Conservation work programme and implementation programme for Miike Coal Mine (Area 7 Miike/ Component Part 7-1)

Omuta City and Arao City drew up "Conservation Work Programme and Implementation Programme" for Miike Coal Mine in FY 2016 and 2017, pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by the World Heritage Committee at its 39th session in 2015. The Programme comprise detail measures for the conservation and restoration of the component part of the "Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining" (hereinafter referred to as "Sites of Japan's Meiji Industrial Revolution")

The Fukuoka Prefectural Government, Omuta City, and Miike Port Logistics Corporation drew up a separate Conservation work programme for Miike Port.

Figure 1 Location maps of Omuta City and Arao City

1. Approach to conservation

Conserve for future generations the system and role of coal mining and transportation in Miike Coal Mine as an energy producer for the industrial revolution during the Meiji Era. As well as the scale of the histories overlapping with the spread of the coal industrial landscape, and promote public utilization of this historic asset so as to develop the cities.

The Sites of Japan's Meiji Industrial Revolution, comprising 23 component parts in Iron and Steel, Shipbuilding and Coal Mining, testify to the first successful transfer of Western industrialization to a non-Western nation and offer Outstanding Universal Value. Area 7 Miike comprises two component parts engaged in the coal industry. They are Miike Coal Mine and Miike Port (7-1) and Misumi West Port (7-2).

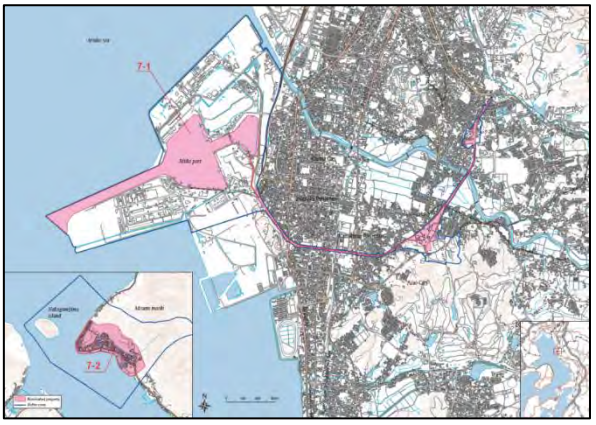


Figure 2 Scope of Area 7 Miike component parts and the buffer zone

Of the three stages reflecting the Outstanding Universal Value of the Sites of Japan's Meiji Industrial Revolution, the Misumi West Port is the component part showcasing the second phase of the introduction of Western technology. The Meiji government built the port in 1887 to stockpile coal as production at the Miike Coal Mine increased and load coal onto large ships.

Coal had been mainly shipped from Miike in small vessels, so there was a need for greater transportation efficiency.

"Miike Coal Mine and Miike Port" is the single component part testifying to the third phase of the establishment of industrial infrastructure. Here was Japan's second location for modernized coal mining technology after the Takashima Coal Mine in Nagasaki, with mining efficiency being improved with the deployment of advanced machinery and a centrally managed mine drainage system. After acquisitions by Mitsui Mining & Smelting, Miyanohara Pit and Manda Pit were excavated in 1888 and 1898, respectively, further increasing coal output. There was further development of infrastructure and coal transportation through wholly electric Miike Coal Railway. This was a very early electric railway application in Japan. Leveraging modern civil engineering to build Miike Port in 1908 brought success through massive and efficient domestic and overseas shipments of Miike coal through large vessels that docked at the port.

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

Elements	Period	Attribute	Value Category of Attribute		
			OUV	Country	Region
Miyanohara Pit	Pit opening – pit closing (1898 – 1931)	Number 2 Shaft ruin	○	○	○
		Number 2 Shaft headframe	○	○	○
		Number 2 Shaft winding-engine house	○	○	○
		Davey pump house exterior wall	○	○	○
		Drainage pipe	○	○	○
		Drainage canal	○	○	○
		Boiler house chimney foundation		○	○
		Connecting line remains	○	○	○
		Connecting line abutment	○	○	○
		Electric power substation		○	○
	Pit closing – Miike Coal Mine closing (1931 – 1997)	Staff room			○
		Storage house			○
		Worker residence			○
		Fence			○
Manda Pit	Pit opening – pit closing (1902 – 1951)	Number 2 Shaft winding-engine house	○	○	○
		Number 2 Shaft headframe	○	○	○
		Number 2 Shaft pithead	○	○	○
		Storage and pump house	○	○	○
		Safety lamp and bathing house	○	○	○
		Office (former fan house)	○	○	○
		Yamanokami shrine facilities	○	○	○
		Number 1 Shaft pithead	○	○	○
		Number 1 Shaft headframe foundation	○	○	○
		Inner shaft tramway	○	○	○
		Coal dressing plant and tunnel	○	○	○
		Davey pump house foundation	○	○	○
		Boiler house ruin	○	○	○

		Power substation (electric power substation)	○	○	○
		Main entrance	○	○	○
		Foundations, etc. of facilities associated with Number 1 Shaft	○	○	○
		Boiler house chimney foundation		○	○
		Sediment basin	○	○	○
		Water tank ruin	○	○	○
		Water canal	○	○	○
		Guard house ruin		○	○
		Concrete electricity poles (4 locations)		○	○
		Oil storage (2 buildings)		○	○
		Old entrance		○	○
		Paint storage & worksite storage		○	○
		Worksite		○	○
		Carpentry storage		○	○
		Boiler house connecting line	○	○	○
		Water tank for guide wood		○	○
		Boiler house & tank		○	○
		Storage & lavatory		○	○
		Support post and rail of the hoist crane		○	○
		Sakura-machi tunnel		○	○
		Water tank		○	○
		Brick buildings		○	○
		Concrete foundations		○	○
		Old main entrance, gatepost		○	○
		Remains of an outdoor electrical power substation		○	○
		Manda booster pump location	○	○	○
		Transmission line tower			○
	Pit closing – Miike Coal Mine closing (1951 – 1997)	Water and gas pipes			○
		Former Asonitto sewing factory			○
		Former Asonitto No. 5 factory			○
		Former Asonitto boutique			○
		Former Asonitto cafeteria			○
		Former Asonitto guard house			○
Coal Railway	Opening – Miike Coal Mine closing (1878 – 1997)	Railroad bed	○	○	○
		Cut & raised earth	○	○	○
		Structures other than earth structures	○	○	○
		Other works		○	○
		Electric power cables, steel towers			○
		Bridge over railway			○
		Other structures		○	○
	Operation period – present (early Showa period to present)	Above-ground pipes			○
		Underground pipes			○

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

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

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

The development of coal industry technology at Miike Coal Mine thereafter leaded Japan's coal industry, and continuously layered the history of industrial activities. Although the facility closed in 1997, evidence of efforts to streamline and systemize coal industry logistics has been still preserved.

To conserve the Miike Coal Mine, which contributes to the Outstanding Universal Value of the Sites of Japan's Meiji Industrial Revolution, it is vital to maintain buildings and remains that form evidence of coal mining and transportation systems from the pitheads to the railway and port by understanding the historical process of changes and developments of Miike Coal Mine from establishing the foundation of the coal industry to the mine shutdown while focusing on coal mining in the Meiji era. It is also important to provide explanations and information on their value to visitors. The cities will therefore undertake the required conservation and restoration to materialize the ideal future form of the Miike Coal Mine from the following two perspectives.

(1) Preserve the mine as it was upon shutdown

The Miike Coal Mine has been maintained as it was when it closed in 1997. Primarily with the physical evidence of the establishment phase for the nation's coal industry, which is one aspect of the Outstanding Universal Value of the Sites of Japan's Meiji Industrial Revolution, the site holistically showcases coal mine's functional and technological progress in line with changing industrial activities and social landscape from the end of the 19th century. Proper maintenance of the site as it was when it closed will preserve constituent elements of the Outstanding Universal Value for the future. Properly preserve the mine as it was shutdown can ensure to deliver the component parts contributing to the Outstanding Universal Value to the future. While pushing ahead with ongoing maintenance and managements, the cities will thus comprehensively and systematically assess the preservation of the Miike Coal Mine through regular monitoring, undertaking planned conservation and restoration to reinforce and stabilize them in terms of material, substance and structure of buildings and remains based on findings from periodical monitoring.

(2) Present the Miike Coal Mine conveying the historical process of changes and developments and spatial spread of industrial landscape in the Area

The following two elements of Miike Coal Mine's historical features are to be preserved and conveyed.

(i) The historical process of changes and developments of the coal industry continuously layered from the establishment of the industrial infrastructure in the Meiji era (late 19th century) through the end of the 20th century, when the mine closed

(ii) Spatial spread of the coal mining industrial landscape, including the chemical complex and corporate housing, centered on modernized coal mining and transportation system covering the pithead, railway, and port

The cities will accordingly emphasize the conveyance of these two historical features to visitors in making the sites available to the public.

As well as guiding by guidance and explanatory boards and providing information at guidance facilities, the cities will convey the Outstanding Universal Value of the World Heritage property as an entity by publishing survey and research results, holding open and public lectures, conducting public events, and training more guides to foster understanding among local residents and visitors. By positioning the World Heritage component part of the “Miike Coal Mine and Miike Port” as cultural resource and hubs for information dissemination in the Area, the cities will cooperate and interact with communities to enhance civic pride.

2. Policy

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

(1) Conducting investigative studies

The cities will make the positioning of Miike Coal Mine in the Outstanding Universal Value apparent and improve its state of conservation, conducting field surveys (including excavations) of the Miike Coal Mine and studying historical documents and other materials on Mitsui Group.

Buildings and remains as constituent elements will be periodically monitored for permanent stabilization through maintenance and restoration.

The cities will evaluate visitor satisfaction through surveys of visitor behavior and employ findings in measures to improve safety and comfort.

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

As well as monitoring buildings and remains, the cities will stabilize them through weeding, cleaning, and other daily maintenance.

The cities will scrutinize any instabilities that monitoring reveals by leveraging expert opinions and findings from studies, undertaking systematically restoration for reinforcement and stabilization.

(3) Indicating the coal mining and transportation systems

The cities will set routes, install explanatory boards, update and set up display relics, and install viewpoints. At the same time, they will explain Area 7 Miike, comprising the two component parts of "Miike Coal Mine and Miike Port" and "Misumi West Port", constitute a series of coal industry systems.

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

In the component parts, material and substance of bricks, iron, concrete, and others used in shafts underscore the nature of the coal industry at Miike, and the cities will restore scenery that makes the atmosphere and landscape distinctive.

Because component parts as a whole can be seen from a distance, one can see distinctive landscape that links the constituent elements of the component parts and the related sites. Appropriate viewpoints include locations where railway site and Miyanohara Pit and Manda Pit can be seen, where railway pipelines are visible, and where brick structures for infrastructure can be seen. To preserve the industrial landscapes from such viewpoints, building heights, materials, and colors will be controlled.

(5) Implementing projects

Required spending would be allocated in order of priority to undertake scheduled tasks under the project implementation. The cities would confirm work progress and review Programme at the right timing to move the project ahead.

3. Methods

(1) Investigative studies

(a) Excavation and field surveys

At Miyanohara Pit and Manda Pit, excavation surveys would compare the old drawings with the current conditions of buildings and remains, confirm and interpret coal mining and transportation systems, and further enhance communications to deepen visitor understanding.

The following excavation work at Miyanohara Pit would be prioritized to check on conditions of remains. The work would encompass the Davey pump room site, which was crucial for water drainage, the adjacent masonry water drainage area, the steam engine boiler stack and auxiliary, and the Miike State Prison.

At Manda pit, test excavations at the following facilities to a minimum to avoid harm for preservation would confirm the extent of underground remains. They would include the boiler house, the No. 1 shaft facilities, and

the Davey pump house.

For the coal railway site, there would be excavation surveys of the railway bed, filling and cutting locations and other areas to confirm and analyze the basic structure of the railway.

(b) Surveys of building restoration

Periodic monitoring would assess the progress of deterioration with each constituent element. Techniques for seismically reinforcing the brick winch chamber of Miyanohara Pit would be scrutinized.

(c) Historical documents and other materials surveys

There would be ongoing study and research of historical documents and other materials (historical documents, photographs, and maps) owned by relevant organizations and research institutes of Mitsui Group, as well as citizens and other parties.

(d) Surveys of visitor numbers and behavior

Changes in visitor traffic would be assessed to evaluate negative impacts on the component parts, with the results being employed in countermeasures. A visitor dynamics survey would confirm visitor understanding of the World Heritage and its component part and gauging visitor satisfaction.

(e) Monitoring

Monitoring charts would be produced, with follow-up monitoring to comprehensively understand the deterioration of buildings and remains and landscape transformations with the component part and the buffer zone. If negative impacts are identified, steps would be taken to eliminate causes or reduce impacts, followed by verification of the effectiveness of measures taken.

Findings from follow-up monitoring would be compiled in an annual report. The Miike Conservation Council setup under the World Heritage management structure would discuss measures. Reports would be submitted to the National Committee of Conservation and Management for Sites of Japan's Meiji Industrial Revolution.

(2) Conservation and restoration of buildings and remains

Observation of the current situation revealed that unstable buildings are (1) Number 2 Shaft winding-engine house, (2) Number 2 Shaft headframe, and (3) other buildings and structures in this order of priority. Reinforcements mainly for seismic strengthening of the buildings for (1), steel corrosion prevention for (2), and restacking fallen masonry structures for (3) would be undertaken.

(a) Conservation and restoration of constituent elements in the component part that contribute to the Outstanding Universal Value

➢ **Miyanohara Pit**

Observation of the current situation revealed that unstable structures are (1) Number 2 Shaft winding-engine house, (2) Number 2 Shaft headframe, and (3) other buildings and structures. Reinforcements would be mainly for (1) seismic strengthening for the structure, (2) steel corrosion prevention, and (3) restacking fallen stones.

- Number 2 Shaft winding-engine house

  The brick structure would be seismically reinforced in view of a preliminary survey that highlighted seismic issues. Improvements would encompass (1) vertical steel reinforcement, (2) brick joint repairs and reinforcement, and (3) horizontal steel reinforcements of the upper structure.

- Number 2 Shaft headframe

  The tower's steel material would be restored as corrosion in visible. The steps would be to (1) assess materials to identify where they were produced, (2) repair and reinforce the corroded materials, and (3) paint and rustproof.

- Other buildings and structures

  There would be seismic reinforcements and other restoration in view of seismic strength issues with the brick wall of Davey pump house. The steps would be to (1) undertake vertical repairs with steel

materials, and (2) repair and strengthen brick joints. Masonry drainage parts that have collapsed would be restacked. Existing materials would be reused as far as possible, with replacements with similar new materials as necessary. Where ongoing monitoring identifies other areas at risk of collapse, the deterioration would first be scrutinized, followed by restoration after decisions on techniques that may include reinforcing masonry and strengthening back-filling.

- Underground archeological remains and relics

  Conservation to stably maintain underground archaeological remains and relics after the excavation survey would include putting sand or other cushioning materials right above remains and relics when filling in. There would then be regular monitoring to check for unevenness and depressions from the ground surface to identify and resolve causes of instability in the underground remains and relics.

  Regular monitoring from the ground surface of unexcavated areas would identify and resolve causes of instability in underground remains and relics.

➢ **Manda Pit**

For the brick buildings of Manda Pit, a constituent element that contributes to the Outstanding Universal Value, the steps would be to restore (1) Storage & pump house, (2) Safety lamp house & bathing house, and (3) the office. As earthquake vulnerabilities have been identified for all of these areas, restoration would include seismic reinforcements.

- Storage & pump house (former fan house)

  Cracks are evident in the exhaust tower of the brick structure, which would very likely collapse. The structure would thus be restored and seismically reinforced. It was originally built as a fan room, but later renovated as a Storage & pump house. A new explanatory board and other visuals would help visitors understand that this was once a fan house.

- Safety lamp house & bathing house (former fan house)

  This brick building comprises a lamp room, bathroom, dressing room, and drying room. As parts of the roofs have deteriorated over the years, there will be repairs and seismic reinforcements. This area was originally a fan and machine room but was later renovated as a lamp room and bathroom. A new explanatory board and other visuals would help visitors understand that this was once a fan house.

- Office (former fan house)

  This brick building consists of an office, restroom, an administrative room, a changing room, toilets, kitchen, and staircase. Given visible cracks and other damage on parts of the outer wall and interior wall plaster peeling and falling off, the structure would be restored and seismically reinforced. It was originally built as a fan room, but was later renovated. Provide information to help visitors to understand that it was once a fan house.

- Number 2 Shaft headframe

  Restoration of the steel shaft tower of Manda Pit was completed in 2010. The focus now is primarily on daily maintenance. After assessing deterioration found through regular monitoring, deteriorated areas would be partially repaired.

- Other buildings

  In principle, there would be ongoing maintenance, with partial restoration of deteriorated areas identified through regular monitoring. Restoration would use existing bricks as much as possible.

- Underground archeological remains and relics

  Conservation to stably maintain underground remains and relics after the excavation survey would include putting sand layer for cushioning right above remains and relics when filling in. There would then be regular monitoring to check for unevenness and depressions from the ground surface to identify and resolve causes of instability in the remains and relics.

  Regular monitoring from the ground surface of unexcavated areas would identify and resolve causes

of instability in underground remains and relics.

➢ **Coal Railway**

The cities regularly monitor the Coal Railway remains, and have identified no unstable locations requiring immediate steps. That said, the remains are soil structure constructed more than a century ago and seems inherently likely to destabilize. The cities have therefore determined the following policy for the future.

Regular monitoring will reveal deterioration of the railway bed. If some instability is identified, the structure would be stabilized after the causes are identified. There would be measures to enhance understanding of the railway remains by restoring them to the original condition, including by exposing buried remains.

It will be a priority to keep railway embankments and cuttings configuring slopes in good shape. If monitoring reveals instabilities they would be remediated for structural stability. Specific steps will include weeding, cleaning and maintaining and repairing rainwater drainage facilities on a daily basis. Restoration techniques would be based on findings from monitoring and excavation surveys. Efforts would be taken to keep true to existing materials, material qualities and construction techniques as far as possible to retain the character of the railway.

Brick railway bridges at interchanges they intersect with roads would basically maintain their looks and be repaired and structurally reinforced where instable in view of deterioration identified through regular monitoring.

(b) Repair of elements closely related to constituent elements of the component part that contribute to Outstanding Universal Value

Previous surveys confirmed the structural soundness of underground sections of pithead of the second shaft at Miyanohara Pit. In view of some concrete cracks in some parts, however, there would be necessary repairs over the medium term schedule in view of the extent of deterioration found through monitoring.

(3) Presentation to foster overall understanding of the coal mining and transportation system

(a) Zoning

To promote presentation and public utilization that fosters a consistent and comprehensive understanding of the coal mining and transportation system extending broadly from the pitheads (Miyanohara Pit and Manda Pit) and the railway (Miike Coal Railway) to the port (Miike Port), each component part would be zoned, with clearly indicated methods of presentation and public utilization commensurate with outline and characteristics of each constituent element.

Zone	Public use policy
Miyanohara pit zone	Many buildings performed key functions for Miyanohara Pit are here as symbolic of Miyanohara mine remains. From the overall perspective of the Mitsui Miike Coal Mine site, presentation and public utilization would foster understanding of functions of drainage facilities and water flows at the second shaft which played an important role even after closure. For existing buildings and machinery, routes will be constructed and explanatory boards installed.
Manda pit zone	Many buildings performed key functions for Manda Pit are here as symbolic of Manda mine remains. Presentation and public utilization would foster visitors' understanding for movements of people and coal from the extraction of coal through shipment by coal railway. For existing buildings and machinery, routes will be constructed and explanatory boards installed.
Coal Railway zone	Here, people can understand the significance and history of the links between the pithead and port and the efficiently transportation of mass-produced coal to Miike Port. Presentation and public utilization would foster understanding of the logistics system by installing a trail and others through utilizing the topography in which peaks and valleys were transformed to flat land so as to provide for the railway.

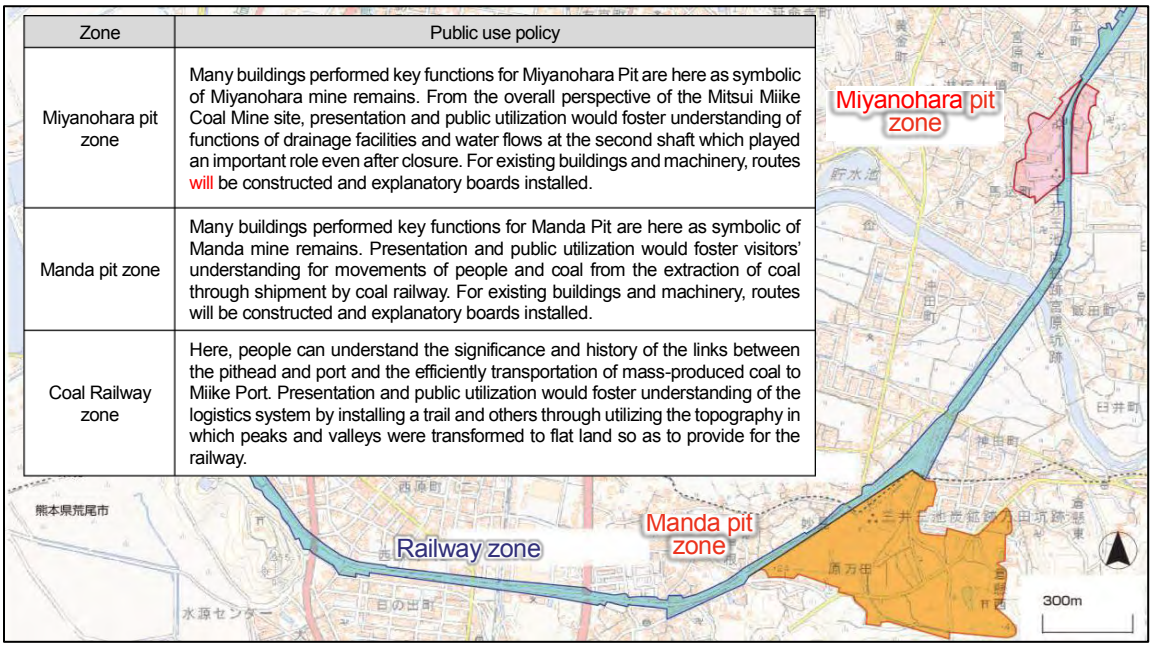


Figure 3: Zoning and presentation and public utilization policies by zone

(b) Tour route planning

➢ **Miyanohara Pit**

To streamline visitor entry management and improving understanding of the coal mining and transportation systems at the pithead, the cities will set up routes along the component parts and surroundings as follows.

(1) Guidance facility → (2) Davey pump room and boiler facility → (3) Pithead facility → (4) Drainage → (5) Prison and other facilities

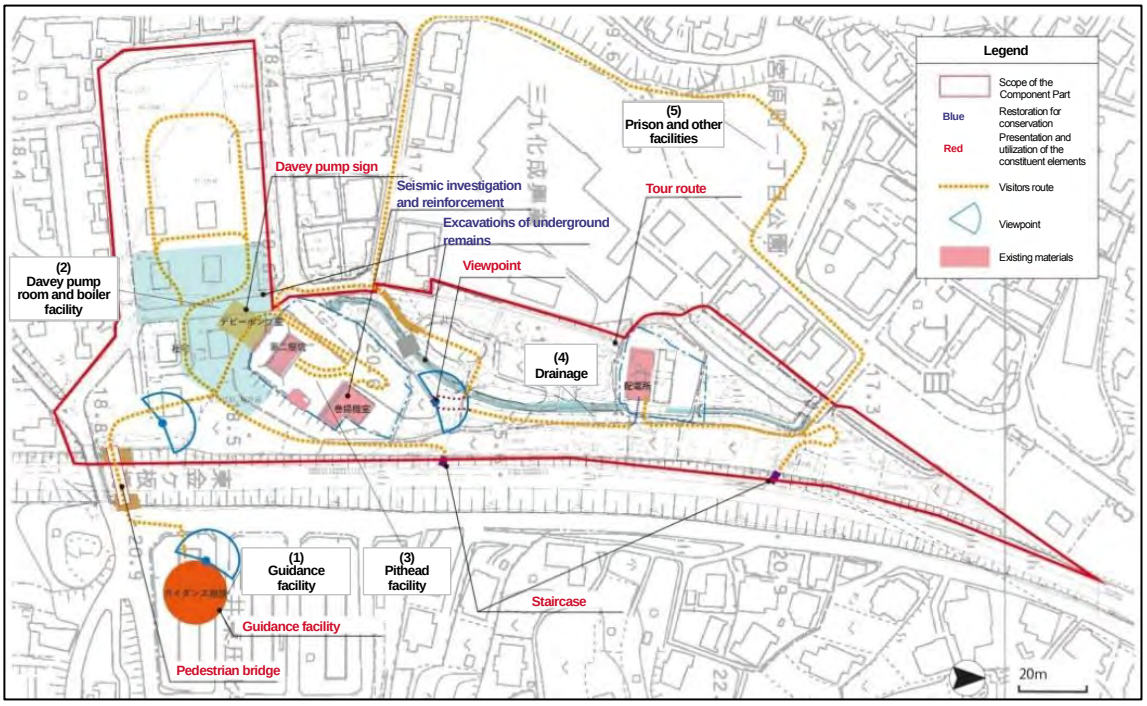


Figure 4 Miyanohara Pit presentation and public utilization plan

➢ **Manda Pit**

The cities will enable allow visitors to sense conditions in around 1939, the heyday of coal mining, by setting up two routes. One would be for understanding flows of employees and miners at Manda Pit. The other would be for following the flow of coal. People flows are as follows.

(1) Yamanokami shrine → (2) Storage & pump house (former fan house)→ (3) Office (former fan house) → (4) Safety lamp house & bathing house (former fan house) → (5) Number 2 Shaft headframe → (6) Number 2 Shaft winding-engine house → Flow of coal: (7) Number 1 Shaft headframe foundations → (8) Remains of the coal dressing plant (coal railway) → (9) Remains of the Davey pump house → (10) Power substation (electrical power substation) → (11) Remains of the boiler house

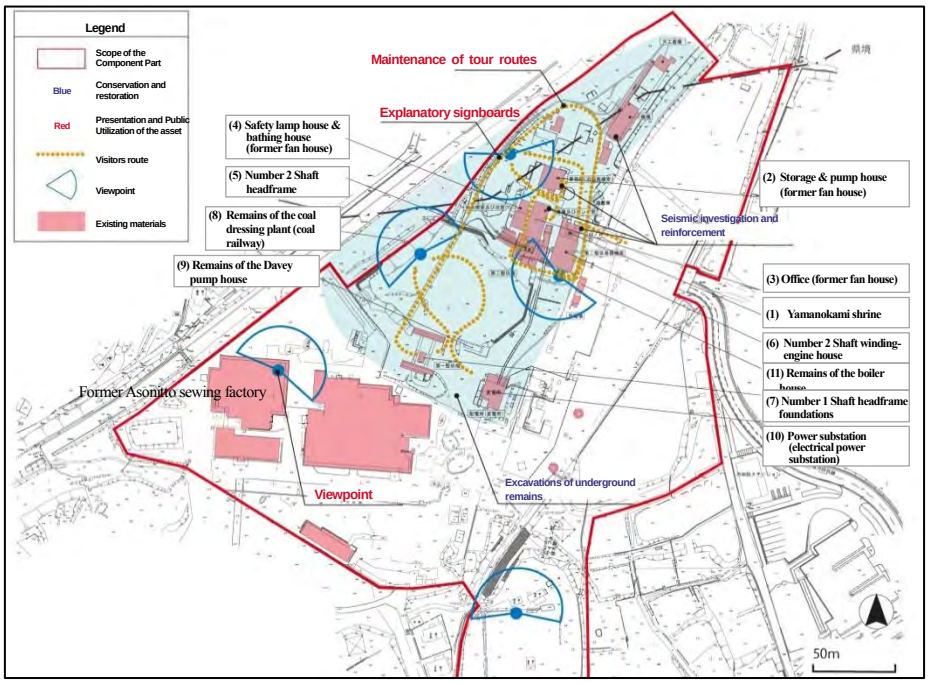


Figure 5 Manda Pit presentation and public utilization plan

➢ **Miike coal railway**

The cities established the following route for the component part and surroundings. This is both to foster visitor understanding of the railway role in logistics system but also to show the continuity of functions between the Miyanohara and Manda pitheads and railway.

(From north) (1) Northern district of Miyanohara Pit→(2) Adjacent district to Miyanohara Pit→(3) Area around Suwa River Bridge→(4) Northern district of Manda Pit→(5) Adjacent district to Manda Pit

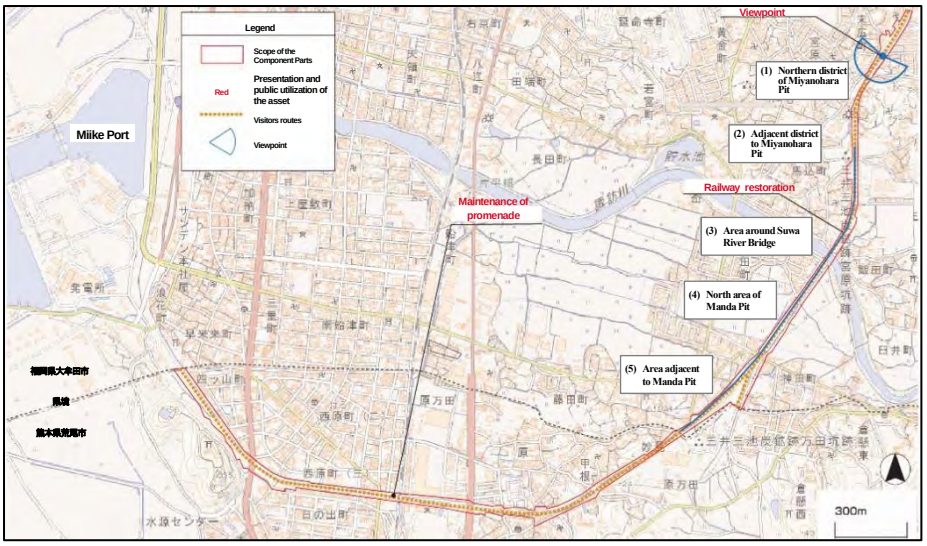


Figure 6 Railroad site Pit public use plan

(c) Topography and environmental improvements

The current topography and environment would be maintained, except for minimal changes needed for restorations, presentation and public utilization.

A trail would be constructed so visitors can sense the coal railway site continuity. A walkway between the railways and the pitheads (Miyanohara Pit and Manda Pit) would also be set up to foster understanding of continuity and connections between them.

(d) Arrangement of landscape and planting vegetation

In principle, there will be no new tree planting. Trees that impede understanding the coal mining and transportation system within the component parts will be cut down. Trees that provide shade at viewpoints and rest sites will be retained.

The scenic nature of Miike's coal industry in materials and material qualities of bricks, irons, and concrete used in shafts would be identified and reflected in the materials and material qualities of new fences and walkways.

(e) Guidance and explanatory facilities

The cities will install information and guidance boards along routes. The designs and presentations of the boards would be consistent, and the boards will be few and compact so they are not distracting during tours.

At Miyanohara Pit, archaeological remains and relics recently discovered through the excavation surveys would be displayed and clearly explained to visitors, with the remains and relics being securely maintained underground.

On the eastern end of Manda Pit are factory buildings of Asonit that were constructed to employ families of victims of a coal dust explosion accident in 1963 (**Figure 5**). Prior to that, there were facilities related to the No.1 shaft pithead. While explaining the history and significance to visitors, the cities will set out to open factory buildings roofs as viewpoints and use indoor spaces to house materials for restoration of Manda Pit.

(f) Administrative and convenience facilities

In providing essential convenience facilities for visitors, locations and designs will be chosen that do not spoil the landscape. Existing facilities would be used for toilets, and new ones would not be built. Facilities from when coal mining was ongoing would be used as much as possible, with railway platform sites being harnessed for resting and other convenience facilities.

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

Buffer zone around Miyanohara and Manda pits are designated as landscape development areas under the Ordinance on Landscape of Omuta City and Arao City, requiring positive landscapes through regulations of structural heights and colors.

For lookout on railway sites and Miyanohara and Manda pits, observation points for railway pipelines, observation points for brick structures intersecting with roads and other infrastructure, and viewpoints for each component part, building heights and materials and colors will be controlled so visitors can better apprise themselves of the scenic natures of Miike's coal industry.

4. Projects implementation

(1) Priority of implementation projects

Omuta City and Arao City will prepare a schedule for projects implemented over 20 years from 2018. The schedule will comprise three six-year phases, Phase I is 2018 to 2023. Phase II is 2024 to 2029. Phase III is 2030 to 2035. Projects will be in accordance with priorities. Conservation works for Miyanohara and Manda pits, which have function as pithead and many brick buildings remains, are deemed a prime priority, and they will be covered in Phase I. Thereafter, the work for the Coal Railway will be in Phase II.

Projects assigned the highest priorities in Phase I are as follows:

- Restoration of Number 2 Shaft winding-engine house of Miyanohara Pit
- Restoration of such Manda Pit buildings as the fan house

(2) Revision of implementation schedule

The schedule was based on a prevailing view of the ideal outlook for the component part ant the buffer zone. After the Phase II is complete, the cities will review the schedule based on progress and contemporary social situation.

Zone	Project item	Phase I 2018 to 2023	Phase II 2024 to 2029	Phase III 2030 to 2035
Miyanohara Pit	1. Excavation survey and study			
	2. Preservation and restoration of winding-engine house and other			
	3. Install routes and explanatory boards to foster visitor understanding			
Manda Pit	1. Excavation survey and study			
	2. Preservation and restoration of fan house and other structures			
	3. Install routes and explanatory boards to foster visitor understanding			
Coal Railway remains	1. Excavation survey and study			
	2. Install routes and explanatory boards to foster visitor understanding			

Table 2 Projects implementation schedule

(3) Others

Omuta city and Arao city has carried out conservation and restoration work, etc. for the Miike Coal Mine by securing necessary funds* making use of various subsidy programs available in FY2016 and FY2017, the first two years following inscription of the property on the World Heritage List. To ensure the smooth implementation of the project, it plans to continue such efforts to secure necessary funds in partnership with relevant institutions.

* Approximately 14 million yen was spent in FY2016 and 25 million yen has been budgeted for FY2017 (including the amount earmarked for plan making, presentation and public utilization of the component part), both excluding the cost for day-to-day maintenance.

Figure 7 Conceptional drawing of Miyanohara Pit at Miike Coal Mine once restored and open to the public

Figure 8 Conceptional drawing of Manda Pit at Miike Coal mine once restored and open to the public

5. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Miike Coal Mine, which became a source of "Conservation Work Programme and Implementation Programme" is available on Omuta City's and Arao City's web site. <http://www.city.omuta.lg.jp/hpkiji/pub/Detail.aspx?c_id=5&id=10743>, <http://www.city.arao.lg.jp/q/list/393.html>

Conservation work programme and implementation programme for Miike Port (Area 7 Miike/ Component Part 7-1)

Executive Summary

The major conservation issue with Miike Port is the conservation of the north groin. The work program has been developed to address its problems, and it is being implemented. The work started in fiscal year 2009 and is still continuing. Further details can be found in Section 2-1) below. Otherwise, the only anticipated works relate to ongoing minor repairs and maintenance.

Introduction

Fukuoka Prefecture (the Port Authority), Omuta City, and the Miike Port Logistics Corporation developed the Miike Port conservation work program in fiscal years 2016-2017 in close collaboration with the State Party including the Ports and Harbours Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, and the Cabinet Secretariat, under the guidance of heritage experts, in response to Recommendation b) attached to the decision of the World Heritage Committee (39COM 8B.14). Note that a separate conservation work programme has been prepared for Miike Coal Mine.

This Work Program represents an action plan that is in keeping with the policy aims of both the Miike Port Plan and the Conservation Management Plan, setting out concrete measures for more effectively achieving the aims of both plans. The Port Plan is the instrument through which management of the operating port is implemented. This Conservation Work Program is based on the concept of the Port Plan, but is fully informed by the Conservation Management Plan, and heritage advice from Japan and abroad, based on proper heritage assessment in achieving the protection of World Heritage values.

Introduction of new protection mechanisms and processes for Miike Port through the port management system is endorsed by the newly revised Port Plan under the jurisdiction of Article 3-3 of the Port and Harbour Act, with clear reference to protection of Industrial Heritage in the Port Plan to protect the heritage value of Miike Port. Following the revision of the plan, the Port Authority and Miike Port Logistics share an understanding of the attributes contributing to Outstanding Universal Value, and abide by the Port Plan which will control development that may affect the heritage value of Miike Port. Any conflicts related to the heritage assessment or the management of the property would be properly resolved through the Conservation Management Plan process, in addition through dialogue in the local conservation council (**Figure 1** below).

All stakeholders in Miike Port industrial district as well as the port users and community, as a private-public partnership, unanimously recognise that the significance of the Miike Port contributes to the Outstanding Universal Value of the "Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining", as testimony to the rapid industrial transformation of Meiji Japan in coal distribution and western engineering skills. Conservation management policies were established as the basis for Miike Port and the Port Area's protection and management of the World Heritage values, in parallel with their ongoing industrial operation, and legal and contractual arrangements will apply to that protection and management. The limits of change are described in the Conservation Management Plan of Miike Port. Based on the shared understanding of the Conservation Management Plan submitted to UNESCO, all the stakeholders in Miike Port have endorsed this work program through the local conservation council, a conservation mechanism developed under the strategic management framework.

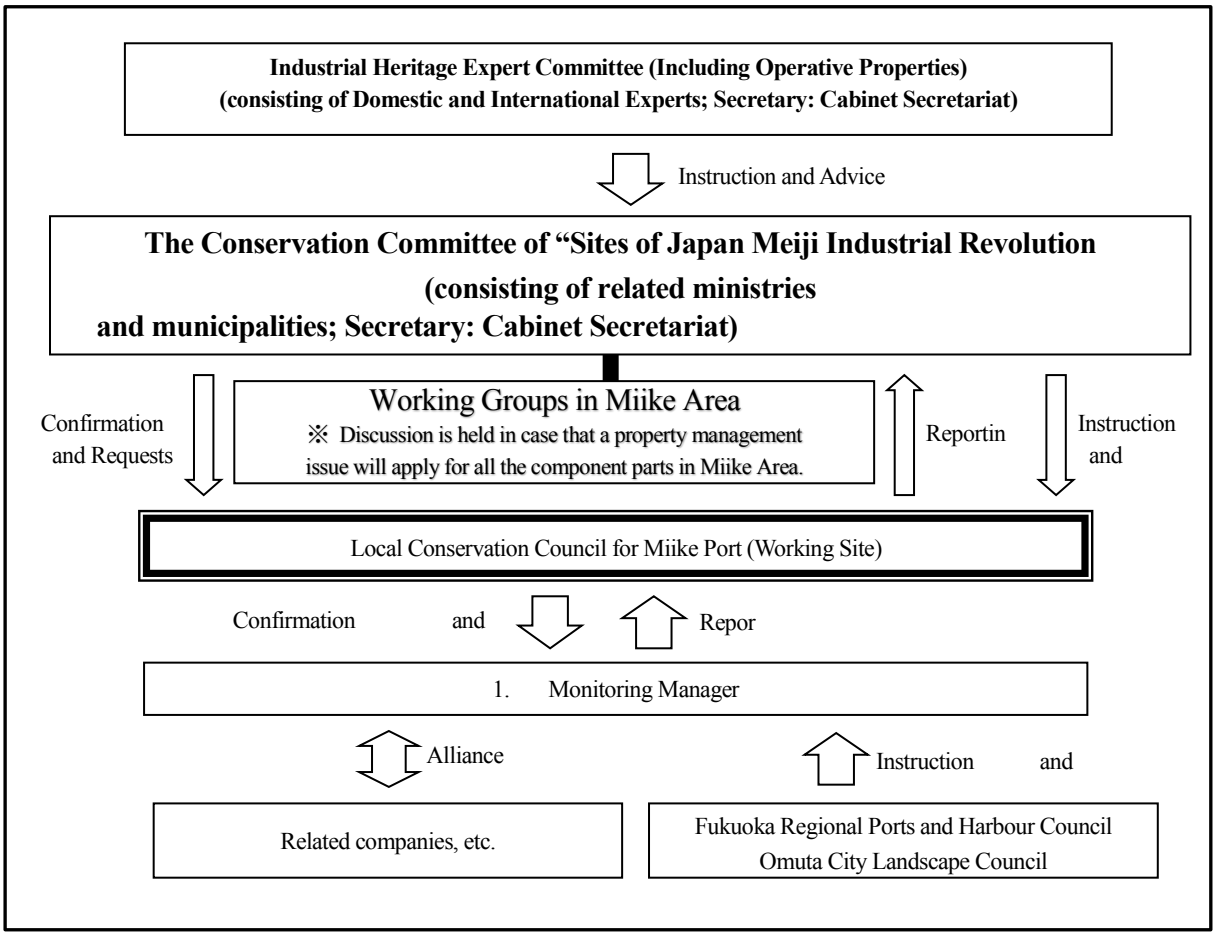


Figure 1. Concept of conservation management structure for Miike Port

1. GENERAL

This summary describes the specific works being planned or foreshadowed in the current period. The approach taken to these works is consistent with the Conservation Management Plan prepared for Miike Port and provided as part of the nomination dossier.

2. WORK PROGRAM

➢ **Improvement of north groin**

The Port Authority has drafted the Miike Port conservation work program in fiscal year 2016-2017 giving priority to the conservation work of the North Groin, an attribute of World Heritage value. The work started in fiscal year 2009 and is still continuing. Given the notable deterioration and damage to the north groin, this threatens to diminish World Heritage values and also is an issue for operation of Miike Port. There is only very little original Meiji fabric in the north groin due to repeated repairs because of damage caused by natural disasters, and it is not clear where the original fabric is. As conservation work is undertaken, original fabric will be identified and recorded. However, the original lineal form and general appearance of the north groin has been respected. Accordingly, the conservation work program for the north groin was developed with special attention to minimizing impacts, and retaining current fabric and design features, which includes repairs of the harbour walls, and reinforcing and augmenting the structure of the breakwater to withstand typhoon weather conditions, based on the conservation management policy described in the Conservation Management Plan. Currently, 80% of the North Groin has been conserved. (**Figure 2** below)

Regarding the process of determining the repair work method and finish, the Port authority and State Party have asked for the input and advice from World Heritage experts in order to seek for the best feasible conservation method to conserve the attributes that convey Outstanding Universal Value.

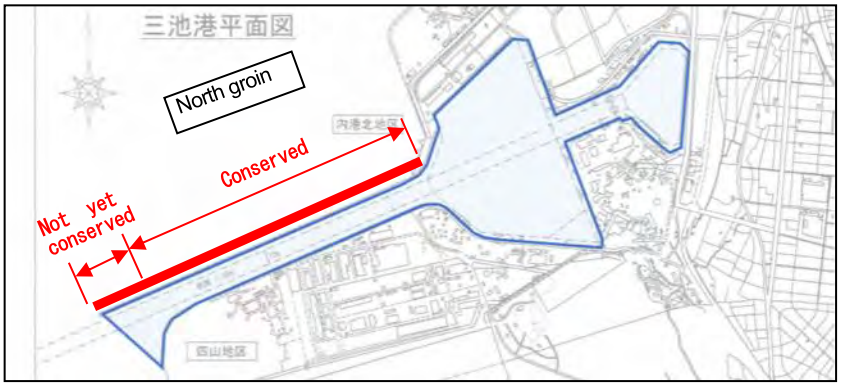


Figure 2. Conservation of north groin

a) Condition of North groin

Conservation work program continued from fiscal year 2009 was based on two Surveys of North Groin Condition conducted by Port Authority in fiscal year 2008 and by Port Bureau of Ministry of Land, Infrastructure, Transport and Tourism in fiscal year 2011. As for the survey's result, please see **Figure 3**.

In summary of the survey, although the top portion of the north groin was raised by concrete, it retains its original features. A concrete coating has been partially applied to the masonry surface. Among those places with masonry remains, some are in "Good" condition, others are in "Fair" condition which need observation, and those in "Poor" condition which need urgent repair and reinforcement by increasing the weight of stone materials to help them remain stable given the wave action generated by ships in the channel.

Current state photos	Current state	Expected deterioration	Urgency
TYPE 1 	Surface of coating stones is fully covered with concrete. This can often be found on the north sediment control groin, inside of the south harbour wall as well as the tip of the south wall.	As can be seen on the similar concrete-covered parts in the surrounding area, damage due to ageing (in the near-to-midterm) deterioration is expected. <Thinning due to ablation → cracks → exfoliation → omission of small armor stones → long shore drift → settlement → collapse>	Although the abovementioned damage due to ageing (near- to-midterm) deterioration is expected, this can be addressed by regular upkeep because armor stones on the rear face are currently retained thanks to concrete covering. Medium
TYPE 2 	This is covered from bottom to top with square armor stones that meet the weight requirements. This can be seen on part of the north sediment control groin.	No deterioration in the near-to-mid-term as this meets the required weight against the target waves (ship generated waves, penetrating waves).	No near-to-midterm deterioration. Low
TYPE 3 	This type is most commonly found on both the north sediment control groin and the south harbour wall. The top of the groin is covered with square blocks of about 3.9 t within the range of 1.0- 1.5 m from the top, while the bottom is covered with the mixture of small and large armor stones.	It is expected that the bottom coating stones that do not meet the required weight against the target waves (ship generated waves, penetrating waves) will fall off, which will then cause the sand on the rear face to be removed and thus result in settlement and collapse like TYPE6.	Urgently need to be addressed due to the increase in the size of ships and the tendency that very small armor stones are frequently found. High
TYPE 4 	Some of the smaller stones are visible; however as a whole they are covered by the larger stones. Visible from the offshore side of the north groin and the south harbor wall.	The larger stones can function (against trail waves, penetrating waves) as they are heavier, and there is no problem of deterioration in the medium term. Part of the smaller stones are visible, however they are sandwiched between the larger stones, and acute deterioration is not expected.	Most of the blanket stones are heavy enough so there is no problem, however attention should be paid to gaps that occurred. Routine check is necessary. Medium
TYPE 5 	The deteriorating blanket stones are covered by the front finishing blocks. Many can be seen from offshore side of the south revetment.	As can be seen in the same blocked section nearby, damage due to deterioration over the years (near-to-midterm) is expected. Each block weighs less than 100kg, which is not sufficient, so drop or loosening is expected. **<** Drop, loosening → scouring → Sink as a whole, slide **>**	Damage as mentioned above in coming years (near- to-midterm) is expected, however currently the rear blanket stones are there as a result of the finishing block, so it can be handled by routine check. Medium
TYPE 6 	The current blanket stones have been dropping and loosening.	Due to scouring, damage starts to progress which may affect the adjacent span.	Damage is progressing, and it may affect the adjacent span, so it is urgent. High

Figure 3. North groin condition before conservation works started

The north groin's condition is classified according to 6 types according to structure and deterioration, state of the existing revetment, and by which the urgency of repair and reinforcement has been judged. Since the western end has significant structural problems, the necessity of repair and improvement is obvious and no type-judgement has been conducted.

Repair and reinforcement work will be conducted for sections in "Poor" condition - TYPE 3, TYPE 6 and the western end part.

b) Considerations

1) Refurbishment and repairs are necessary for maintaining both the form of the groin as a World Heritage attribute, and the function of the north groin in maintaining the port channel.
2) The current lineal form and appearance of the north groin will be respected.
3) Retain the original fabric of the current north groin as much as possible, keeping the repairs to the minimum necessary.
4) The extent of necessary repairs will continue to be based on a clear grasp of the current state of the north groin over time, and the environmental threats to it.
5) Repair materials are being chosen that harmonize with the current appearance of the north groin.

c) Reinforcement method

Based on the above considerations and the deterioration, the policy of repair and reinforcement is as below.

- "Poor" condition of TYPE 3, TYPE 6 and the western end part which require urgent repair and reinforcement are considered a high priority. For other types, monitoring will be undertaken.
- In some sections, there is different stone material used on the upper and lower parts which has different weight, and therefore resistance to wave action, and there is also different deterioration. Repair and reinforcement should be limited to only those parts needing repair or reinforcement within the same section.
- The stone masonry has been repaired on many occasions since the port was constructed, and there is original and later masonry existing. New masonry will match the finish of the masonry to be replaced, whether original or later.

The conservation method is shown at **Figure 4** below.

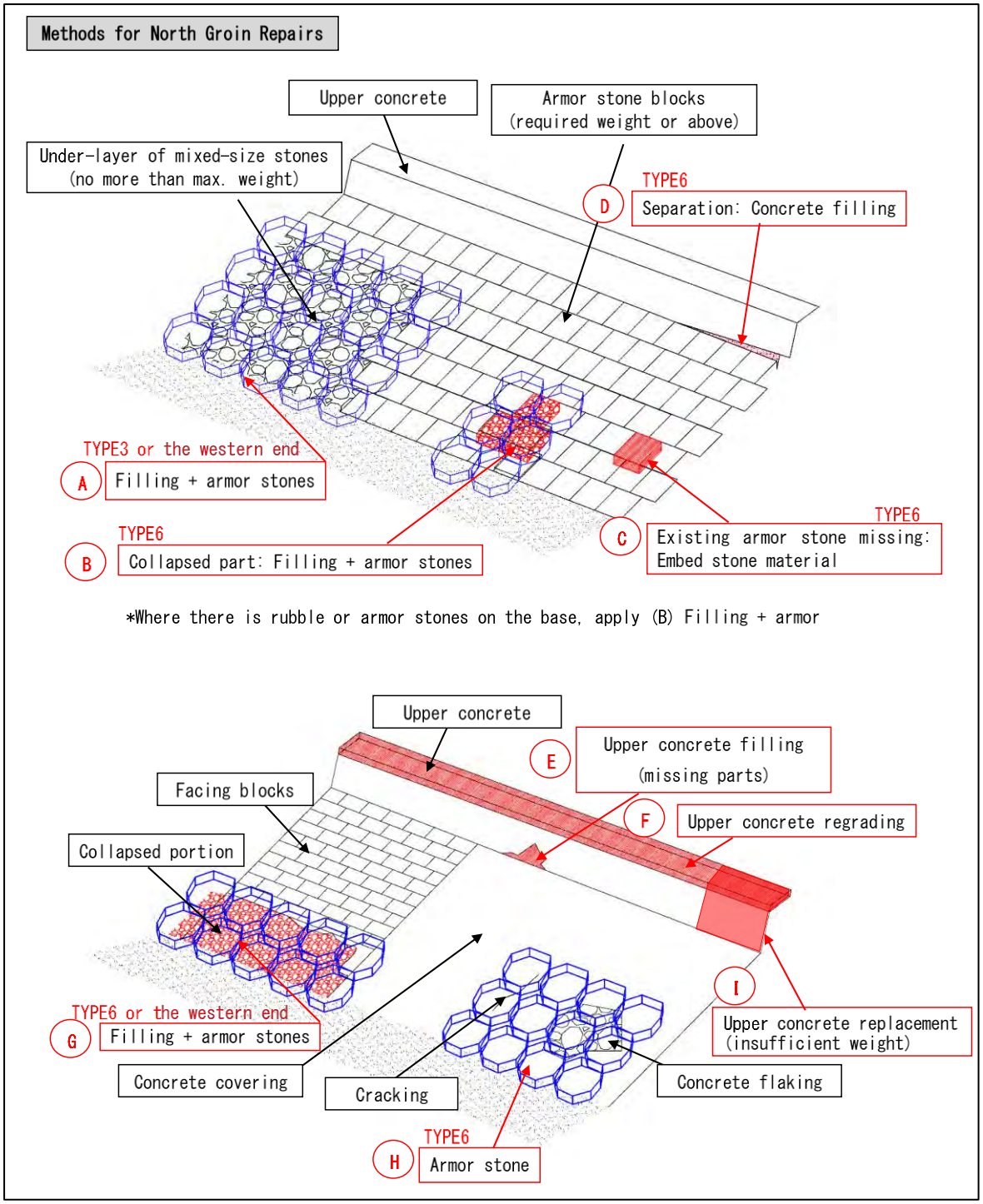


Figure 4. North goin refurbishment and repairs
(Note: red and blue elements are new repairs or reinforcement work)

d) Current situation

Conservation work on most of the groin has been conducted as indicated in **Figure 4** above. For the next stage, reinforcement of the western end (Method A, G and I) will be conducted.

3. OTHER WORKS

(1) Development of the Ariake Sea coastal highway

The Ariake Sea coastal highway is a major infrastructure project to provide high volume road access parallel to the Ariake sea shore. The road is already completed to a point adjacent to the eastern side of the buffer zone around Miike Port, and this was reported in the Nomination and Conservation Management Plan.

The planned extension of the route of the Ariake Sea coastal Road continues along the eastern edge of the buffer zone, and is proposed to cross the buffer zone and railway easement linking Miike Port to the Miike Coalmine Railway, which is a World Heritage element that runs inland to the coal mines. The Ariake Sea coastal highway, where it runs along the edge of the buffer zone, is located on the elevated alignment of the former coal mine railway and coal yards servicing the Port. Where it is proposed to cross the World Heritage railway component, the proposal is to continue the raised embankment and create a bridge over the railway alignment. This is designed to provide sufficient space and elevation to allow for future possible use of the railway alignment as a transportation route for visitors between the port and the mines. The engineering and heritage considerations of this design for the road have been under investigation through studies by World Heritage experts and discussions with the road management authority (Ministry of Land, Infrastructure, Transport and Tourism) and heritage managers (Omuta City, Arao City) since before the World Heritage inscription, and have been indicated previously to the World Heritage Center. Discussions continue on minimizing the visual impacts of the bridge and embankment, and this is not considered to be a development with adverse effects on the World Heritage property.

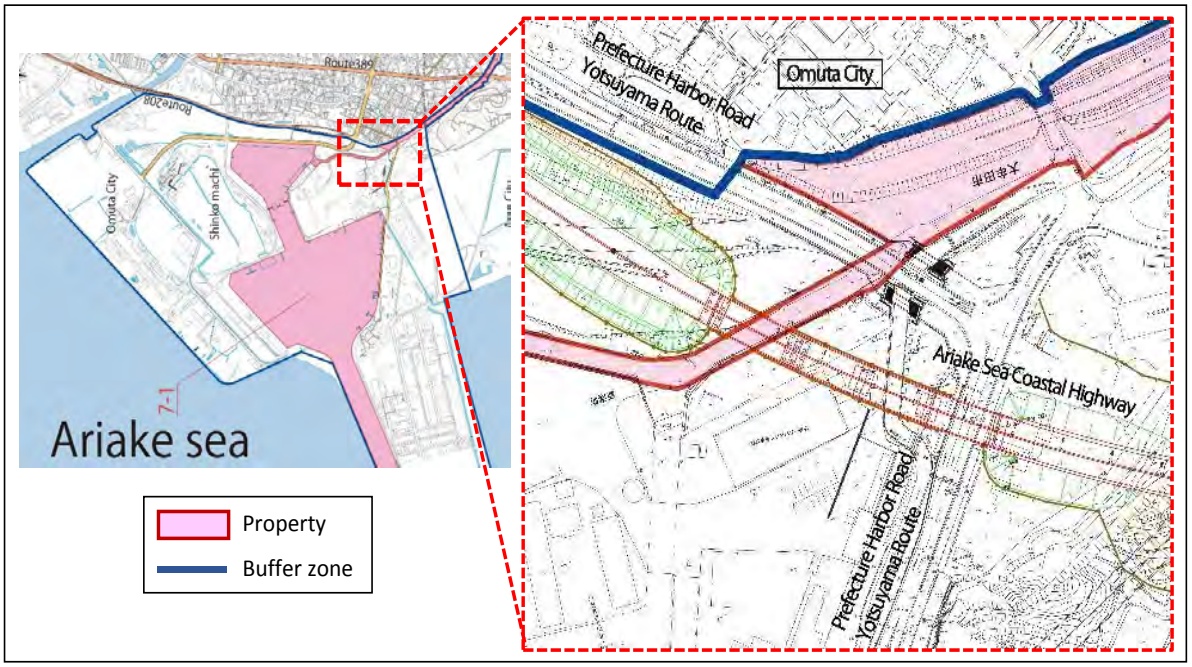


Figure 5. Ariake Sea Coastal Highway (Fukuoka Prefecture Area)

(2) Viewing point provision

An observation point with an overview of the lock gates is under construction in the landscaped area next to the parking lot for the high-speed ship. The aim is to enhance communication of Outstanding Universal Value to visitors, while ensuring safety and without hindering port activities.

Work on this will be carried out in fiscal year 2017.

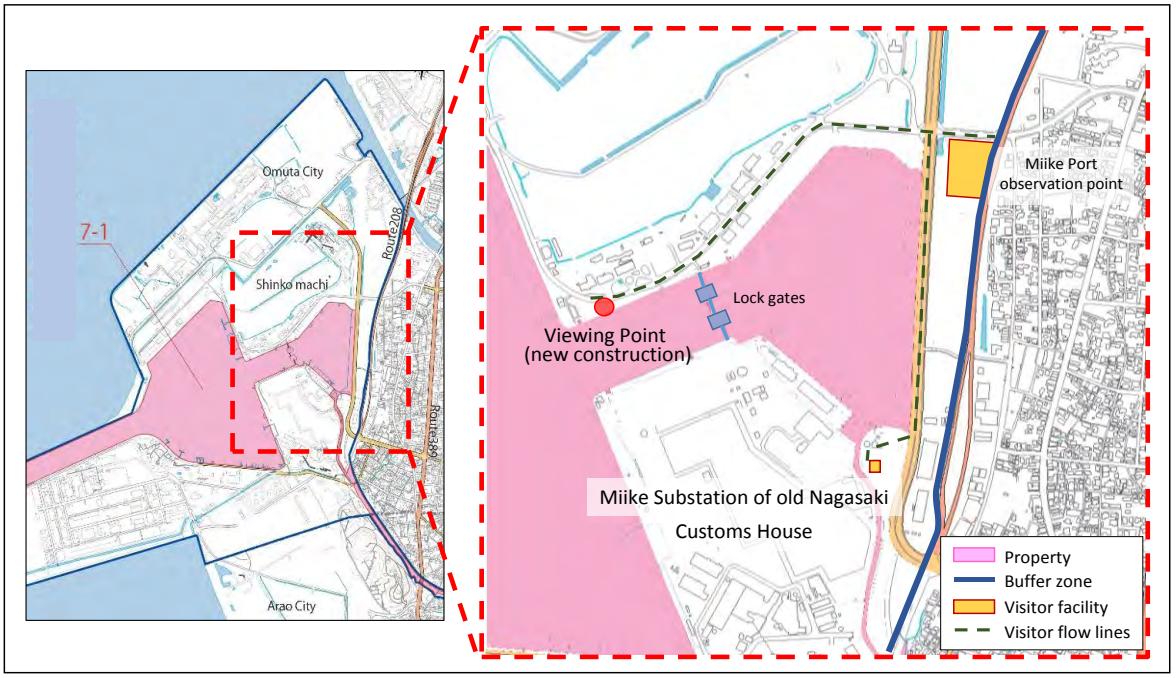


Figure 6. Miike Port Visitor Reception Facilities

4. WHAT IS NOT INCLUDED IN THIS WORK PROGRAM

Proposals that are not included in this Work Program include a proposed new small boat harbour and a new quay development. These projects have not yet reached a point where details can be provided. However, the obligation to report such projects under the Operational Guidelines is noted.

Conservation work programme and implementation programme for Misumi West Port (Area 7 Miike/ Component Part 7-2)

Uki City drew up a "Conservation Work Programme and Implementation Programme" for Misumi West Port in FY 2016 and 2017, pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by the World Heritage Committee at its 39th session in 2015. The Programme comprises detailed measures for the conservation and restoration of the component part of the "Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining" (hereinafter referred to as "Sites of Japan's Meiji Industrial Revolution").

1. Approach to conservation

Restore the masonry and other constituent elements to maintain the design and structure of Misumi West Port, which was built in the Meiji Period. Promote the conservation work of the facility as a port that recalls its past while being cultivated amid modernization as part of the living landscape of Misumiura in keeping with community development endeavors for next generations.

Area 7 Miike, one of the Areas of Sites of Japan's Meiji Industrial Revolution, comprises two component parts. One is Miike Coal Mine and Miike Port (Component Part 7-1) and Misumi West Port (Component Part 7-2). These component parts mutually played major roles in the development of the coal industry, which achieved Japan's industrialization through the improvement from the early stages of the direct introduction of Western technologies.

Since antiquity, the waters of Misumi West Port have remained a hub for transporting goods and people between the Amakusa region and the Shimabara Peninsula with the Plains of Kumamoto and Yatsushiro. As the volumes of coal shipped from Miike Coal Mine increased, Dutch engineer Rouwenhorst Mulder designed Misumi West Port to provide access to large ships. Completed in 1887, the facility combined Mulder's design and the techniques of stonemasons from the Amakusa region. This location was not just a harbor but also a city with a drainage channel (system). The large parcel of land and wide roads reflected advanced Dutch urban planning concepts that were revolutionary for Japan. The drainage channel and other urban infrastructure continues to support community life in both form and function.

Figure 1: Locations of Area 7 Miike and Misumi West Port (Component Part No. 7-2)

At Misumi West Port, which incorporates masonry techniques, it took immense manpower to load coal on steamboats. However, at Miike Port (in Omuta City, Fukuoka Prefecture), which opened just 20 years after completion of Misumi West Port, the deployment of machinery dramatically enhanced transportation efficiency improved. A comparison of both ports reveals Misumi West Port as a component part of the rapid development of heavy industry in Japan through rising coal exports.

In the Conservation Management Plan for Misumi West Port which was prepared for nomination of "Sites of Japan's Meiji Industrial Revolution" for World Heritage inscription. The list of elements constituting Misumi West Port and their value categories are shown as **Table 1**.

Component	Value Category of the Component			
	OUV	Nation	Region	Local
Quay	○	○	○	
West-end drainage channel	○	○	○	
West drainage channel	○	○	○	
East drainage channel	○	○	○	
Ichinohashi	○	○	○	
Ninohashi	○	○	○	
Sannohashi	○	○	○	
Nakanohashi	○	○	○	
Rear water channel	○	○	○	
Old Misumi Marine Transportation Warehouse	○		○	
Old Takada Shipping Office	○		○	
Old Uto County Office			○	
Ryujyokan			○	
Old Misumi Summary Court			○	
Old County Office			○	
Official Residence of the Chief of Police			○	
Town layout	○	○	○	
Road gutters	○	○	○	
Wells	○	○	○	
Water god				○
Local deity				○
Hinterland	○	○	○	
Shrine				○
Private houses				○
Tide station				○

Table 1: The list of elements constituting Misumi West Port and their value categories

※In drawing up this programme, constituent elements stated in CMP are partly reviewed.

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

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

(1) Comprehensive preservation and inheritance of the landscape of Misumi West Port and surroundings

To safeguard and inherit the landscape of when Misumi West Port was built, Uki City will maintain the constituent elements, (i) designs and forms of the quay, drainage channel, the town layout, wells and other constituent elements, and (ii) topography of the hinterland, and at the same time, the city will conserve the surrounding landscape by restricting development and other activities.

Figure 2: Scope of the program

(2) Sharing value focused on the process of historical changes and developments of Misumi West Port

It is important to understand the value of Misumi West Port from the perspectives of its process of historical changes and developments, which is still alive in many corners of the landscape. That value encompasses not only the course of the harbor construction in light of its geographical features and the originality of the water supply system, including the still functioning drainage channel but also the significance of former judicial, public administration, and maritime trade functions, the scale of a city with landfill, and the continuation of the urban infrastructure. Uki City exhibits and explains to ensure both visitors and local residents immerse themselves in the both roles that Misumi West Port played in the development of the coal industry in the Meiji Period and in the after period by touring the town.

(3) Sustainability of local living

One prerequisite in preserving and inherit Misumi West Port and its landscape is to maintain and invigorate local livelihoods. In the Misumi West Port area, where the birthrate is falling and the population is aging, Uki City will endeavor to create new jobs by promoting agriculture and fisheries and developing tourism and branding the town, as well as strive to foster community enthusiasm for the locale, including surrounding areas by promoting community development and measures on community-lead tourism.

2. Policy

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

(1) Conducting investigative studies to assess the current state of the constituent elements and clarify the process of historical changes and developments of the component part

To properly maintain stone masonry, such as for the quayside and drainage channel, Uki City will monitor the degradation of materials by seawater, wind and rain, and other causes as well as damage from the growth of trees and other vegetation.

The city will survey visitor numbers and behavior and other aspects, including the actual state of tourism and disaster awareness at the aim of understanding sustainability of the community.

The city will look into deepening understanding of the process of historical changes and developments of Misumi West Port including verifying routes for storing and transporting coal, and the locations of each facility as well as investigating unexamined related sources within the area and study historical documents and other materials.

(2) Maintaining and restoring stone masonry for the quay and drainage channel etc.

While monitoring stone masonry of the quay and drainage channel etc., the city will conduct daily maintenances and repairs. In addition, the city will conduct restoration with dismantling if severe damage or potential collapses are detected. Particularly, the city will cut down or transplant trees where their roots cause bulge or looseness in masonry.

As the landscape as a whole, including the port city function, indirectly affects the preservation of stone masonry structures, the city will make consideration for its maintenance and management.

(3) Maintaining hinterland landscape and natural forest, including in the buffer zone

The hinterland of Misumi West Port is a source of earth and sand for coastal landfill, and is important to understanding how the landscape was created when the port was built by comparing to the filled ground of the settlement.

While maintaining the hinterland slope covered with a natural forest, the city will therefore take various steps to create a good landscape for the current settlement. It will manage the currently maintained view and viewpoints in the hinterland and on the opposite shore and ensure that the condition is always recognizable. While fixing the landscape of buildings and other installation in collaboration with local residents to maintain good views of the current settlement, the city will deploy a framework to preserve the landscape, including through cleaning initiatives that involve visitors.

(4) Present displays about systems at Misumi West Port

The city will efficiently and comprehensively inform visitors, focusing on the Outstanding Universal Value of the Sites of Japan's Meiji Industrial Revolution and the positioning of Misumi West Port in that, including about the historical roles of each facility as elements of the harbor city.

(5) Sustainably promote community-based projects and build related structure

The city will undertake measures to ensure safety and security. It will share awareness and promote cooperation between residents, visitors, and relevant parties by continuing to conduct regular workshops and support daily cleanups by residents and other cleaning initiatives by local organizations and volunteers.

Leveraging its World Heritage Exchange Headquarters, the city will promote the project through collaboration between relevant departments. In particular, it will bolster its management and contact system to ensure swift responses to disasters and other emergencies.

3. Methods

(1) Investigative studies

(a) Investigative studies to ensure preservation of Misumi West Port

The city will continue monitoring with producing monitoring charts for the entire landscape including the buffer zone, matched to the features of each element, including individual constituent elements of the component part, such as quay, drainage channel, and port hinterland, etc. The city will conduct an annual follow-up to scrutinize repair techniques and timing according to the extent of damage.

For the extent showing significant bulge or looseness on the masonry of the quay, drainage channel, or other structures, the city will assess the extent of such movement and prepare for major restoration with dismantling based on the results of analysis. As well as investigating the causes of masonry instability, the city will explore the causes of masonry deterioration and weathering, assess sources of stones were supplied, and look into seismic retrofitting for buildings, especially the Old Misumi Marine Transportation Warehouse.

(b) Investigative studies into local community sustainability as underpinning of Misumi West Port

The city will conduct surveys of household and others to understand the social dynamics of the local community, the future underpinning of Misumi West Port. The city will also conduct surveys of the number of visitors, considering a possibility to set an upper limit for the acceptable number of visitors to the community while surveying the number of visitors to evaluate a structure to cater to future visitors to the community.

(c) Investigative studies to clarify the process of changes and developments of the Misumi West Port

To clarify Misumi West Port's role in the development of the coal industry in the Meiji Period, the city will collect historical documents and other materials regarding coal mining, transportation, and exports from the Miike Coal Mine. It will clarify the process of changes and developments of Misumi West Port, not only by focusing on the port and settlement structure during the Meiji Period, but also conducting research from in view of the role in distribution and traffic before and after the Meiji Period.

(2) Conservation and restoration of quay, drainage channel, and other structures

(a) Prioritizing based on monitoring results

If identifying damage or other issues in the course of regular observations based on monitoring records or if there is damage or other problems due to disasters or other incidents, or if surveys of stone movement identify dangers, the city will commission detailed expert survey and make the appropriate conservation and restoration measures based on priorities according to four damage stages as shown in **Table 2**.

Priority ranking		Damage or other problem	Response policy
A	Requiring urgent measures	・Damage in the component part.	・Take immediate measures, including restoration.
B	Follow-up observations needed	・Some visible impact on the component part, but no damage yet. ・Adjacent to the component part and could suffer damage in future.	・Conduct follow-up observations by monitoring (bulges of masonry, growth of tree and other developments). If deeming high probability of damage to the component part, take measures, including restoration.
C	Low potential of causing damage to the component part.	・Unlikely to have an affect in view of distance from the component part and etc.	・Continue follow-up observations through monitoring.
Others	Requiring regular management.	・Affecting preservation of the component part in terms of maintenance and management, such as through overgrowth of grasses in drainage channel.	・Undertake maintenance works, such as by regularly weeding drainage channel.

Table 2: Setting priorities

(b) Coservation and restoration techniques and other measures

If follow-up observations identify damage to the masonry of the quay or drainage channel, the city will conduct major restoration with dismantling and resetting masonry based on drawings and photographs. If masonry bulge or looseness is found, such as because of tree growth, the city will cut down or transplant them to prevent problems from expand, and remediate after removals.

At the same time, the city will conduct restoration for building damage and deterioration, mainly for the Old Misumi Marine Transportation Warehouse. Where possible, original materials and techniques will be maintained in restoration.

The area of the World Heritage component part is designated as part of the Misumi West Port Cultural Landscape area under the city's Landscape Plan, with no parts requiring specific restoration. The city will safeguard the existing town layout by continuing to limit development and other actions beyond the scale of current buildings within the area and maintain the skyline of the hinterland when viewed from the quay.

(3) Arrangement and improvement of landscape

(a) Adjustments among parties and sharing awareness about arrangement and improvement of landscape

Development is restricted in the scope of the component part and buffer zone that is selected as an Important Cultural Landscape namely “Misumiura Cultural Landscape” under the Law for the Protection of Cultural Properties and designated as the “Misumi West Port Cultural Landscape Area” based on the city's Landscape Plan as well. To enhance the viability, the city will set up a place to share understanding among relevant departments in the city, the Government of Japan and Kumamoto Prefectural Government, and local residents to share the desired landscape approach and to ensure the right notifications for certain activities.

(b) Utilization of system to promote landscape leading

The city's Landscape Plan has a landscape advisor system to assist the city government and citizens in undertaking public or private works in how to create landscapes. The city invites the landscape advisors and conducts regular discussions with them on sharing information and in triparty communications. Based on

assessments of historic buildings and other structures still not designated as cultural properties, the city endeavors to preserve them by designating them as important buildings to the landscape under the Landscape Act. The city has designated National Road 57, as an important constituent element of the Important Cultural Landscape based on the Law for the Protection of Cultural Properties, as the Public Facility of Landscape Importance based on the Landscape Act, and strives to improve the landscape, including by eliminating utility poles.

To ensure the safety of school routes and routes for visitors, the Ministry of Land, Infrastructure, Transport and Tourism will expand the existent footpaths by cutting a small portion of the slope of hinterland. The area is further east of the east edge of the scope inscribed on the World Heritage List. The ministry will alter landscape to match the surroundings.

(c) Management of trees

The high ground of the hinterland oversees Misumi West Port. The city has thus built a viewpoint to oversee the quay and marine area in the hinterland (**Figure 3**) and uses signboards to guide visitors there. If follow-up observations (monitoring) reveal that the view might be blocked, the city will cut and trim trees accordingly.

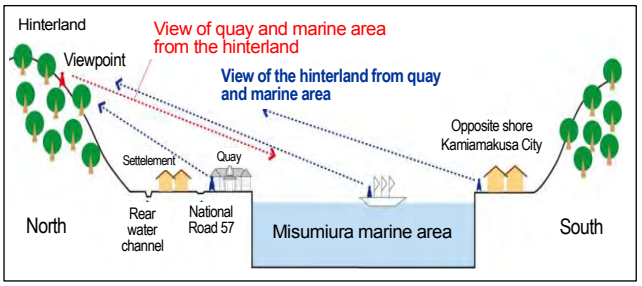


Figure 3: Approach to viewpoint and views

The landscape of Misumi West Port and hinterland as seen on a regular liner or from the village and road on the opposite shore has an important impact on understanding how the landscape was created when the port was built. The city thus accords attention to maintaining the landscape in terms of the features of the hinterland, natural forest and settlement. .

(d) Creating landscapes through arrangement and other efforts

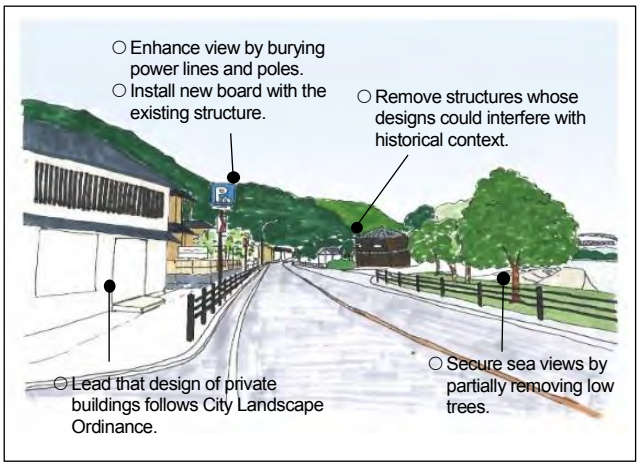


Figure 4: Impression of beautification

In areas that many visitors frequent, notably as along the national road and rear water channel, the city will try to create dignified landscapes that are befitting of World Heritage component part while ensuring the safety of local residents and visitors. The city and other relevant institutions will improve the views of surrounding areas, including the hinterland and sea by burying utility poles and lines underground and ensuring installation of new outdoor board with the existing structure, endeavoring to maintain the continuity of streetscapes by planting trees in vacant lots and to use better quality pavements (**Figure 4**).

(4) Presentation

(a) Zoning

Based on explaining the value of Misumi West Port, the distribution of constituent elements representing that value, the current state of the scope of the Programme, and other factors, the city will divide the whole scope into six zones and define public usage for each zone in line with its features (**Figure 5**).

Figure 5: Zonings

(b) Tour route planning

The city will encourage visitors coming by car to use car parks around JR Misumi Station around 2.5 km southeast of Misumi West Port and car parks around Misumi East Port, or to use private loop buses. As the view from sea helps to understand how the landscape was created by the construction of the port through comparing Misumi West Port and the hinterland, Kumamoto Prefectural Govenment will use the floating pier at the east end of the car park to provide a ship route for visitors.

The city will build a route for visitors to walk around the Harbor Walk Zone and the Guidance Zone within component part. On the route, visitors would be promoted to visit the drainage channel at the back of the residential area and a hill viewpoint (**Figure 6**) by tour guides at a guidance center inside the Guidance Zone.

The tour guide route will focus on such facilities as the quay and drainage channel that have contributed to the Outstanding Universal Value, and will based on the distribution of buildings constituting the harbor settlement, with zonings being a consideration.

(c) Arrangement and improvement of landscape and planting vegetation

The city will maintain important trees that contribute to good landscape of Misumi West Port, including with trees for views and shades, ensuring that they do not adversely affect such constituent elements as masonry and other buildings or the lives of local residents.

(d) Guidance and explanatory boards

To navigate and inform visitors on the guide route set through tour route planning, the city will install comprehensive guideboards as well as explanatory panels and name boards for each element, guidance and reminder signs, and other installations at appropriate locations. Future updates to guideboard, explanatory panels, signs, or other installations will be in Japanese, English, Chinese and Korean.

(e) Administrative and utility facilities

After regularly checking the state of utilizing existent toilets and benches, resting areas, and other visitor facilities, as well as the whole of Misumi West Port, the city will upgrade or remove existing facilities as needed. If finding through a visitor survey that utility facilities are not sufficient for the better state of utilization, the city would consider constructing new facilities.

To address a lack of car parking space during some events and to encourage access from the floating pier on east of the buffer zone to Misumi West Port, Kumamoto Prefecture will undertake the Green Plaza Construction Project (see **Annex**) that include car parks alongside of the National Road 57 adjacent to the east-end of Misumi West Port.

The city will use existing facilities for exhibition and information dissemination and will not build a new

facility. Where reusing existing facilities, the city will clarify the division of roles of exhibit and explanation between each facility under a set theme that includes a cultural landscape perspective through the entire Misumiura, focused on the World Heritage concept and positioning of Misumi West Port therein. (**Figure 6**).

4. Projects Implementation

(1) Order of priorities

Table 3 shows the specific projects and implementation schedules for conservation work programme and implementation programme. Over the short term, between 2017 and 2022, the city will undertake projects to resolve urgent issues, including repairing deteriorated and damaged such constituent elements as the quay and drainage and ensuring safety and convenience for local residents' lives. To establish and reinforce future administration system, the city's World Heritage Exchange Headquarters will conduct regular hearings on requests and other information at the regional representative liaison meetings (West Port Meetings) organized by area representatives, managers, businesses and other parties. The goal is to ensure close collaboration between relevant departments and to implement the projects effectively.

(2) Revision of implementation schedule

In medium term of ten years after short-term projects are completed, the city will start projects that could not be completed in the short term as well as undertake conservation and restoration and other work for damaged and deteriorated areas identified through regular monitoring.

In long term of 16 years after making the projects, the city will review project processes and operations as needed based on progress to date.

As well as dealing with short through long term projects, the city will continue to maintain and manage facilities and monitor damage and other issues with the constituent elements of the component part. It will monitor annually and scrutinize techniques for conservation and restoration and timing according to the extent of damage and other issues before undertaking work.

(3) Others

Fundamentally, owners and managers as well as individuals, organizations, and public institutions that run projects by borrowing facilities will secure their own funding to match their project. Subsidies would be used in cultural properties preservation to conserve and restore the constituent elements, and various other subsidies would be utilized for other projects depending on the contents.

Approximately 11 million yen was spent in FY2016 (including the amount spent to cover costs incurred for plan making, the renovation design of the Old Uto County Office, the dredging of the rear water channel and east drainage channel, and the presentation and public utilization of the site), and 28 million yen has been budgeted for FY2017 (including the amounts earmarked for plan making, renovation work for the Old Uto County Office, dredging of the rear water channel, conservation work for the rear water channel, installation of world heritage plaque, and the presentation and public utilization of the site), both excluding the cost of day-to-day management and maintenance.

Category	Item	Short term						Medium term	Long term
		2017	2018	2019	2020	2021	2022	Six to 15 years after plan made	From 16 years after plan made
Investigative studies	Monitoring								
	Collect and study relevant historical document and materials								
	Collect relevant historical document and materials on exports of Miike coal and research relevant facilities								
	Survey households in Misumi West Port area								
	Survey visitors								
Repairs	Damage repairs and other works								
Facility improvement	Upgrade guidance, explanation, and other facilities								
	Maintain and manage administrative and utility facilities								
	Maintain and manage car parks								
	Install routes								
Construction of preservation management system	Establish organizations within the settlement								
	Build confirmation system for development activities								
	Establish local resident organizations								
	Other activities, including local cleanups								
	Conduct local round-table meetings								
	Collaborate with educational institutions and holding local events								
Buffer zone and wider area	Green Plaza Construction Project and maintenance and management								

New Continued

Table 3: Project implementation schedule

5. Basic Plan

The basic plan for Misumi West Port is as shown in the **Figure 6**.

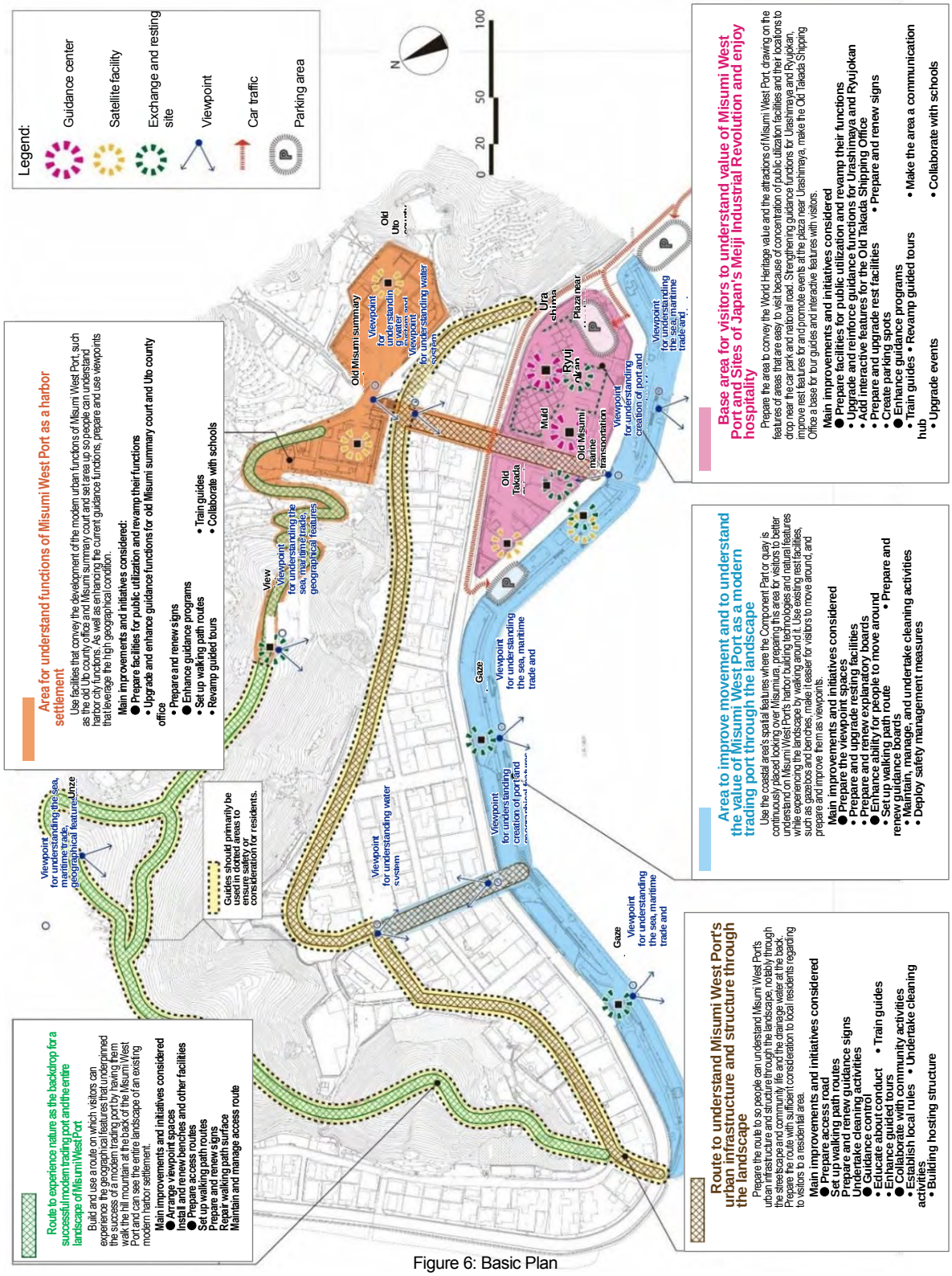


Figure 6: Basic Plan

6. Others

The Conservation, Restoration, Presentation and Public Utilization Plan for the Misumi West Port, which became a source of "Conservation Work Programme and Implementation Programme" is available on Uki City's web site. <http://www.city.uki.kumamoto.jp/q/aview/390/10010.html>

(Annex)

Outline of Misumi West Port Greenery Plaza Improvement Project and Impact on the Outstanding Universal Value

1. Project

(1) Implementing Body

Kumamoto Prefectural Government

(2) Subject Location

The subject location is adjacent to the eastern edge of the area of "Misumi West Port", one of the World Heritage component parts of "Sites of Japan's Meiji Industrial Revolution". It is a narrow area between National Road 57 and the sea, with a total length of approximately 160 m from the eastern edge of the component part to the floating pier (completed February 2013) and an area of approximately 3,130 m^2. Roughly the western half of the subject location (length approximately 80 m, area approximately 1,470 m^2) is included in the buffer zone of Misumi West Port (Figure 2).

(3) Execution Period

FY2018 (scheduled to begin construction) – FY2019 (scheduled to complete construction)

(4) Objectives

a. Secure a route for visitors connecting the floating pier with Misumi West Port.
b. Enhance the safety and convenience of local residents and visitors.
c. Resolve the shortage of parking spaces during events.

(5) Contents

a. Construct a plaza with a view of Misumi West Port and the Misumi-no-Seto Strait sea area, which lies beyond the port.
b. Construct a route that leads visitors from the floating pier and parking lot to Misumi West Port.
c. Construct a parking lot for 27 passenger vehicles.

2. Project examination process

This project was decided subsequent to the following examination process. The contents reflect the opinions expressed during the examination process.

- Kumamoto Prefectural Government established a working group comprised of persons of learning and experience, which met 17 times between October 2012 and July 2017 and examined the details of the project proposal
- Kumamoto Prefectural Government also broadly listened to opinions from Uki City and other concerned administrative organs and from local residents between May 2013 and July 2017.
- Uki City established a "Misumi West Port World Heritage Restoration, Maintenance and Utilization Committee" to devise the policies and methods for the conservation, restoration, presentation and utilization of Misumi West Port targeting at the World Heritage component part and its buffer zone, as well as the selected scope of Important Cultural Landscape under the Law for the Protection of Cultural Properties (**Figure 3**), and conducted reports and hearings regarding this project.
- Also at the "Miike Conservation Council" established based on the "General Principles and Strategic Frameworks for Conservation and Management of the Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining," consensus was sought among the concerned parties at discussions held on May 8, 2017.

3. Impact of the project on the World Heritage component part

- While giving consideration to the fact that this project is in an area adjacent to the World Heritage component part, the project intends to newly create a space where local residents and visitors can both enjoy the scenic attraction of the subject location and to improve the setting of Misumi West Port.
- This project meets all current legal regulations, and reflecting opinions expressed during the examination process presented in 2 above, it enhances maintaining continuity of the component part, with measures including the use of materials consistent with the component part and the maintenance of the existing stone walls and trees in the project area.
- As explained above, this project has no negative impact on the component part, and conversely contributes to the improvement of the setting that is unified with the component part. For future project execution, Kumamoto Prefectural Govenment will continue to fully share information and hold discussions with the Government of Japan (the Cabinet Secretariat and Agency for Cultural Affairs), Uki City, and other concerned parties.

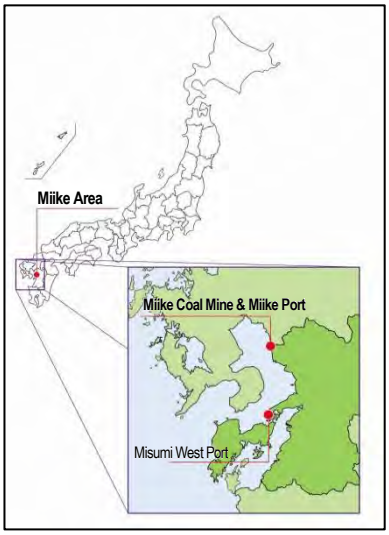


Figure 1 Location map of Misumi West Port (Component Part 7-2)

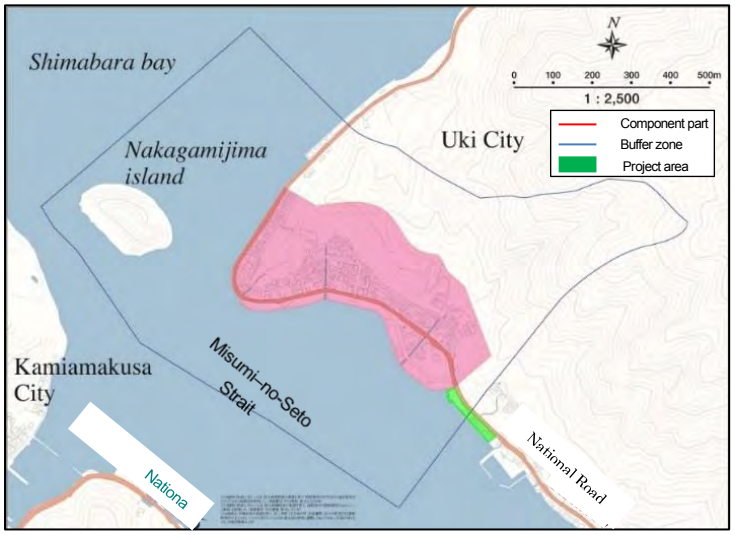


Figure 2 Location map of project area

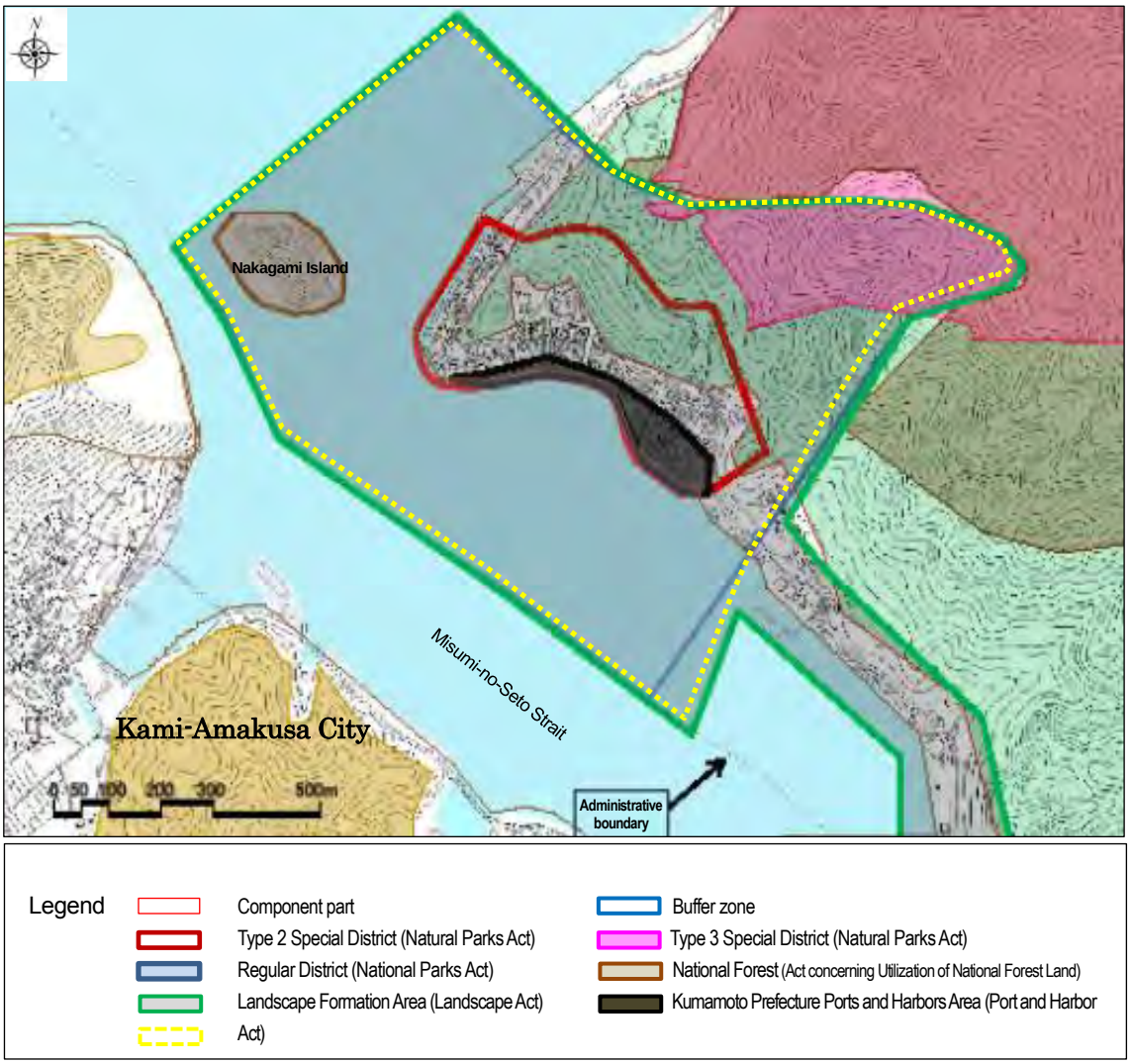


Figure 3 Map indicating legal regulations concerning the component part and buffer zone (including table)

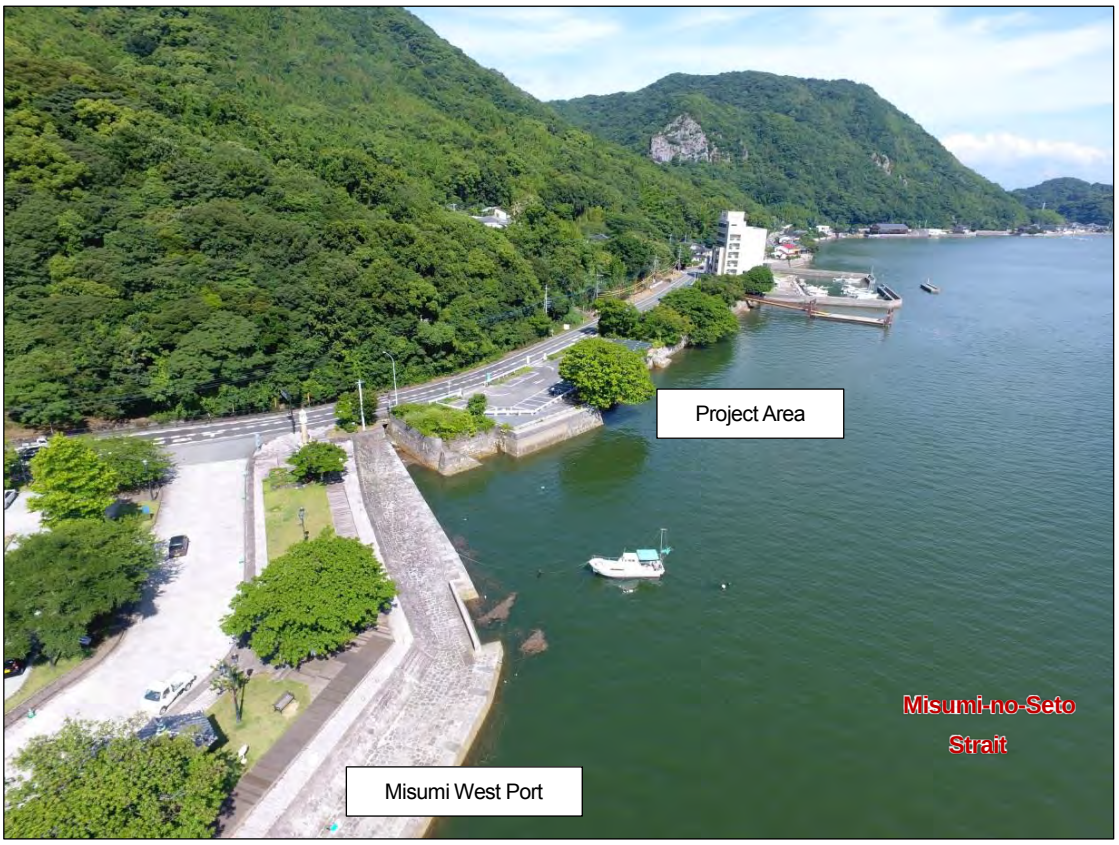


Figure 4 Present state of project area (aerial view of the buffer zone and floating pier from above the component part)

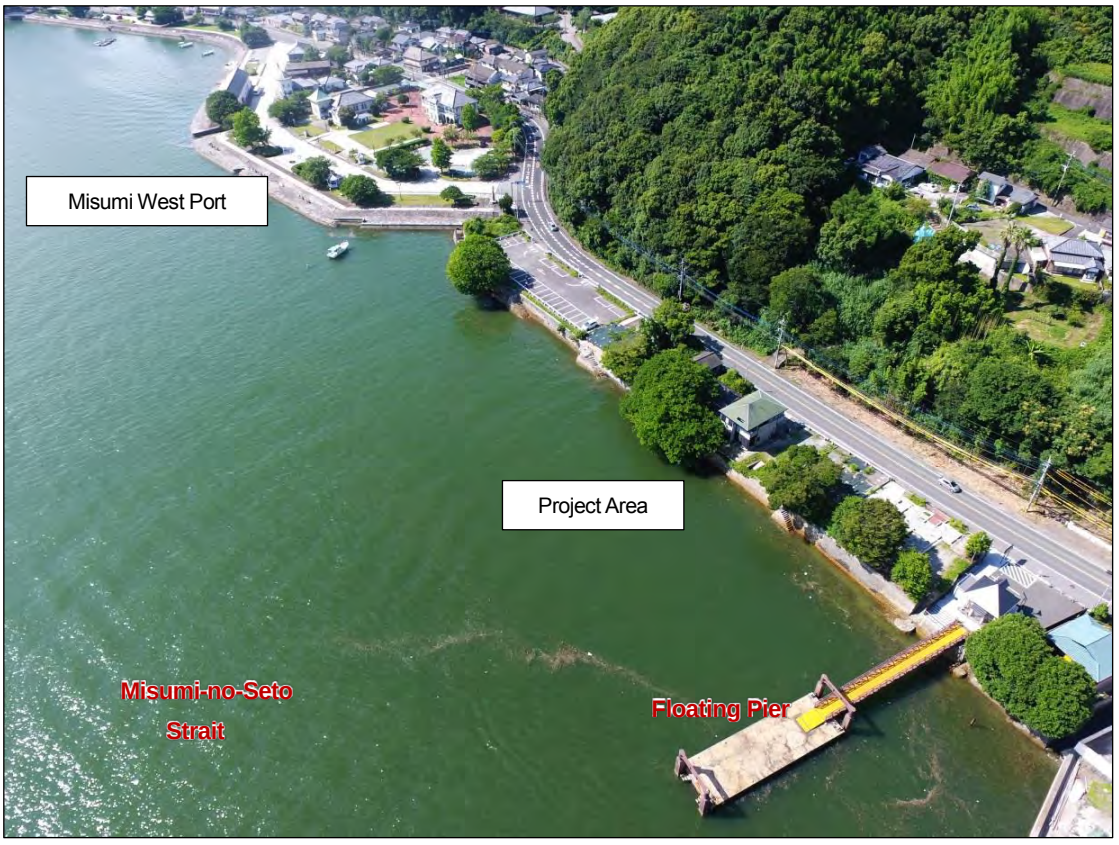


Figure 5 Present state of project area (aerial view of the buffer zone and Misumi West Port from above the floating pier)

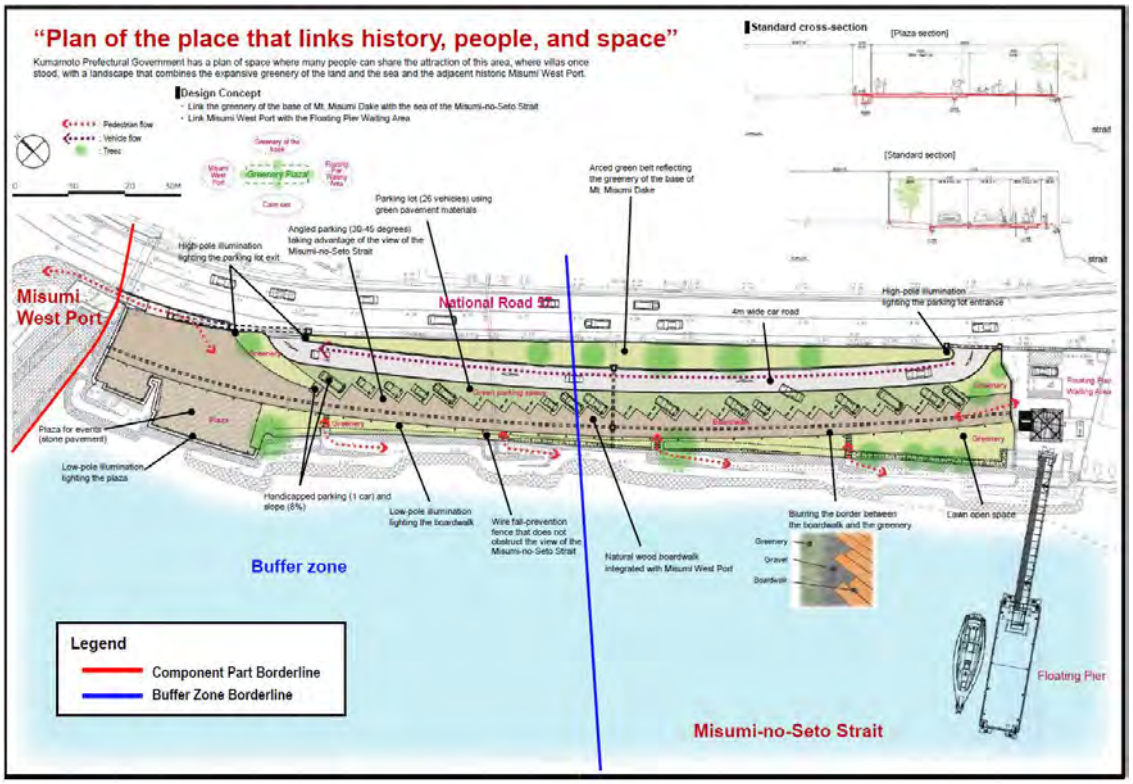


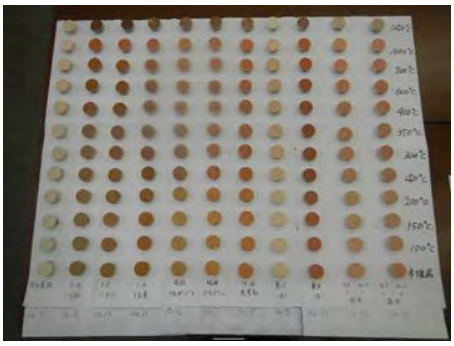
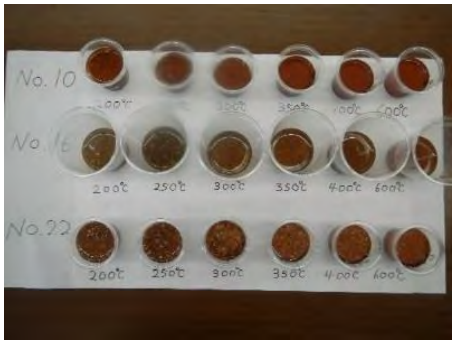
Figure 6 Map indicating Misumi West Port Greenery Plaza improvement project

Figure 7 Completed project image (aerial view of buffer zone and Misumi West Port from above the floating pier)

Conservation measures currently being implemented on a priority basis at component parts

Conservation work (including presentation and utilization) currently being implemented on a priority basis at each of the component parts of the property are as follows.

Area 1 Hagi/Hagi Reverberatory Furnace (Component Part 1-1)

Project	Timing	Project outline
Surveys needed for conservation, restoration, presentation and public utilization of buildings	FY 2016 onward	Prior to restoration of the upper part of the furnace consisting of bricks, an ingredient analysis of the original bricks and a study on the brick firing method is being conducted. Based on the results, brick-making and other empirical experiments are being undertaken, along with various types of tests in relation to brick strength and deterioration. These results will also be reflected in the conservation and restoration work, etc.
Ingredient analysis of bricks and study on firing method	FY 2016 onward	A ingredient analysis of the original bricks, loss on ignition tests, and compressive strength tests are being conducted. To determine the specifications for creating the experimental bricks needed for the various types of tests prior to creating new bricks for replacement of those deteriorated at the upper part of the furnace, ingredient analyses of the raw materials, etc., are being undertaken, test pieces created, and water dissolution experiments conducted on these.  

Area 1 Hagi/Ebisugahana Shipyard (Component Part 1-2)

Project	Timing	Project outline
Excavation surveys	FY 2009 onward	Excavation surveys toward specification of underground archaeological remains were conducted over FY 2009, 2010 and 2012. From FY 2015, further excavation surveys will be undertaken of the various workshop remains based on survey plans in order to install planar markers indicating the locations and scales of underground remains on the immediate surface of protective earth layer. Survey work is expected to be completed in FY 2022.
Excavation surveys aiming at designation as a National Historic Site	FY 2009-12	   Left: FY 2009 excavation survey on probable builders' residence site Center: FY 2010 excavation survey on probable forge site Right: FY 2012 excavation survey on probable Koshinmaru shipbuilding site
Excavation surveys aiming at installing planar markers over remains	FY 2015-16	  Left: FY 2015 excavation survey on probable Heishinmaru and Koshinmaru shipbuilding site (left rear) and dovetailing shed site (front right) Right: FY 2016 excavation survey on probable Heishinmaru and Koshinmaru shipbuilding site (rear center) and dovetailing shed site (front left)

Area 1 Hagi/Ohitayama Tatara Iron Works (Component Part 1-3)

<table>
<tr><th>Project</th><th>Timing</th><th colspan="2">Project outline</th></tr>
<tr><td>Development of Ohitayama Tatara Iron Works surrounds</td><td>FY 2014 onward</td><td colspan="2">World Heritage inscription is expected to attract more visitors, but the existing rest facility was small and the attached toilets old, so construction of the necessary new toilets was addressed first, starting in March 2015. The rest facility, which will have display reflecting the Outstanding Universal Value, etc., was completed in March 2017. As the component part was close to the rear of the original rest facility, the original facility was removed for the sake of the scenery. As the new rest/interpretation facility was built at the site of the old parking spot for two microbuses, new parking was secured for the two buses in a nearby public space.</td></tr>
<tr><td>Installation of toilets</td><td>FY 2014</td><td> 
Before: Toilets (one closet bowl, one urinal) comprise 6 m^2 of the old rest facility</td><td> 
After: Men’s toilets (one closet bowl, one urinal) and women’s toilets (one Western-style, one Japanese-style)</td></tr>
<tr><td>Installation of a rest/ interpretation facility</td><td>FY 2016</td><td> 
Before: Interpretation space comprises 12 m^2 of the rest facility.</td><td> 
After: The new 93.5 m^2 facility has interpretation, rest and training functions.</td></tr>
<tr><td>Installation of microbus parking</td><td>FY 2016</td><td> 
Before: Used as a public space</td><td> 
After: Renovated into parking for two microbuses</td></tr>
</table>

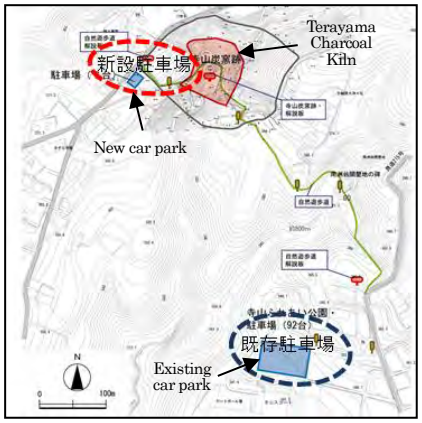
Area 1 Hagi/Hagi Castle Town (Component Part 1-4)

Project	Timing	Project outline
Construction of a visitor center	FY 2014-16	➢ The Visitor Center was built to more properly disseminate information on the Outstanding Universal Value of the Sites of Japan's Meiji Industrial Revolution and the positioning and features of the five component parts of Area 1 Hagi in terms of Outstanding Universal Value. ➢ The Visitor Center was opened on March 4, 2017 as part of the Hagi Meiringakusha facility as the first place that visitors go to obtain information on Hagi City tourism, history, and culture. ➢ Hagi Meiringakusha is located within the grounds of the historical remains of the Hagi City Meirinkan. A wooden building originally part of Hagi City Elementary School, which opened in 1885, the restored facility now has exhibits set up in the former classrooms. ➢ The building, which was originally built in 1935, comprises four two-floor blocks. Two of those blocks have been restored. In addition to restoring the building to its original appearance, seismic resistance was improved and the appearance of the buildings including compound refurbished. A car park was built in the old elementary school sports ground. ➢ Of the two restored blocks, the main block at the front of the building was turned into a tourist information center, a Hagi Clan School Meirinkan exhibition room, a Meirin Elementary School exhibition room, a recreated classroom, and the Geopark Center. The old school building comprising the second block (Building 2) contains the World Heritage Visitor Center in the east wing and the Bakumatsu (late Edo period) Museum in the west. The Bakkumatsu Museum presents historical materials and science and technology history materials, including devices related to medicine, astronomy, and tricks, as well as cannons and guns, etc., from the end of the Edo period to the Meiji Restoration. It is intended to explain the historical background to the five component parts belonging to Area 1 Hagi. ➢ An outline of the Visitor Center is as follows: ・ Structure: Two-floor wooden building ・ Building area: 913.38m^2; Floor area: 1,770.32m^2 ・ Facilities: Exhibition rooms, toilets ・ Cost: Restoration of two blocks: JPY731.49 million (JPY135.57 million for the World Heritage Visitor Center) ・ Development period: FY2014-16  Front of Hagi Meiringakusha (from the southeast)  Hagi Meiringakusha (seen from above to the southeast; section marked in red is the Visitor Center)

Area 2 Kagoshima/Shuseikan (Component Part 2-1)

Project	Timing	Project outline
Installation of signage and explanation boards within Shuseikan	FY 2014-15	To enhance signage directing visitors from the nearby national road and car park to the component part and improve on-site explanatory signage and explanation boards in Area 2 Kagoshima were produced and installed with a unified design. Before: ・ Varied designs and specs ・ Insufficient explanation of component part  After: ・ Unified Area 2 Kagoshima design and format ・ Better component part explanations 
Updating of interpretation at the Former Foreign Engineer's Residence	FY 2015	To promote visitor understanding toward World Heritage inscription, the Outstanding Universal Value of the Sites of Japan's Meiji Industrial Revolution was explained, exhibits and pictures, etc., relating to Area 2 Kagoshima created and displayed, and guidance functions enhanced at the Former Foreign Engineer's Residence. Before: ・ Exhibit explanations of relation between Foreign Engineer's Residence and the Shuseikan Project  After: ・ Addition of information on Sites of Japan's Meiji Industrial Revolution, etc. 
Public purchase of private land around the Former Foreign Engineer's Residence	FY 2014-15	Private land around Former Foreign Engineer's Residence was purchased for the purpose of coherent presentation/promotion of Former Foreign Engineer's Residence. Before: ・ Difficult to feel the original historic atmosphere  Underway: ・ Purchase of 4,364.86 m^2 of land from private companies and individuals 
Stabilization for hillside of Sengan-en Garden	FY2015-19	After rockfall from the hills to the north of Sengan-en, the hill is being stabilized to ensure visitor safety, etc. Before: ・ Rockfall from hillside in FY 2014  Underway: ・ Hillside stabilization underway using nets, etc., to prevent rockfall and slippage 
Renovation of Sengan-en reception block	FY 2017	Sengan-en reception block functions have been improved for greater visitor convenience. Before: ・ Individual visitor and group lines cross between the car park and bus stop. ・ Aging toilet facilities  After: ・ Reception window for groups and individuals swapped ・ Toilet facilities updated ・ Rest/guidance facility installed 

Area 2 Kagoshima/Terayama Charcoal Kiln (Component Part 2-2)

<table>
<tr><th>Project</th><th>Timing</th><th>Project outline</th></tr>
<tr><td rowspan="2">Installation of signage and explanation boards within Shuseikan</td><td rowspan="2">FY 2014-15</td><td colspan="2">To enhance signage directing visitors from the nearby highway and car park to the component part and improve on-site explanatory signage and explanation boards in Area 2 Kagoshima were produced and installed with a unified design.</td></tr>
<tr><td>Before:
・ Varied designs and specs
・ Insufficient explanation of the component part
  </td><td>After:
・ Unified Area 2 Kagoshima design and format
・ Better component part explanations
  </td></tr>
<tr><td rowspan="2">Fixed-point monitoring of Terayama Charcoal Kiln</td><td rowspan="2">FY 2015 onward</td><td colspan="2">Stonework displacement measurement is being conducted to preserve the kiln remains.</td></tr>
<tr><td>Before:
・ Unclear to what extent stonework has loosened or swollen
  </td><td>Underway:
・ Fixed-point monitoring using laser beams
  </td></tr>
<tr><td rowspan="2">Improvement of surface on access route</td><td rowspan="2">FY 2016</td><td colspan="2">The surface of the nature trail which is the access route from the car park to the kiln was improved to ensure a safe viewing environment for visitors.</td></tr>
<tr><td>Before:
・ Surface soil washed away by rain
  </td><td>After:
・ Roller compaction of soil mixed with cement to maintain harmony with the surrounding scenery (two spots)
  </td></tr>
<tr><td rowspan="2">Installation of a temporary car park</td><td rowspan="2">FY 2017</td><td colspan="2">A small temporary car park was installed close to the Terayama Charcoal Kiln primarily for elderly visitors and other visitors who have difficulty walking.</td></tr>
<tr><td>Before:
・ Distance of approx. 800 m from existing car park of the Terayama Fureai Park and the kiln
 
</td><td>After:
・ Parking spot for six cars and one small microbus installed approx. 100 m from the kiln
・ Parking lines and 2 car park signs installed
  </td></tr>
</table>

Area 2 Kagoshima/Sekiyoshi Sluice Gate of Yoshino Leat (Component Part 2-3)

Project	Timing	Project outline
Installation of signage and explanation boards within Shuseikan	FY 2014-15	To enhance signage directing visitors from the nearby prefectural road and car park to the component part and improve on-site explanatory signage and explanation boards in Area 2 Kagoshima were produced and installed with a unified design. Before: ・ Varied designs and specs ・ Insufficient explanation of component part  After: ・ Unified Area 2 Kagoshima design and format ・ Better component part explanations 
Installation of temporary fences along viewing route to prevent visitors from falling	FY 2016	Temporary fences were installed to ensure a safe viewing environment for visitors and prevent them from falling. Before: ・ Issues in ensuring visitors' safety  After: ・ Temporary wood and rope fences installed to prevent visitors' falling 
Excavation survey to confirm remains below viewing route	FY 2017	An excavation survey is underway to confirm underground remains immediately below the viewing route prior to refurbishing the viewing route in a manner that preserves the underground remains and the scenery. Before: ・ Temporary wood and rope fences installed to prevent visitors falling  Underway: ・ Consideration of how to refurbish the viewing route based on the state of underground remains 
Installation of a parking lot for tourist buses	FY 2016	A parking lot has been installed close to the sluice gate remains to cope with increased visitor numbers following the World Heritage inscription. Before: ・ No nearby space to park large tourist buses  After: ・ Parking space for two large tourist buses installed on prefectural road ・ One signboard installed 

Area 3 Nirayama/Nirayama Reverberatory Furnaces (Component Part 3-1)

Project	Timing	Project outline
Refurbishment of furnace surrounds	FY 2013-16	The land adjoining the furnaces to the northeast and from the south to the west was formerly privately owned. Izunokuni City decided that the land needed to be municipalized to ensure the conservation of the component part, and consulted with the owners, with municipalization completed in August 2014. The land to the northeast was then refurbished as a park so that visitors can look at the river which forms part of the component part, and this was opened in March 2016. The land from the south to the west was earmarked for a guidance center and a grassy area as means of promoting visitor understanding, etc. These were both completed in/by November 2016 and opened in December. Izunokuni City has also leased all the land to the west of the guidance center, refurbishing it as a car park and opening it for use in March 2016.
Installation of a park to the northeast	FY 2013-15	Before: ・ As this was private land used as a plum grove and there were no paths through it, it was not open to visitors.  After: ・ Refurbished as a park after municipalization. Now open to visitors, who can see the whole river area. 
Installation of a car park and refurbishment	FY 2014-15	Before: ・ The parking lot was spread over three lots, with some leased by Izunokuni City and used for parking, but others left unused with broken fences, detracting from the scenery.  After: ・ Izunokuni leased all the land and refurbished it as a unit, making it more convenient as a car park and also greatly improving the scenery. 

Area 4 Kamaishi/Hashino Iron Mining and Smelting Site (Component Part 4-1)

Project	Timing	Project outline
Typhoon No.10 damages restorations	FY 2016-	For a constituent element (Smelting Site, etc.) which had damaged by Typhoon No.10 in August 2016, steps have been taken for the restoration following urgent measures such as removal of sediments accumulated, driftwoods, and fallen trees, and recovering scattered sediments. First Blast Furnace and associated facilities: The sand at the base of bellows was slightly washed away, turning the plain into a wetland. → Refilled manually. (Completed in November 2016) Third Blast Furnace and associated facilities: Scattered sediment, fallen trees nearby the site. → Fallen trees removed. (Completed in 2017) Remains of the watercourse: Scattered gravel and driftwood, exposed bottom surface → Driftwood removed and recover exposed bottom surface. (Completed in June 2017) Before: Transportation site  After: Transportation site 

Area 5 Saga/Mietsu Naval Dock (Component Part 5-1)

Project	Timing	Project outline
Survey of Mietsu Naval Dock	FY 2009 onward	With the Mietsu Naval Dock survey still underway, a lot has yet to be discovered. As there is currently insufficient information on the fishermen's lodging area and the training area, excavation surveys, etc. will be continued in both areas until around FY 2020. (The below pictures show an FY 2016 excavation survey.)  
Excavation surveys	FY 2009 onward	A survey was conducted as of FY 2009 to confirm underground remains aiming at designation as a National Historic Site. Since this designation was achieved in FY 2012, excavation surveys have been underway to obtain basic materials for conservation, restoration and presentation of the remains. Excavation surveys will continue until around FY 2020 with a focus on points other than the dry dock surrounds.
Historical Document surveys	FY 2009 onward	Historical Document surveys have been underway since FY 2009 on the process of the construction of the Mietsu Naval Dock, the transformation of the Saga Clan Navy, and steamship restoration and construction, etc. In addition to these surveys, other survey work will also be continued until around FY 2020 on the state of the Mietsu Naval Dock in late Edo period, technological exchange with Nagasaki, the people involved in dock construction, and personnel originally trained at the dock, also bearing in mind the expansion of relevant historical materials.
Transfer of Mietsu Naval Dock car park	FY 2017 onward	There is a car park in the Sano Memorial Park, which includes Mietsu Naval Dock World Heritage component part. However, as this is not a desirable facility in terms of the conservation of underground remains of the Mietsu Naval Dock, the car park will be transferred outside the component part.
Construction of Mietsu Naval Dock guidance center	FY 2017 onward	Interpretation facilities in relation to the Outstanding Universal Value of Sites of Japan's Meiji Industrial Revolution and the positioning, etc., of the Mietsu Naval Dock therein will be enhanced. To supplement the presentation of the component part, a guidance facility will be established that provides the appropriate scale and environment for inside and outside interpretation to function cohesively and supplement the presentation of the component part.
Creation of basic design for guidance center	FY 2017 onward	Creation of a basic design for the guidance center was begun in FY 2017 toward opening the guidance center in FY 2021, with note to those guidance center issues, etc. considered in FY 2016.

Area 6 Nagasaki/Takashima Coal Mine (Component Part 6-6)

Project	Timing	Project outline	
Repair of Takashima Coal Mine facilities	FY 2015-17	After the Takashima Coal Mine was closed in the Meiji era, buildings other than mine facilities were constructed within the site for other uses. When these too went out of use, they were removed, but the concrete floor, blocks, slab, and rubble from the foundation remains were left in place. With urgent preparations needing to be made to welcome visitors following World Heritage inscription, work was begun in FY 2015 to restore and present the Takashima Coal Mine remains and surrounds, including the establishment of explanation boards for appropriately conveying the value of the coal mine remains to visitors.	
Removal of unnecessary items	FY 2015	Before: ・ A concrete slab and blocks remained within the component part of Takashima Coal Mine, as well as vegetation planted post-operation.  	After: ・ Unnecessary items were removed (completed in FY 2015). 
Installation of a ceramic panel marking underground remains	FY 2016	Before: ・ The underground remains of coal mine facilities including steam engines and building foundations were appropriately conserved by installing an earth layer with appropriate thickness.	After: ・ To convey to visitors the state and scale of the underground remains, actual-size portrait-style photos of the underground remains were baked into a ceramic plate installed on the ground immediately above the remains. A board explaining the underground remains was also installed (completed in FY 2016). 
Installation of explanation board	FY 2016	Before: ・ Insufficient explanation boards to convey the World Heritage Outstanding Universal Value and the positioning of the component part, etc., therein.	After: ・ A board was installed that explains the mine remains and underground remains in four languages (Japanese, Chinese, English and Korean; completed in FY 2016). 

	Installation of diorama model and viewing space	FY 2016	Before: ・ As the remain of mining pit is the only part of the mine facilities that can be seen above round, an easily-understood explanation was needed of how the mine looked during operation.	Underway: ・ A diorama based on old photos was temporarily installed to help visitors envisage the coal mining process from production to shipment (completed in FY 2016). ・ Since FY 2017, a viewing space was installed in a spot from which the component part can be observed from the same direction as the only remaining old photo of the mine when it was operational, with the diorama too transferred to that space. 
	Creation of a park over the remains of the old Takashima Town-operated pool	FY 2016	Before: ・ An old town-operated pool no longer in use remained on the route from the remain of Takashima Coal Mine to the related site of Second Glover House. 	Underway: ・ The old pool was removed and the ground cleared and measured (completed in FY 2016) to create a park with car and bike parking. ・ The park will be designed in FY 2017 and the park constructed in FY2018. 

Area 6 Nagasaki/Hashima Coal Mine (Component Part 6-7)

Project	Timing	Project outline	
Emergency work	FY 2014 onward	No conservation, restoration and presentation work was conducted since the Hashima Coal Mine closed in 1974, except for post-disaster reconstruction of the seawall revetment and installation of viewing routes for visitors. As a result, the various remains deteriorated and became very dangerous, including the collapse of the following facilities, which would have a great impact in terms of site conservation. Structural maintenance measures have therefore been instituted in order of priority since FY 2014 as emergency steps.	
Repair of seawall revetment remains (revetment on western coast of Building No. 31)	FY 2014-15	Before: ・ The rear of the seawall revetment had been scoured out and caved in substantially. ・ Unaddressed, the caved-in area was highly likely to widen, destabilizing the seawall revetment, and causing collapse. 	After: ・ The western sea opening was blocked with concrete in 2014 (completed in Nov. 2014). ・ The caved-in area was filled with concrete in 2015 (completed in Sept. 2015). 

	Repair of seawall revetment remains (revetment on western coast of Building No. 51)	FY 2014-15	Before: ・ The rear of the seawall revetment was scoured out by the July 2014 typhoon, caving in substantially. ・ Unaddressed, the caved-in area was highly likely to widen, destabilizing the seawall revetment and Building No. 51, and causing them to collapse. 	After: ・ The western sea opening was blocked with concrete in 2014 (completed in Nov. 2014). ・ The caved-in area was filled with concrete in 2015 (completed in Sept. 2015). 
	Repair of production facility remains (remains of Pit No. 3 Winding machine room)	FY 2015-16	Before: ・ Only one wall remained standing, rendering the structure unstable. ・ Cracks and missing bricks were apparent across the wall, with the collapse of the arch crown highly likely to lead to the collapse of bricks in the crown and the section above the crown. 	Underway: ・ New bricks were added in FY 2015 to replace those missing in the arch crown (completed March 2016). ・ Reinforcing was undertaken in FY 2016 (initial response; completed March 2017). ・ Reinforcing will be undertaken as of 2017 (secondary response, structural stabilization). 
	Repair of production facility remains (pithead pier)	FY 2015-16	Before: ・ The truss-style steel frame that supported the stair passage had corroded away, leaving only the concrete structure. ・ The whole structure had bent, with the steel fulcrum showing marked deterioration. ・ The whole structure was highly likely to collapse at once. 	Underway: ・ Reinforcing was undertaken in FY 2016 (initial response; completed in March 2017). ・ Reinforcing will be undertaken as of 2017, following a structural survey, basic and implementation designs, and discussion at the expert committee, etc. (secondary response, structural stabilization). 
	Repair of accommodation facility remains (lower part of Building No. 70)	FY 2017-18	Before: ・ When the 1991 typhoon caused the seawall revetment to break, scouring created a major cavity. ・ The concrete pile foundations were exposed, with several piles also lost. ・ The building has lost support from the pile foundations and has become unstable. ・ If the building collapses, this is highly likely to impact on the seawall revetment. 	Underway: ・ In FY 2016, an implementation plan was drawn up and discussion conducted at the expert committee, etc. ・ Scoured areas will be filled over FY 2017 and 2018.

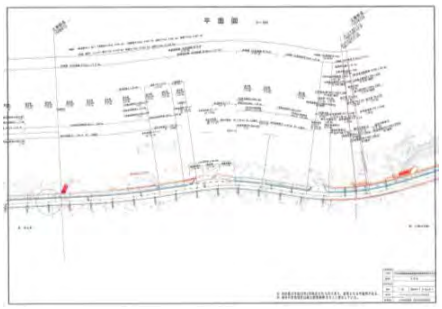
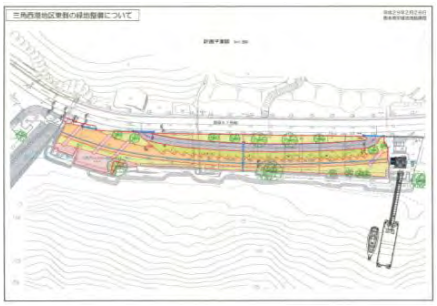
Area 6 Nagasaki/Glover House and Office (Component Part 6-8)

<table>
<tr><th>Project</th><th>Timing</th><th colspan="2">Project outline</th></tr>
<tr><td>Improvement of seismic resistance</td><td>FY2015-16</td><td colspan="2">As approximately 50 years have passed since the 1966-68 restorations and walls, floors and furniture have all been found to be deteriorating, total restoration needs to be undertaken for the main buildings and sub-buildings. Seismic analysis has been underway since FY 2015, and systematic conservation work undertaken. A Sites of Japan's Meiji Industrial Revolution guidance facility for Nagasaki City has been installed within the Glover Garden and is open to visitors.</td></tr>
<tr><td>Seismic strengthening and restoration</td><td>FY 2016</td><td>Before:
・ With the interior and exterior of the main and sub-buildings deteriorating, systematic restoration of the entire facility needed to be undertaken.</td><td>Underway:
・ The following surveys were undertaken in FY 2016-17 for seismic analysis purposes.
(1) Visual survey of state of damage
(2) Infrared structural survey
(3) Ground and boring surveys
(4) Wall survey with dismantling
・ As a result of these surveys, it was decided that structurally weak areas need to be strengthened, including chimneys, spandrel walls, and the footings of veranda pillars, etc.
・ Seismic strengthening, restoration, updating of disaster prevention equipment, and updating of interpretation will be undertaken in FY2018-20.
  </td></tr>
<tr><td>Installation of a guidance center</td><td>FY 2015-16</td><td>Before:
・ Facilities for visitors to Sites of Japan's Meiji Industrial Revolution were inadequate.</td><td>After:
・ With the World Heritage inscription of Sites of Japan's Meiji Industrial Revolution, a guidance center was installed on the first floor of the Former Mitsubishi No. 2 Dock House within the Glover Garden (refurbishment completed in FY 2016).
・ Interpretation content will be revised to convey appropriately to visitors the World Heritage Outstanding Universal Value and the history of the component part in line with the Japanese government's interpretation strategy (to be completed in FY 2019).
  </td></tr>
</table>

Miike Coal Mine Manda Pit (Area 7 Miike/Component Part 7-1)

Project	Timing	Project outline	
Building restoration	FY 2016	Among those brick buildings which are constituent elements contributing to Outstanding Universal Value, restoration will be undertaken with priority on the particularly deteriorated storage & pump house, safety-lamp & bathing house, and office building. Surveys will be undertaken in FY 2016-17, with restoration undertaken in FY 2018.	
Storage & pump house (former fan house)	FY 2016-2018	There are structural cracks in the brick framework, which, if they advance, could lead to partial collapse. Major damage is also visible to part of the gable roof, and there are also multiple places where wooden roofing boards and roof trusses are rotting as tiles have shifted and the damaged portion widened, letting water inside.	
Safety-lamp house & bathing house (former fan house)	FY 2016-2018	While there is a monitor roof for ventilation on the roof of the upper part of the bathing house, strong winds have damaged some of the roof cladding and wooden louvres. Roof tile damage is spreading, and some of the roof has collapsed. The gutters in the gaps between the annex eaves and the storage & pump house walls have filled up with soil and cannot drain.	

Area 7 Miike/Misumi West Port (Component Part 7-2)

Project	Timing	Project outline	
Installation of the Misumiura Pedestrian Path next to National Road 57	FY 2017 onward	There is a lot of traffic on National Road 57, large trucks included, and the current pedestrian path which is the route to the local school is very narrow, prompting a call from local residents and school authorities of Misumi West Port for it to be widened. Widening a pedestrian path requires purchasing land on the northeastern side of the existing path along National Road 57 and securing funds, so it will take several years to complete. In FY 2017, a path will be installed on the southern side of National Road 57, which sits outside the buffer zone on the southeast side. If the land is purchased and the funds found, the path could be extended even further along National Road 57 within the buffer zone through to the southeastern edge of the component part. (Ministry of Land, Infrastructure, Transport and Tourism project)	
Installation of Misumi West Port greenery plaza on the eastern side of the component part	FY2017-2019	Misumi West Port greenery plaza including parking space will be created on the southern side of National Road 57 between the floating pier built in February 2013 outside the buffer zone and the southeastern edge of the component part, including the temporary parking lot built within the buffer zone on the southeastern side of the component part. The Plaza will include an open area which looks out over the Misuminoseto channel, a path connecting the floating pier, Misumi West Port, and a parking lot. As creating this plaza will require purchasing land and securing funds, it is expected to take several years to complete. Work will begin in FY 2017 with installation of a barrier to prevent people from falling. (by Kumamoto Prefectural Government)	
Seismic analysis, refurbishment design, and refurbishment of the former Uto government offices (Kyushu Maritime Institute Main Building)	FY 2015-17	The former Uto government office building within the component part was built in 1902 (refurbished in 1988), so it is now 115 years old. A detailed seismic analysis in FY 2015 revealed that the building had insufficient seismic resistance, and a plan to strengthen this was developed the same year, with the strengthening work, ant extermination, and creation of a refurbishment design all undertaken in FY 2016. Refurbishment will take place in FY 2017. (Uki City project)	

Area 8 Yawata/The Imperial Steel Works, Japan (Component Part 8-1)

Project	Timing	Project outline	
Visitor measures	FY 2015	As the Imperial Steel Works, Japan lies within the active Yawata Steel Works, only limited areas are open to the public. A viewing area was therefore set up within the site from which visitors can see the First Head Office.	
Installation of First Head Office viewing area	FY 2015	Before: ・ Visitors do not have free access to the site, so facilities related to the Imperial Steel Works, Japan cannot be viewed. 	After: ・ A viewing area was set up within the site from which visitors can see the First Head Office. A board explaining World Heritage property as a whole and the positioning of the component part therein, was installed along with a World Heritage Plaque. 

Area 8 Yawata/Onga River Pumping Station (Component Part 8-2)

Project	Timing	Project outline	
Partial removal of ivy from outside walls	FY 2016	Before: ・ Walls were entirely covered with ivy. ・ There was a risk that the ivy could enter through joins and cracks in the bricks and cause the bricks to deteriorate. 	After: ・ Ivy was removed from the east wall in FY 2016. ・ Checks will now be conducted to ensure that no new shoots appear with the removal of the old ivy, and ivy will be removed from the north, south, and west walls when the whole building is restored. 
Visitor measures	FY 2015 onward	As the Onga River Pumping Station lies within an working site, visitors do not have free access to the site. A viewing area was therefore set up where visitors can see the Pumping Station from outside the site.	
Installation of a viewing area	FY 2016	Before: ・ A temporary viewing area was set up next to the road outside the site. 	After: ・ A viewing space congruent with the scenery was completed, and a World Heritage Plaque and information and explanation boards using the common logo were installed.