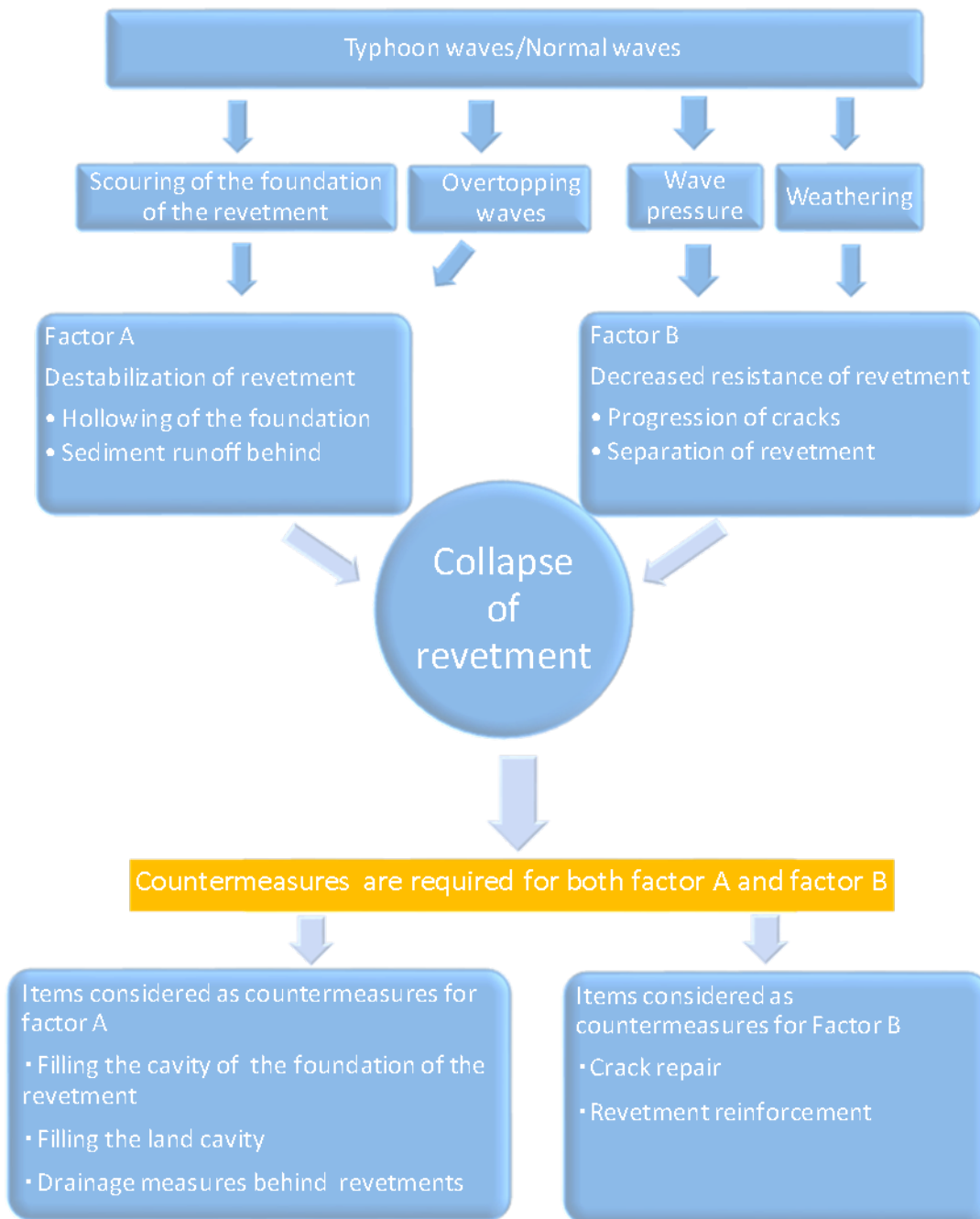


Figure-11 Mechanism of bank protection collapse and flow of countermeasure construction method

Factor A Destabilization of revetment

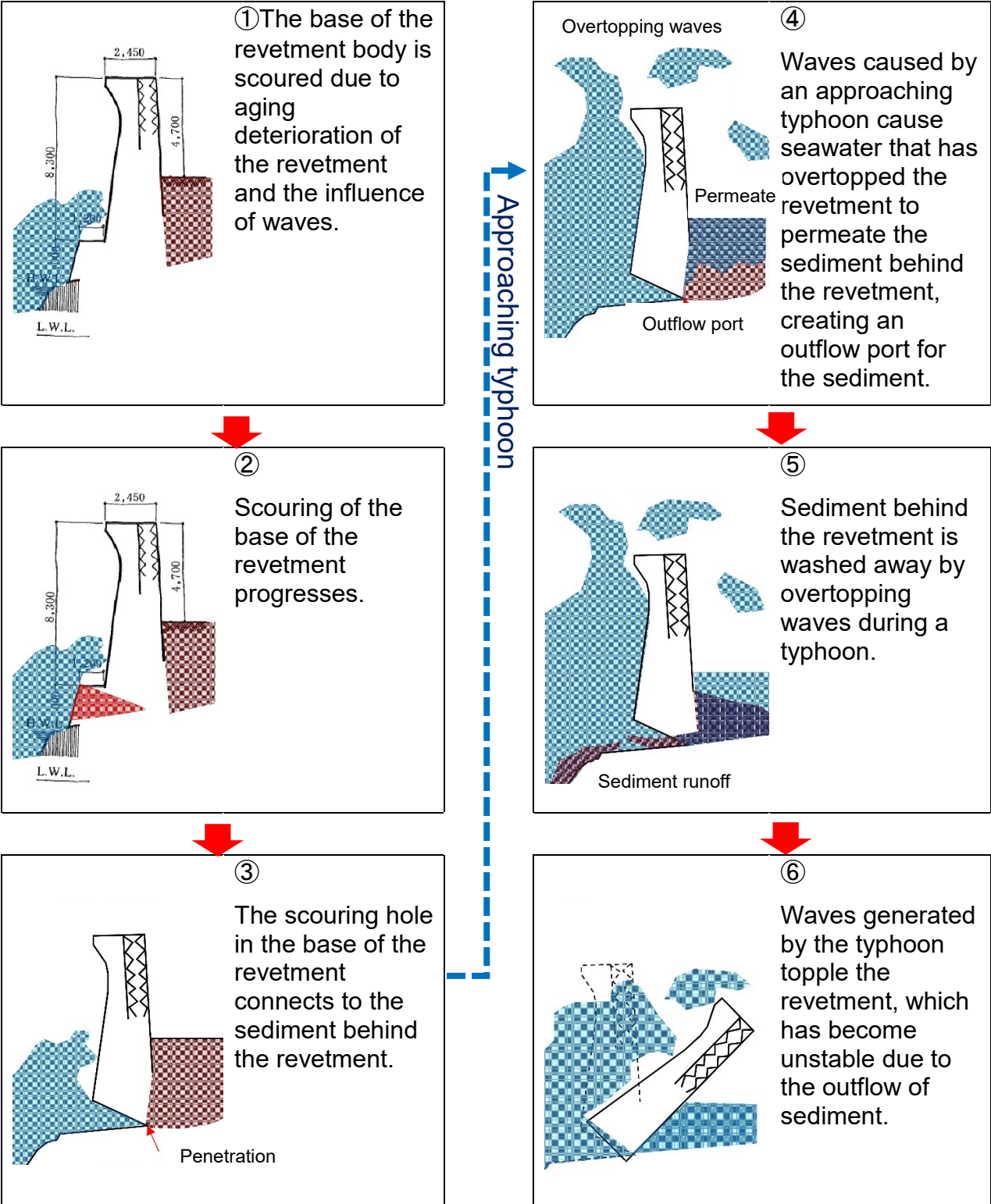


Figure-12 Mechanism of "Factor A Destabilization of revetment"

Factor B Decreased resistance of revetment

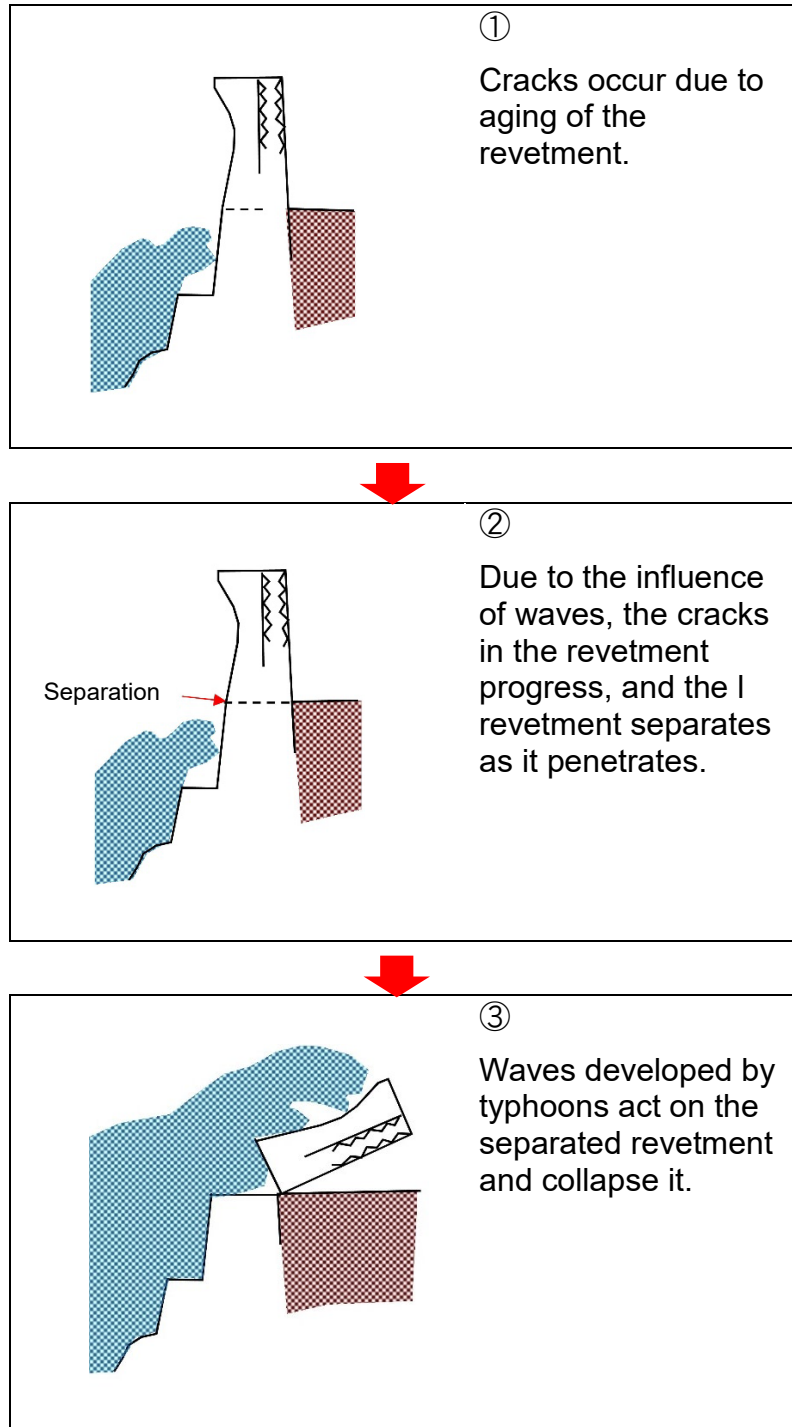


Figure-13 Mechanism of "Factor B Decrease in strength of revetment"

Appendix 3-3

3 Consideration of countermeasures

Based on the results of "2 Factor analysis", we considered measures according to the factors. In examining the proposed countermeasures, we considered not to damage the current landscape. The review process for repair and reinforcement is shown below.

Consideration of countermeasures against [Factor A: Destabilization of revetment]




(1) Cavity filling and drainage measures behind revetments

The repair method for cavities is to inject the filler into cavities. And after a comparative study of fillers, the revetment foundation cavity and the land cavity were divided into cases and examined.

(a) Examination of filler

As for fillers, "cement bentonite", "plastic grout material (parfait grout)", and "High-flow, non-shrinking grout material for cement-based filling" were compared in terms of workability, environmental impact, and cost. (Table-3).

Table-3 Filler comparison table

Item	Cement bentonite	Plastic grout material (parfait grout)	High-flow, non-shrinking grout material for cement-based filling
Image			
Overview	A method of drilling an injection port and press-fitting it with a mortar pump.	A method of drilling an inlet and pressing it in with a grout pump.	A method of drilling an injection port and press-fitting it with a mortar pump.
Workability	It separates easily in the sea and cannot be filled into cavities and narrow gaps. The pumpable distance is about 50m.	It is difficult to separate in the sea and can be filled into cavities and narrow gaps. The pumpable distance is about 400m.	It is difficult to separate in the sea and can be filled into cavities and narrow gaps. The pumpable distance is about 100m. It is a factory production and cannot be constructed on remote islands away from the factory.

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Environmental impact	It easily dissolves in water, and if leaked, it will deteriorate the water quality.	It does not dissolve in water and does not adversely affect the environment.	It does not dissolve in water and does not adversely affect the environment.
Cost	Material unit price ¥20,000/m ³	Material unit price ¥24,000 /m ³ ~¥30,000/m ³	Material unit price ¥90,000 /m ³

From the above, "Plastic grout material (parfait grout) " is possible to pump it over a wide area, it is difficult to separate in the sea, it is possible to fill cavities and narrow gaps, and it is a filler that does not dissolve in water and does not have an adverse effect on the environment. It was selected. In terms of cost, "cement bentonite" is superior, but it is not selected because it easily dissolves in water and may adversely affect the sea area of Hashima, which is a good fishing ground. " High-flow, non-shrinking grout material for cement-based filling " is not adopted because it is expensive and cannot be applied on remote islands far from the factory.

(b) Method of filling the cavity of the foundation of the revetment

Concerning the cavity of the foundation of the revetment, due to the following problems and construction restrictions, we will adopt underwater inseparable concrete that is difficult to separate in the sea and can be filled into cavities and narrow gaps.

- Emergency countermeasures are required as the revetment is unstable.
- The same strength as the revetment is required.
- There is concern about sediment runoff behind the site.
- There are good fishing grounds in the surrounding area.

(c) Filling method for the land cavity behind revetments and drainage measures behind revetments

For the land cavity, the construction method will be selected based on whether or not the cavity penetrates the revetment body foundation and then there is a sign that the earth and sand are being sucked out (Table 4).

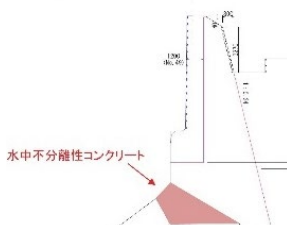
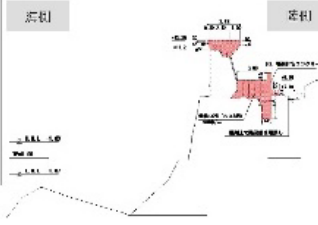
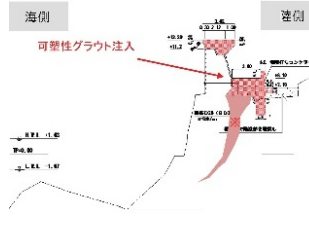
If there is no sign of soil being sucked out, cover with cast-in-place concrete to cope with scouring caused by overtopping waves. At that time, it is necessary to remove unnecessary rubble, etc., and confirm that there is no risk of the cavity reaching deep and sucking out earth and sand.

At the same time, as a countermeasure against sediment runoff, the overtopping area behind the revetment will be covered with concrete, and drainage ditches will be developed according to the amount of overtopping waves so that the overtopping seawater can be discharged quickly. The drain to be constructed will be connected to the outlet of the existing revetment.

If signs of sediment being sucked out from the levee body foundation cavity are observed, it is necessary to fill the levee body foundation and the through-cavity. Therefore, a method of injecting plastic grout, which can be used to fill cavities and narrow gaps, is adopted.

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Table-4 Cavity filling method classification table

Place	Revetment foundation cavity	Land cavity	
Construction method	Underwater inseparable concrete	Cast-in-place concrete	Plastic grout injection
Suck out	-	No suck out	Sucking out
Image			
Overview	A construction method in which a special concrete with high inseparability in water and high fluidity is poured into the revetment foundation cavity.	Cast-in-place concrete will be placed in places where the back of the revetment has been scoured by overtopping waves and has sunk significantly. A drainage ditch will be developed according to the amount of overtopping waves, and it will be connected to the drainage outlet of the existing revetment.	Inject plastic grout to the places where the back of the revetment is scoured by overtopping waves and where signs of suction from the revetment foundation cavity are seen.
Workability	<ul style="list-style-type: none"> Since the material itself does not separate, there are few restrictions on the construction method and construction conditions, and the total cost can be reduced by simplifying the construction and shortening the construction period. 	<ul style="list-style-type: none"> If there is no construction yard in the back, it will be cast on the sea using a work boat or by on-site kneading. 	<ul style="list-style-type: none"> If there is no construction yard in the back, it will be cast on the sea using a work boat or by on-site kneading.

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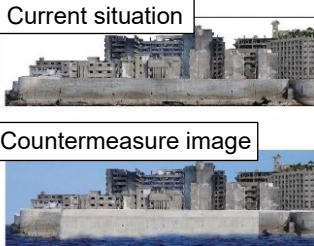

Examination of countermeasures for [Factor B Decreased resistance of revetment]

(2) Crack repair

We considered three options for repairing cracks: (a) filling cracks, (b) covering with concrete, and (c) installing rubber joint material.

In the study, a comparative study was conducted from the perspectives of impact on landscape, workability, and maintainability (Table 5).

Table-5 Crack repair method comparison table

Construction plan	(a) filling cracks	(b) covering with concrete	(c) installing rubber joint material.
Image	 <p>Current situation Countermeasure image</p>	 <p>Current situation Countermeasure image</p>	 <p>Countermeasure image</p>
Construction method overview	A method of filling cracks with an epoxy resin-based filler.	A construction method in which new concrete is added to the sea side of the existing revetment and integrated.	A construction method in which a rubber joint material is installed in front of the revetment.
Scenery	The scenery does not change much.	Since the existing revetment is concrete, the landscape will not change significantly.	The appearance is bad because rubber joints stand out.
Workability	It is necessary to install scaffolding, but construction is difficult because it is constantly affected by waves.	Similar to (a), construction is difficult. If there is a yard on the inner side of the island, construction by land machinery is possible.	Similar to (a), construction is difficult. Temporary construction is required depending on the location.
Maintenance	Repair required every 10 years	No maintenance required	Need to replace when rubber deteriorates
Remarks	It is possible to prevent sediment runoff, but it does not restore strength.	Contributes to sediment runoff prevention and strength recovery.	It is possible to prevent sediment runoff, but it does not restore strength.

From Table 5, "(a) filling cracks" is not adopted because maintenance is required every 10 years and it does not recover the strength of the revetment.

Regarding "(c) installing rubber joint material", it is not adopted because it has a minor visual impact as the rubber joint material stands out and it is necessary to replace the rubber when it deteriorates.

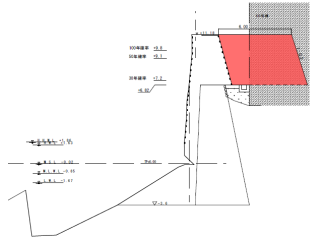
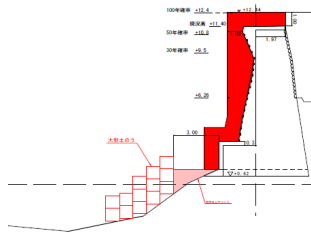
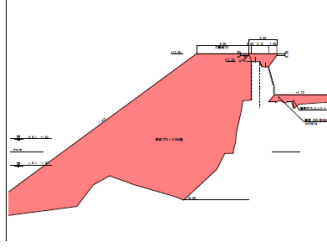
Regarding "(b) covering with concrete", since the original revetment is concrete, it has almost no impact on the landscape, does not require maintenance, and increases the strength of the revetment itself. Since it is in line with the current state of the revetment, it is adopted as the most suitable plan to protect the island itself, including the stone revetment of the Meiji period, from erosion and collapse.

(3) Revetment reinforcement

Three options were considered for the reinforcement method of the revetment main body: reinforcing the land side with concrete, reinforcing the sea side with concrete, and installing wave-dissipating blocks.

In the study, we conducted a comparative study in terms of impact on the remains, impact on the scenery, workability, and cost (Table 6).

Table-6 Reinforcement method review table

Construction plan	(a) reinforcing the land side with concrete	(b) reinforcing the sea side with concrete	(c) installing wave-dissipating blocks
Standard cross section			
Construction method overview	<ul style="list-style-type: none"> • A construction method in which concrete is placed on the inner side of the protruding part to reinforce it. • The width of the concrete should be more than 6m in order for the protrusion to be safe against the action of waves. 	<ul style="list-style-type: none"> • A construction method that protects and reinforces existing concrete with tension concrete. Shear strength is also considered. • It counteracts the action of the waves with a spur. 	<ul style="list-style-type: none"> • A construction method that attenuates and dissipates wave energy by installing wave-dissipating blocks in front of the revetment.
Impact on remains	Since there are remains of coal production facilities in many places behind the revetment, reinforcement with a concrete width of 6 m or more is not possible because it would physically interfere.	No effect	No effect
Scenery	The appearance from the sea side does not change, but the scenery from the inside of the island changes greatly.	The appearance from the sea side does not change much because the existing revetment is also made of concrete. The scenery from inside the island remains the same.	The appearance from the sea side changes greatly.
Workability	On-site kneading on the	Construction is	Construction is difficult

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	island can be done without being affected by waves, but a yard is required.	difficult because it is affected by waves, but it can be constructed by temporary work such as temporary installation of wave-dissipating blocks at the construction site. Repairs such as filling cracks are not required.	due to the influence of waves. Depending on the size of the wave-dissipating block, it may be difficult to procure a work boat with the necessary construction capacity, and a block production yard is required.
Cost	-	¥3,300,000/m	¥6,200,000/m

From Table 6, "(a) reinforcing the land side with concrete " is a structure that can withstand friction, but the thickness of the concrete is 6m or more depending on the location. It is physically impossible to implement because it interferes with the remains.

Regarding "(c) installing wave-dissipating blocks", it is excellent in that it is not necessary to directly modify the revetment, but in order to attenuate and dissipate wave energy, it is necessary to stack blocks up to the height of the crest of the revetment. There is a large change in the appearance from the sea side, which has a lot of impact on the landscape, and the cost is enormous, so it is not adopted.

Regarding "(b) reinforcing the sea side with concrete ", there is no impact on the remains of the production facility, and since the sea side, which was originally covered with concrete, is reinforced, there is little impact on the landscape, and the above-mentioned crack repair function.

Based on the above, "(b) reinforcing the sea side with concrete " will be adopted.

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(4) Decided construction method/Evaluating the impact on attributes that contribute to OUV

As described above, we have conducted repeated studies to prevent the collapse of the revetment, which could have an adverse impact on the Meiji-era masonry revetment and the remains of coal production facilities, which are attributes that contribute to OUV, as well as the physical impact on the landscape and remains on the island. Considering this, we decided on a construction method that requires the minimum necessary intervention. The construction method (Table-7) and the construction cross section (Fig. 14) that summarizes the decision method are as follows.

Table-7 Decision construction method

Damaged area	Adopted construction method
Crack	Cover with concrete
Land cavity (with suction)	Plastic grout injection
Land cavity (without suction)	Cast-in-place concrete
Revetment foundation cavity	Underwater inseparable concrete
Revetment(reinforcement)	Cover with concrete
Sediment runoff behind the revetment	Drainage improvement + Cast-in-place concrete

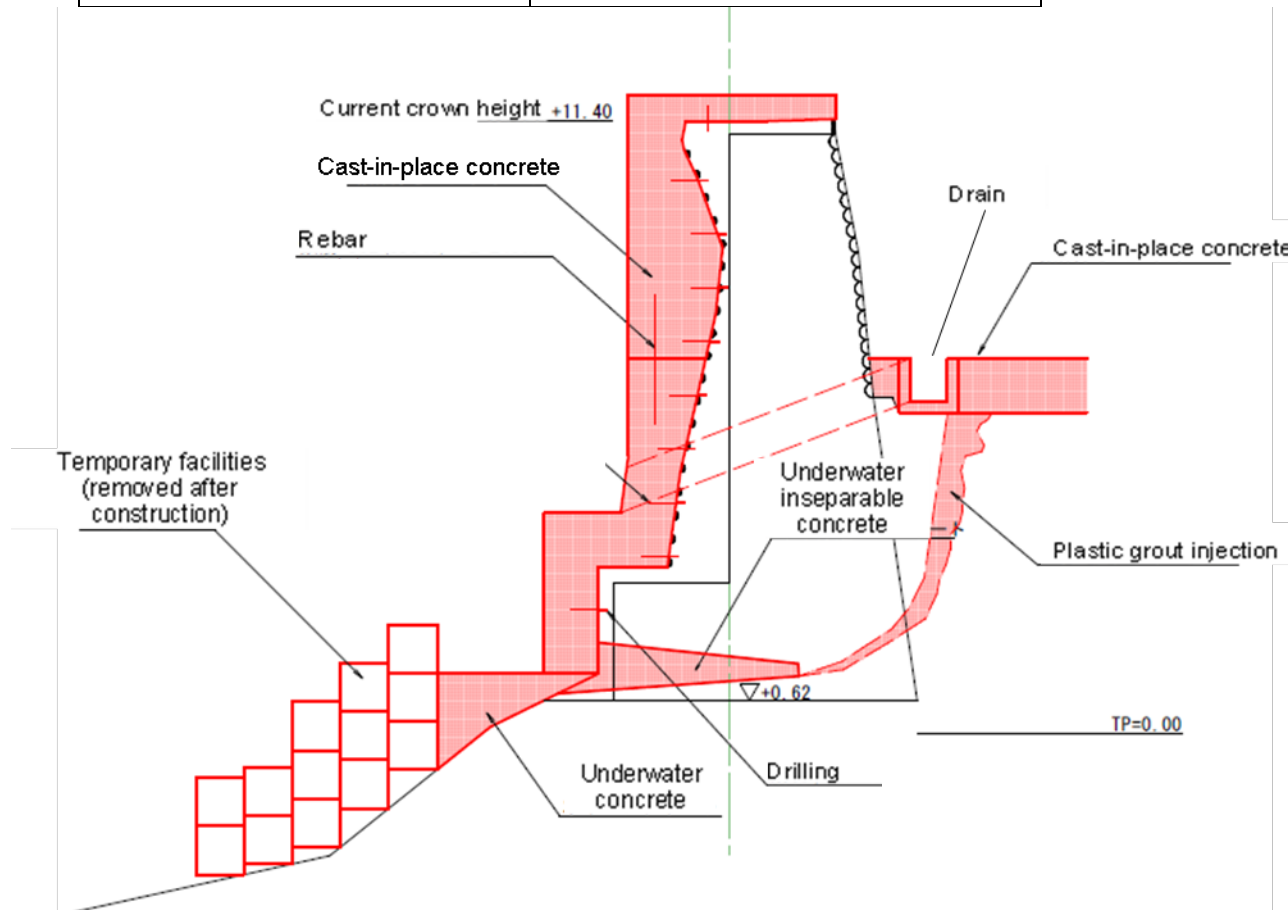


Figure-14 Basic cross section of revetment design

Reinforcement of the seawall by the above method can avoid the adverse impact of damage to the Meiji period masonry revetment and coal production facility remains, which are attributes that contribute to OUV, due to the collapse of the seawall, which has been a concern.

This study was conducted in line with the screening process. In order to realize both the conservation work of the Hashima revetment and the OUV, we

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have repeatedly considered. As shown in this report, we considered the best of several alternatives to determine the best possible maintenance method, including minimizing OUV impact. This study was conducted with the advice of an external expert.

The primary attribute potentially impacted by the proposed works is the Meiji-era sections of revetment. When fully implemented, the works will stabilise the revetment which includes these sections, thereby conserving them in situ. The post-Meiji external face of the revetment, facing the sea, will be obscured where the new reinforcement wall is installed. This will have a limited visual impact, especially until the new concrete weathers. However, in time, it is likely to present a sympathetic finish which will not be noticed.

4 Construction plan

(1) Construction implementation plan for 2023


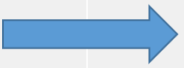




Detailed blueprints and construction plans are currently being prepared for two of the highest priority locations. They are scheduled to be completed around the fall of 2023. Therefore, we plan to start construction by the end of fiscal 2023.

(2) How to preserve and maintain revetments after 2024

As can be seen from the results of the survey of the current state of the revetments mentioned above, there are sections of revetments that are in a serious state of deterioration other than the two locations where construction is scheduled to start in 2023.

Based on the status of the construction work to be carried out in FY2023, we will continue to plan for the appropriate preservation and maintenance of other revetment.

Table-8 Implementation status and future plans for revetment development on Hashima

	2020	2021	2022	2023	2024	2025	2026	2027
① Design condition calculation								
② Revetment status survey								
③ Revetment basic design								
④ Revetment execution design						Continue to consider		
⑤ Revetment reinforcement work								

PROGRESS STATUS OF PROJECT PROPOSAL CONCERNING THE IMPERIAL STEEL WORKS

PROJECT PROPOSAL FOR THE IMPERIAL STEEL WORKS, COMPONENT PART OF THE “SITES OF JAPAN’S MEIJI INDUSTRIAL REVOLUTION: IRON AND STEEL, SHIPBUILDING AND COAL MINING”

PREFACE

The purpose of this report is to give an update on the project proposal reported in 2021 for the Imperial Steel Works, a component part of the “*Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.*” That report dealt with three buildings, however implementation of the plan to use the Head Office Building as a visitor facility, and the final planning for the implementation of seismic strengthening and conservation works at the Repair Workshop are as yet not finalised, and will be reported on in subsequent years as works are proposed. The seismic strengthening of the Former Forge Shop and related conservation works are proposed to commence in the next year, and this project is the subject of this report.

The Former Forge Shop project has been subject of a process over a number of years that has looked at the need for seismic reinforcement, the contribution of the Former Forge Shop as an attribute of OUV, and potential impacts of the works options on OUV and how to avoid or minimise them. It was, in effect, screening as part of an HIA process, amounting to a tailored HIA within the meaning of the 2022 *UNESCO/ICOMOS Guidance and Toolkit for Impact Assessment in a World Heritage Context*, that worked to refine the proposal to the point where a full HIA was not required. The process, which avoids or mitigates any adverse impact on the Outstanding Universal Value of the property, is summarised here and is submitted to the World Heritage Committee in response to the ICOMOS technical review provided by the World Heritage Centre in October 2021, in accordance with the Operational Guidelines, Paragraph 172.

1. PROJECT PROGRESS STATUS – FORMER FORGE SHOP

1.1 Contribution to OUV

The Former Forge Shop is one of the buildings that is an attribute of the Imperial Steel Works, Yawata, the first fully integrated steel works to be built successfully in Asia. The Imperial Steel Works group of three buildings, of which the Former Forge Shop is one, comprises one of the 23 component parts of the World Heritage “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining.”

The Imperial Steel Works at Yawata relates to the “iron and steel” aspects of this industrial revolution. Steelmaking took place in these facilities at the time Japan was emerging as an industrial nation in the last stage of its ongoing industrial revolution.

The management plans indicates that the Former Forge Shop:

‘Reflects one of the original functions of the steelworks, the original foundry function, necessary to the autonomous development of the steelworks, and the subsequent adaptation for materials testing. While its structure has been changed over time, the core building can still be recognized, and the changes it demonstrates echo the continuing expansion and refinement of the steelworks, and the adaptation of transferred technology to meet evolving local needs for these component parts make clear their contribution to the Outstanding Universal Value (OUV) of the property.’

1.2 Context of report – as a response to the ICOMOS Technical Review October 2021.

The October 2021 ICOMOS Technical Review states that:

The proposed seismic reinforcement of the Former Forge Shop and Repair Shop was reported by the State Party in February 2019. This latest report states that the design will minimize impacts as much as possible and that exterior improvement works will be synchronized with the seismic reinforcement work. However, information on the extent and detail of this work was not provided, and it is advised that the State Party submits these details to the World Heritage Centre.

This report provides that additional detail.

1.3 Project description

The structure of the building, with steel frames supporting un-reinforced slag-brick wall panels (made in the steel works), combined with large window areas, makes it prone to earthquake damage. Earlier earthquake damage has resulted in the replacement of the metal roof and the collapse of the eastern slag-brick wall, it being replaced in 2005 with metal cladding. These facilities were found to have inadequate seismic performance in deterioration surveys in FY2014, building surveys in FY2016, and aseismic diagnosis in FY2017. Seismic strengthening design work was carried out in FY2018 based on these studies. Based on the seismic analysis, and the necessity of minimising potential impact on the building as an attribute of OUV, the seismic strengthening has been designed to support the building while reducing intervention in the existing building fabric as far as is feasible. Even with the degree of seismic strengthening proposed, a severe earthquake may still result in the collapse of some slag-brick wall panels, but the main structure will likely be protected allowing for reconstruction of any damaged cladding.

The proposed seismic strengthening framework is to be built free-standing within the building, rather than replacing or duplicating original building elements, and will be connected to the existing structure only at two points on each existing steel wall frame and to the roof trusses to provide stability. The design places the main supporting columns parallel to, but stepped back from the existing steel frames of the original building. The design has been modified to limit the number of columns needed, and the rhythm of the original frame location will be repeated, leaving the space between frames open. Beams link the new columns to a pair of steel ring beams circling the building at two heights, these in turn being tied to the original frames by way of clamp connections that limit intervention on the original fabric. Concrete foundations for the new columns are to be positioned inside the building so as not to disturb the original foundations and wall bases. Building the new foundation will require excavation of sections of the floor area, and tests have been done to devise a method of removing the encaustic ceramic tiles, that form the floor finish of the 1917 testing laboratory, without damaging the tiles, enabling their re-laying once the foundations have been laid. Visible disturbance will then be limited to the points where the new columns penetrate the floor. The

design of the seismic strengthening frame ensures that no reinforcing members cross window spaces or modify the raised clerestory on the roof.

A brick dividing wall separates the tile-floored test laboratory space at the eastern end of the building from the storage area to the west. The lower level of this wall is original to the 1917 reconfiguration of the building, while the upper section is an asbestos-containing post-1935 extension. Laying foundations and positioning columns at the point of level change between the two sections of the building will require removal of the asbestos-containing upper wall, which will not be replaced, and deconstruction of part of the lower wall to allow for the seismic strengthening work to proceed. The lower wall sections will be reconstructed after work is completed, maintaining the sense of enclosure of the testing laboratory space.

The steel frame members located around the wooden window frames and slag-brick walls have corroded at several points. The exterior steel surfaces of the frames have rusted because of exposure to wind and rain for many years. Rainwater has penetrated into the gaps between the steel frame and slag-bricks, or between the steel frame and wooden fittings, and steel corrosion progressed on the inside as well. Wooden window frames have heavily deformed at three spots on the north side, probably because the supporting steel frame members around the wooden windows could not withstand the effects of strong winds, such as typhoons, and have also lost strength progressively due to thinning caused by corrosion. The steel frame members exposed on the exterior walls will be cleaned and painted with anticorrosive coating, and any gaps filled with watertight seal and grout. This work will minimise any strength reduction due to corrosion thinning. The more heavily corroded steel frame will be replaced with new components.

The weight of the slag-brick wall on the wooden window frames, which has contributed to the deformation issues, will be supported by the beams of the new internal steel frame structure. This will prevent the deformation and collapse of the wall due to the strength reduction of the original steel frames, and will protect against earthquake-induced loads and movement.

1.4 Associated conservation works

The archives of the Nippon Steel Corporation's Imperial Steel Works, currently housed in the building, will be relocated to a secure archival facility within the steelworks for their ongoing protection.

When the seismic strengthening frame is in position, a range of conservation works will then be able to be undertaken:

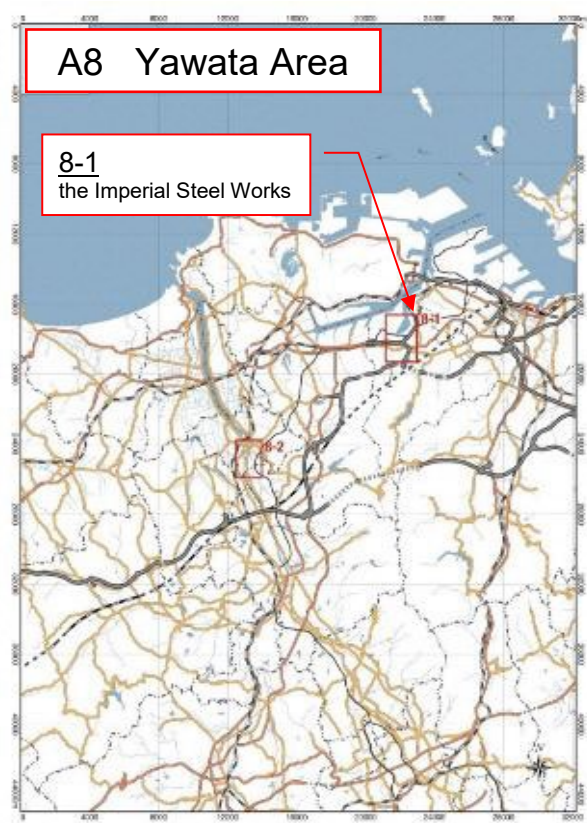
- The tile floor will be repaired as described above.
- The window frames will be repaired or elements replaced where beyond repair with elements of the same design. Exposed and corroded steel frame and window members will be treated or replaced if beyond viable use.
- The slag-brick wall panels, most of which are cement rendered, will be gently cleaned, repointed as needed and stabilised, but without removing the patina that characterises the industrial nature of the building.
- Door entries that require enlarging to enable the seismic works to take place will be reconstructed to their original configuration.

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- External piping, gutters and downpipes, and conduit frames will be cleaned and stabilised, and repaired if still operational, to maintain the historic visual character of the façades, and to ensure effective roof drainage.
- The existing roof and east end-wall metal cladding, replaced after earthquake damage in 2005, are in good condition and will be maintained.



Former Forge Shop (view of west side)



2. Images of proposed seismic reinforcement method

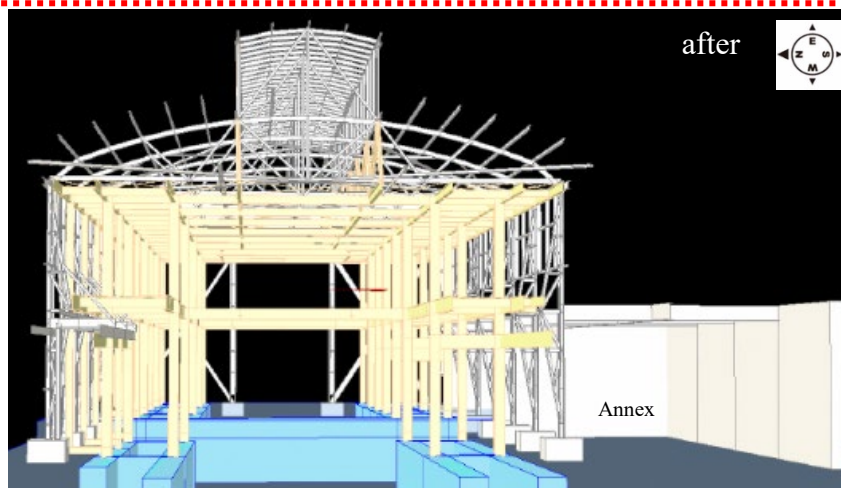
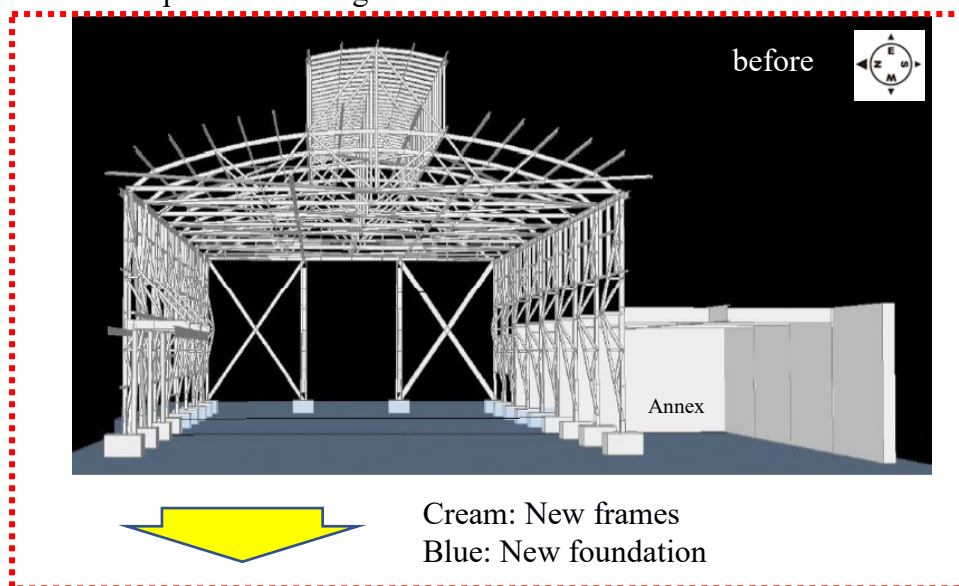
2.1 Image of conservation (west → east)

A. Current status photo



This facility has been in use as an archive of historical documents and other materials created during the operation of the steelworks. Reinforcing it in compliance with the current safe specifications would require doubling the number of steel columns for reinforcement, leaving space only in the central portion. Future use, as yet to be decided, must take into account the smaller floor space available.

B. Perspective drawing

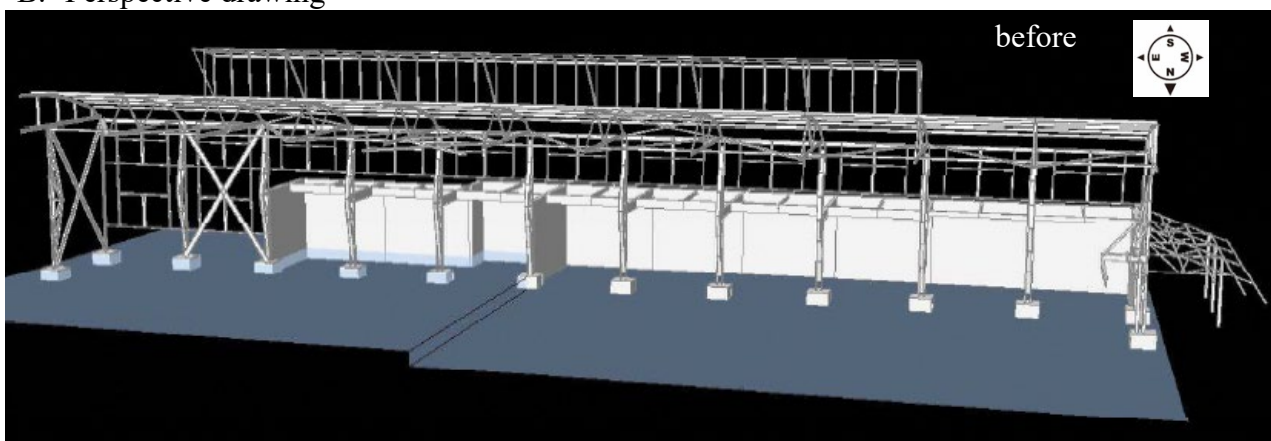


2.2) Image of conservation (north → south)

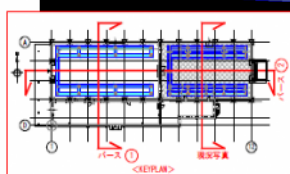
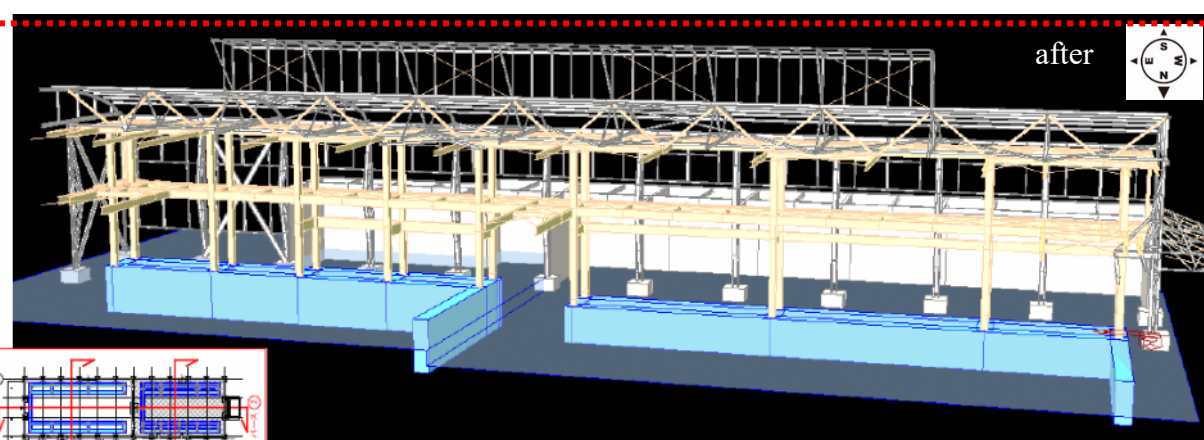
A. Current status photo



B. Perspective drawing

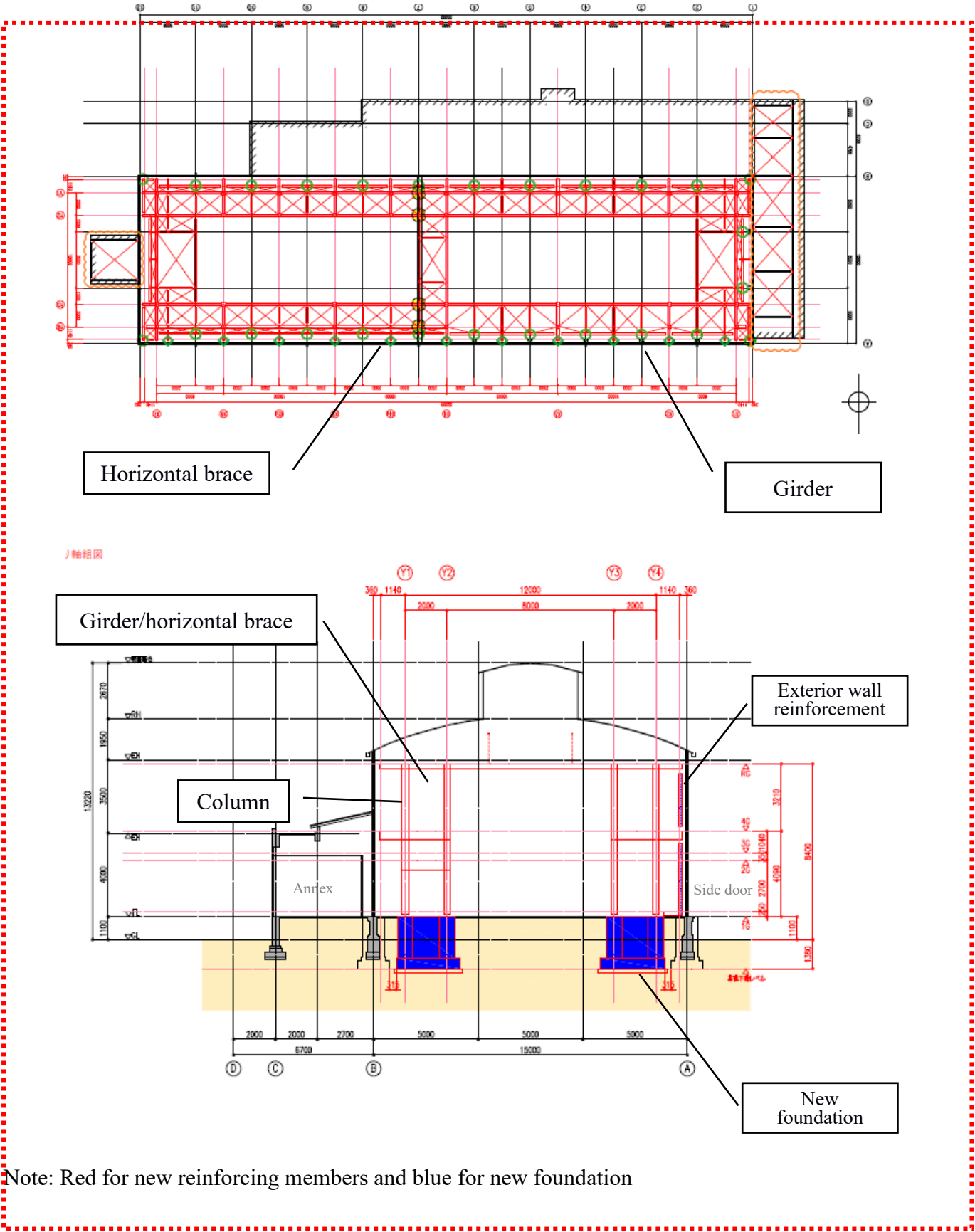


Cream: New frames
Blue: New foundation

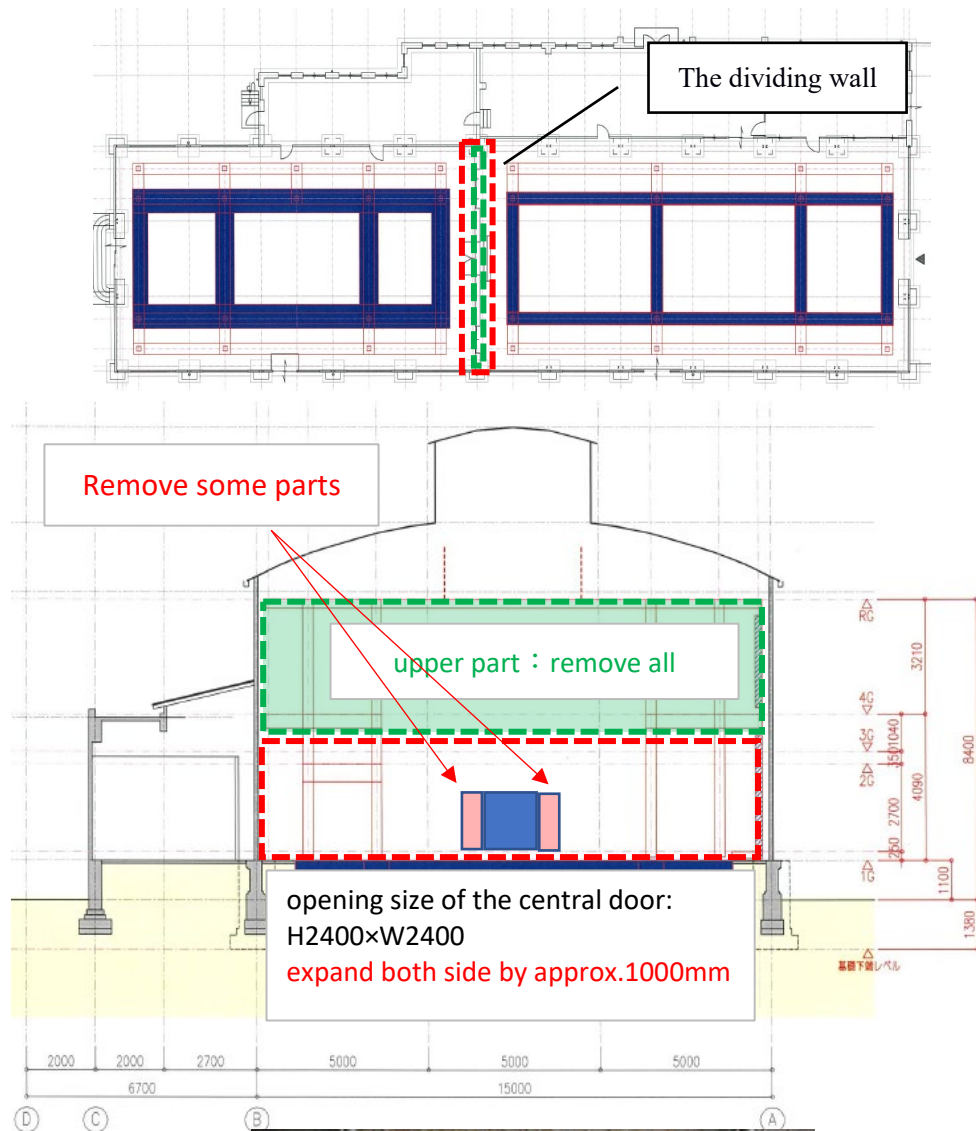


凡例 新設フレーム
新設基礎

2.3 Working drawing



2.4 The dividing wall

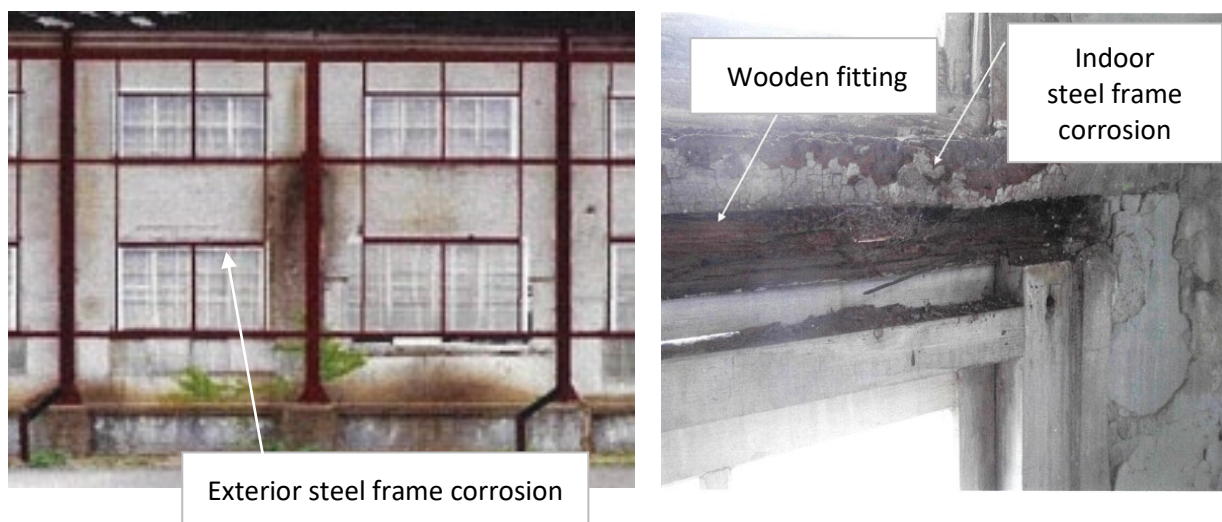


Remove some sections temporarily, then rebuilt after seismic reinforcing works

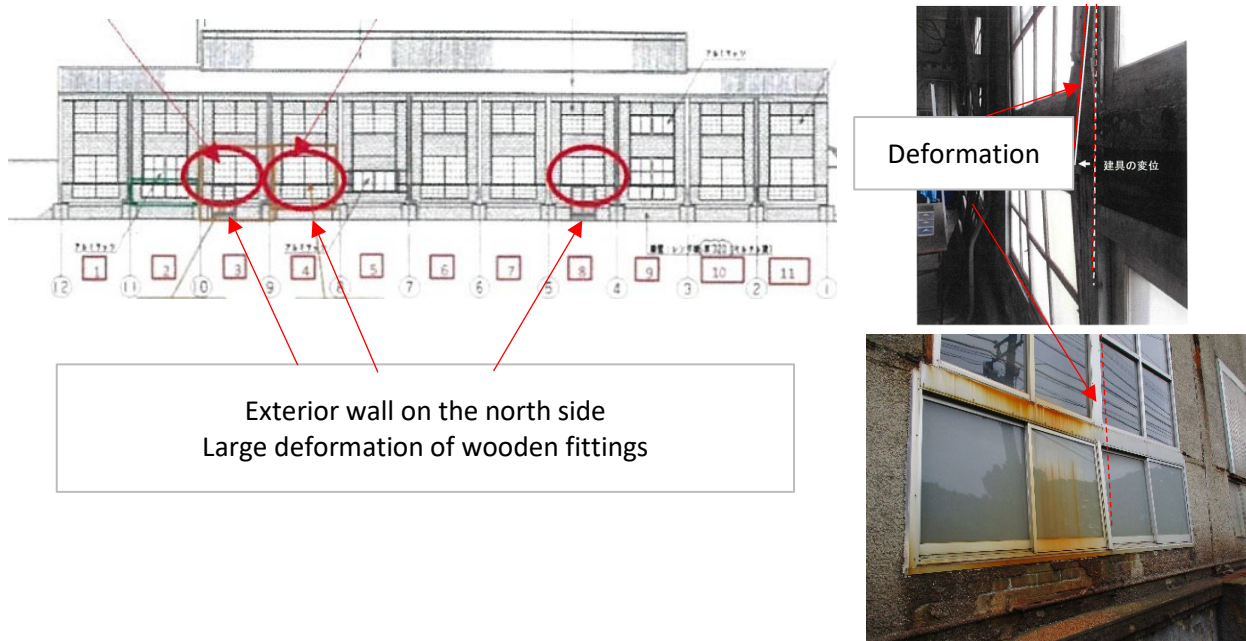
2.5 The exterior wall reinforcement

2.5-1 Current deterioration

A. Overall deterioration of the exterior walls



B. Partial deterioration of exterior wall



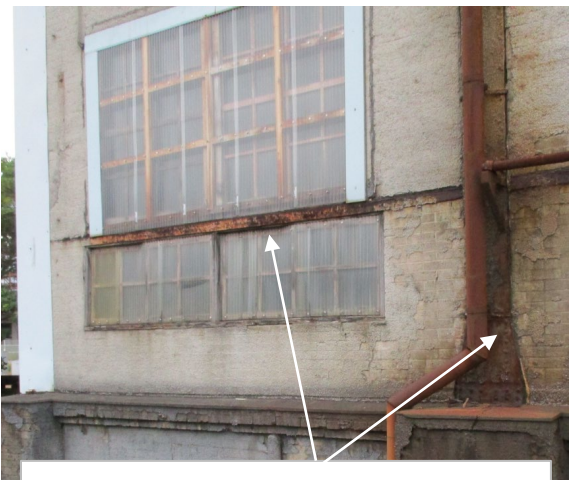
2.5-2 The Exterior wall reinforcement



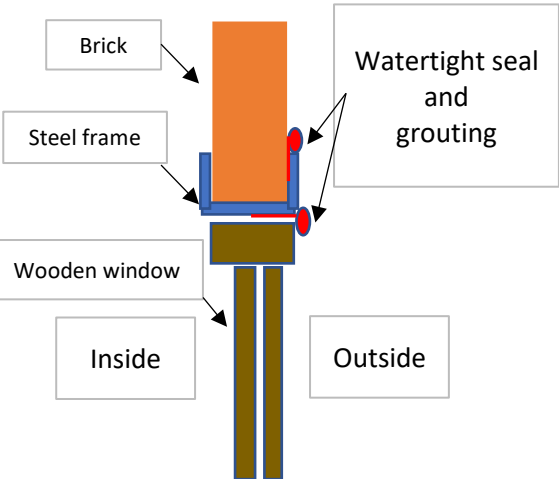
Before



After anticorrosive coating



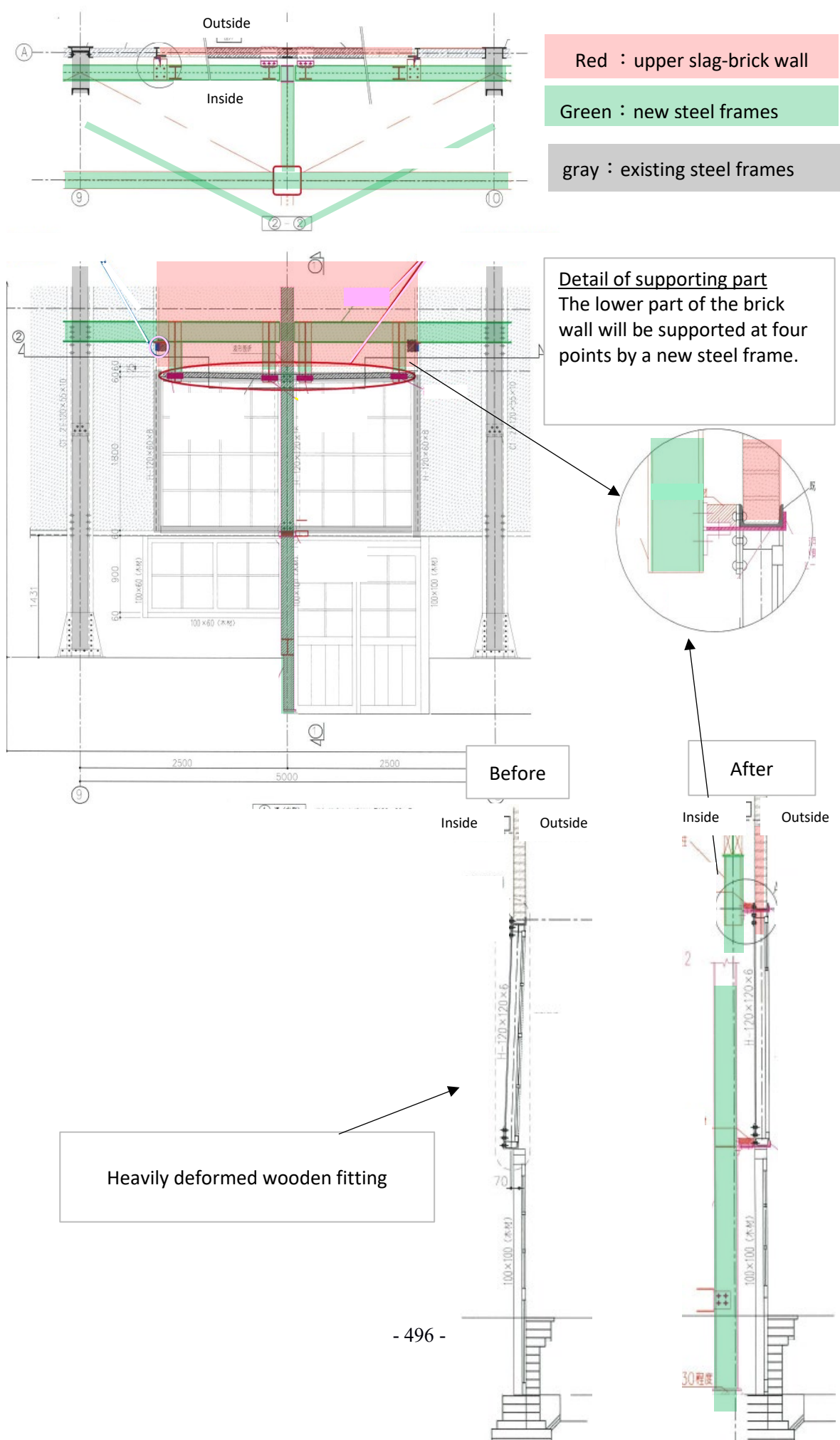
The corroded steel frame will be painted.



Red parts : All upper slag-brick wall will be reinforced.



Appendix 3-4



3. Consultation processes

Conservation and management of the buildings of the Imperial Steel Works are carried out in cooperation with stakeholders, based on the *General Principles and Strategic Framework for Conservation and Management* formulated by the Cabinet Secretariat. Nippon Steel Corporation, the owner of the property, drew up policies and plans in consultation with experts, and having obtained approval of the Yawata Local Conservation Council (Kitakyushu City and Nakama City, Cabinet Secretariat, etc.), reported the project proposal to the World Heritage Centre jointly with Kitakyushu City and Nakama City (“the municipalities”). Work was begun following an ICOMOS technical review provided by the Centre. Thereafter, the detailed specifications were decided while consulting with experts on engineering matters involved in the actual design work. As the design work proceeded, progress reports were submitted for approval to the Yawata Local Conservation Council. The reporting and approval process with these institutions will continue as the conservation work is carried out.

Representatives of these institutions, as well as of the owner, Nippon Steel Corporation, are also members of the planning group responsible for drafting this project proposal.

4. Further considerations

The current use of the Forge Shop is to store the archives related to the use of the Imperial Steel Works. The building is no longer regarded as suitable for the environmentally controlled conservation of these archives, and they are to be removed to another more suitable repository within the steelworks. The later lightweight partitioned rooms within the building that stored the collection will be removed, but the annex building to the south that also contained archives will be retained.

Future use: The seismic strengthening frame introduces more columns into the interior of the Forge Shop, reducing the area of floorspace available for effective use. It is unlikely that the building could be used for operations related to the steelworks production and maintenance. The consideration of future uses continues, and will be better able to be ascertained when the seismic works has been completed and the range of potential uses explored. Public interpretation in the future is a possibility, but at present is not feasible given the ongoing industrial operations surrounding the building. Until a new use is determined the building will be maintained in its stable, post-seismic-works conserved condition.

5. Assessment of potential impact on OUV

The extent of the seismic strengthening work is substantial, however its design has been aimed at avoiding or minimising its potential impacts on OUV. The seismic strengthening framework is to be located free-standing within the building, and connected to it at the absolute minimum number of points, and in a way that minimises intervention in the original fabric. The building’s walls and roof will remain intact and be very little impacted by the work, and the seismic strengthening will not be visible from outside the building, where most visitors will experience it.

The floor area will be impacted by the necessity to excavate new foundations for the seismic strengthening framework. The building site had no former use, so the only possible archaeological remains relate to the construction of the Forge Shop itself. The excavation of the foundation trenches will follow archaeological testing and where necessary supervision. The extent of the impact will be minimised by creating slit trenches for the foundations, and

mitigated by carefully removing and relaying the encaustic ceramic tiles that make up the floor finish of the eastern half of the building. In the western half the floor is concrete that will be taken back to a similar finish.

The new columns and beams of the framework will be very evident within the building, but the overall scale of the interior space will still be visible, and in fact be made more visible with the removal of the lightweight partitioned rooms that currently fill half the space at floor level. The wall separating the eastern and western sections of the building, and defining the space of the testing laboratory established after 1917, will be retained and any sections deconstructed to enable works to take place will be reconstructed. The later upper section, which is of little significance in the industrial history of the building and contains asbestos, will not be replaced.

The conservation work on the building walls and windows will ensure the protection and ongoing survival of the structural elements, but will be subtle so as to retain the industrial character of the building, which is viewed in association with the adjacent Repair Workshop, and it will stand in contrast to the high-status and commercial rather than industrial character of the First Head Office building across the street.

It is assessed that the proposed seismic strengthening works and associated building conservation works will have minimal impact on OUV, and where it does these will be mitigated (as in the case of floor penetrations). The proposed works will ensure the conservation of the integrity and authenticity of the building and will enhance its presentation to the visitor as a cared-for element of the Imperial Steel Works contributing to the OUV of the *Sites of Japan's Meiji Industrial Revolution*. The seismic strengthening works are also reversible if superior options become available in future years.