

Appendix a)-1 Standard form for the “Conservation, Restoration, Presentation and Public Utilization Plan” which could be a source when creating a “Conservation Work Programme” pursuant to Recommendations a) and b) for each component part

Standard form for the “Conservation, Restoration, Presentation and Public Utilization Plan” which could be a source when creating a “Conservation Work Programme” pursuant to Recommendations a) and b) for each component part

For developing a “Conservation, Restoration, Presentation and Public Utilization Plan” for each of the component parts of “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining”, it is required to note the following points with reference to the Annex 1 to 3.

- It should be noted that the “Conservation, Restoration, Presentation and Public Utilization Plan” (hereinafter referred to as the “Plan”) established by the relevant owners and/or municipal governments of each component part in FY 2016-2017 will become the source of the “Conservation Work Programme” (hereinafter referred to as the “Programme”) for each component part that was described in the Recommendations a) and b) out of totally eight Recommendations of the Decision 39COM.8B14 adopted by the World Heritage Committee at its 39th session in 2015 (see **Annex 3**).
- It is needed to consider the contents and processes of each operation as well as the reciprocal relations of Recommendations from a) to h) (see **Annex 1**). Recommendations a) and b), which have common characteristics, and recommendations c) and f), which have a similar relation, are combined. Further, the contents, processes, etc. of each operation are organized in six columns in **Annex 1**.
- The focal point of the contents and processes of six operations described in **Annex 1** is to develop the Plan as a source of the Programme, as specified in the center.
- The contents and processes of operations regarding Recommendations a) to h) should be appropriately reflected in the corresponding parts of the Plan describing specific measures. Reciprocal arrangements should also be made on the basis of “Vision” and six basic policies: A. Promotion of survey; B. Conservation, reinforcement, and stabilization of materials, characteristics of the materials, and structures of the buildings and historical and archaeological remains/objects; C. Presentation and interpretation considering the industrial system in the component part and/or Area; D. Arrangement and Improvement from the viewpoint of landscape; E. Utilization as a cultural resource and/or information transmission base; and F. Implementation of the projects.
- Each Plan should have an equivalent nature as the basic conservation plan for Historic Sites designated under the Law for the Protection of Cultural Properties.
- Regarding the component part that is not directly involved in the industrial operations but indispensable for explaining the background of the modern industrial revolution, such as a castle town of the early modern period, it is required to appropriately translate the items of each chapter of this standard form in accordance with the characteristics of such component part.

Chapter 1 Process and objective for developing the Plan

(1) Process of developing the Plan

- Describe the background and process of developing the Plan.
- Clarify that it is based on the Recommendations included in the Decision made by the World Heritage Committee (39COM 8B. 14) (see **Annex 3**).

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(2) Objective of the Plan

- Describe the objective for the Plan.
- Specify the scope of the Plan. The scope is basically set for the buffer zone of the component part of the World Heritage Property, with consideration of arrangement and improvement of the landscape in the surrounding area; if necessary, the inclusion of the external area of the buffer zone from the perspective of the construction of access routes should be considered.
- Describe the difference from the objective of the Conservation Management Plan (CMP) already established for nomination of the property to the World Heritage List (see **Annex 2**).

(3) Establishment of the expert committee

- Outline the expert committee, which was established for the Plan-development, the list of the committee members, discussion process, etc.

Chapter 2 Outline, current state and challenges of the component part and/or Area

Organize the current state and challenges of the component part and/or Area based on the following aspects.

(1) Constituent elements¹ contributing to the Outstanding Universal Value and other elements of the Historic Site

- Organize the three points: 1) Outstanding Universal Value of the World Heritage Property consisting of 23 component parts (8 Areas) as a whole, 2) Categorizing the relevant component part within the whole World Heritage Property, 3) Constituent elements¹ contributing to the Outstanding Universal Value. Regarding 1), it should be based on the Statement of Outstanding Universal Value adopted by the World Heritage Committee for inscription on the World Heritage List as a principle.
- Organize the current state and challenges of the whole component part and/or Area as well as each constituent element of the component part contributing to the Outstanding Universal Value.
- Organize the two points: 1) the value as a National Historic Site and 2) the elements constituting the value of a National Historic Site. As for 1), it is based on the description of the national value provided by the Council for Cultural Affairs (until the year 2000, the Council for the Protection of Cultural Properties) at the time of designation of the Historic Site as well as its additional designation as a principle.
- Organize the summaries, current state and challenges of elements such as of the Historic Site.
- Describe in details the historical process of changes and developments of the component part and/or Area, with due attention to the concept of its “full history” noted in the Decision (39COM.8B) by the World Heritage Committee (**Annex 3**) and the report of “ICOMOS Evaluations of Nominations of Cultural and Mixed Properties”.

(2) Comprehension of the current state of the component part and/or Area for its presentation and public utilization

- Figure out not only the current state and the requests of local residents for presentation and public utilization of the component part and/or Area, but also the administrative conditions related to

¹ Constituent elements: According to “Additional Information” submitted to International Council on Monuments and Sites (ICOMOS) as of November 5, 2014, “Constituent elements” included in each component part is used synonymously with “attributes”.

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culture/education, city planning, construction and engineering, park work, agriculture/forestry/fisheries, tourism, etc. in order to organize the challenges of the relevant component part.

- Discern the dynamics, number, etc. of visitors, including the surrounding area of such component part to organize the current state and challenges.²

(3) Relations between the projects for regional improvement and those for the Plan

- Assess the contents and characters of the projects related to conservation, restoration, presentation and public utilization of the component part and/or Area and organize their challenges.

Chapter 3 Basic policy

The basic policy comprises two parts: (1) “Vision” showing the future image to be realized and (2) several “Policies” showing such image as specific directions, as described below.

(1) Vision

Considering the future image of the component part and/or Area and the desired way of conservation, restoration, presentation and public utilization, summarize the essential points of one to two pages of A4 paper (1,600 to 3,200 characters in Japanese).

To realize the Vision, the basic policy should be set according to Chapter 3-(2) and specify each method for conservation, restoration, presentation and public utilization in Chapter 4 and below.

Special notification is to be given to how important it is to envision the future image of the relevant component part, which is one of the industrial heritage sites in a group, and to find out an effective solution for the challenges in the Vision. Because those efforts will become a critical starting point to ensure the advancement of projects for conservation, restoration, presentation and public utilization and take steps for improvement³.

(2) Policies

Based on the basic policy of conservation and management specified in each Conservation Management Plan (CMP) of the relevant component part and items specified in Joint ICOMOS–TICCIH Principles for the conservation of industrial heritage sites, structures, areas and landscapes (2010), the individual policies of conservation, restoration, presentation and public utilization of the component part should be set in line with the following directions.

While clarifying positioning of the relevant component part in the whole story illustrated by 23 Component Parts from the viewpoint of Outstanding Universal Value, specify the individual policies of conservation, restoration, presentation and public utilization that is unique to the component part, according to the five points: (1) survey, (2) structure, (3) component part and/or Area, (4) landscape, and (5) cultural resource and/or information transmission base.

² In case the survey of the number of visitors is underway, it is appropriate to organize the current state and challenges considering the interim progress or results.

³ For the Vision, it is required to briefly describe what the future image of the component part should be and what kind of methods for conservation, restoration, presentation and public utilization should be taken to realize such image to contribute to the Outstanding Universal Value by considering that the component part is one of the 23 component parts of the World Heritage, “Sites of Japan’s Meiji Industrial Revolution.”

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A. Promotion of survey

- Clarify the direction to conduct highly accurate survey systematically, aiming for highly credible conservation, restoration, presentation and public utilization of the component part.
- Clarify the direction of the excavation and survey of the relevant historical documents to specify the contribution of the component part to the Outstanding Universal Value as a World Heritage property (and/or historical value as a National Historic Site).
- Clarify the direction of the survey of the relevant historical documents, interviews to the local residents, etc. to specify the physical and psychological role of the component part in the community.
- Clarify the direction of other surveys necessary for conservation, restoration, presentation and public utilization, including measurement and ground survey as well as survey regarding landscapes (transition of land use).
- As an adjustment to Recommendation c), clarify the direction of the survey regarding the number and dynamics of visitors in view of the component part, relevant associated sites and other historical and cultural resources in the surroundings.
- As an adjustment to Recommendation e), clarify the direction of the preparation and operation for the monitoring charts (general and individual charts) and for the annual report.

B. Conservation, reinforcement and stabilization of materials, substance, and structures of the buildings and historical and archaeological remains/objects

- Considering the physical and psychological role of the buildings and historical and archaeological remains/objects in the community during operation and after shutdown, clarify the direction of the following two points.
- As for a deteriorated and/or collapsed member or a member with the possibility of deterioration and/or collapse, clarify the direction of restoration (conservation and reinforcement) to create the stable state of the materials and their substance.
- Clarify the direction of restoration (reinforcement/stabilization) of a destabilized part or a part with the possibility of destabilization.
- As for the machinery/relevant documents left in association with the component part and/or Area, clarify the appropriate direction of conservation and restoration according to the location and nature regardless of attaching to the site (land) or not.

C. Presentation and Interpretation considering the specific industrial system in the component part and or Area

- Clarify the direction of in-situ presentation and interpretation with full consideration of the relationship among the constituent elements of the component part.
- While industrial operation has been already ceased, focusing on the whole process of the past industrial activities and the positioning and role of each constituent element in the component part, clarify the direction of in-situ presentation and interpretation for the industrial system in the component part as a whole so that visitors can understand it.
- As an adjustment to Recommendation g), clarify the direction of interpretation in view of public utilization integrated not only with the component part but with the relevant associated sites in the surrounding area.

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D. Arrangement and improvement in terms of landscape

- Specify the ideal model of the (relict or active industrial) landscape⁴ of the component part contributing to the Outstanding Universal Value of the property.
- Clarify the direction of arrangement and improvement in terms of (relict or active industrial) landscape including not only the constituent elements of the component part contributing to the Outstanding Universal Value but also other elements in the surroundings.
- Clarify the direction of maintenance, arrangement and improvement of in terms of environment and landscape widely intended for the buffer zone including the closest area to the component part.
- As an adjustment to Recommendations d) and e), clarify the direction of the development and its operation of the monitoring chart in terms of the view from the surrounding area toward the component part, the view from the component part toward the surrounding area, and the direction of arrangement and improvement integrated with the relevant associated sites in the surrounding area.

E. Public utilization as a cultural resource and/or information dissemination base

- Position the component part as a part of cultural resource in the local community, relate them to each other under the series of networks, and clarify the direction of public utilization as an information transmission base.
- Clarify the direction of participation of the local community in the projects included in the Plan.
- As an adjustment to Recommendation c), clarify the direction of visitor management including consideration of the possibility and/or necessity for setting the acceptable visitor threshold.
- As an adjustment to Recommendation f), clarify the direction of capacity building of the relevant stakeholders.

F. Implementation of the projects

- Clarify the direction about how to conduct policies A. to E. as a whole, mentioned above.
- As an adjustment to Recommendations c), d), e), f), and g), clarify each direction regarding the following points.
 - Clarify the direction of operation and management needed for developing each step of a project.
 - Clarify the direction of promoting framework of the projects, roles and corporation of the relevant department/section.
 - Clarify the direction of the follow-up of the project’s progress.

Chapter 4 Survey

Specify the content, method, and procedure of the survey that are needed to develop the conservation, restoration, presentation and public utilization of the component part and to conduct a projects included in the Plan concerned.

- Excavation and related survey
 - Especially for the excavation project, it should be careful to get necessary information within the minimal scope.
 - In parallel with the archeological survey, the survey of movable assets including the relevant

⁴ The “landscape” mainly refers to both the past industrial landscape and the present relict landscape.

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historical documents should also be conducted.

- Survey of historical documents
- Other surveys including survey of the role of the component part in the local community, measurement and ground survey, survey of landscape (transition of land use), and survey of the number and dynamics of visitors in view of the component part and the relevant associated sites in its surroundings.
- Monitoring
 - Clarify the composition and the method of operation for the monitoring charts (general and individual charts) and the annual report.
 - Specify the methods to properly execute Chapters 5 to 8 below based on the state of deterioration/weathering or subsequent modification to the constituent elements, etc. that are obtained by the monitoring.

Chapter 5 Conservation and restoration of buildings and historical or archaeological remains/objects

(1) Conservation and restoration of the constituent elements included in the component part contributing to the Outstanding Universal Value

A. Conservation and restoration of buildings

- Specify the conservation and restoration method of historical buildings (architectural and other structural elements), stone walls and gardens.
 - Cleaning
 - Coating of deteriorated materials
 - Enhancement (conservation-scientific measures)
 - Partial replacement, relocation/storage
 - Dismantling and major repair (complete/partial, etc.)
 - Enhancement of destabilized structures (earthquake-resistant/unequal settling measures)
- Specify the disaster-preventing method for historical wooden structures.

B. Conservation and restoration of historical and archaeological remains/objects

- Categorize the remains/objects into the buried and the unburied and specify the conservation and restoration method respectively.
- Specify the stabilizing and collapse-preventing method for the geography of historical and archaeological remains/objects.

(2) Conservation and restoration of other elements of the National Historic Site included in the component part

- As for the classification of A (conservation and restoration of buildings) and B (conservation and restoration of historical and archaeological remains/objects), same as (1).

(3) Conservation and restoration of machinery, relevant historical documents, etc.

- Specify the conservation and restoration methods of machinery installed in the architecture, which is one of the constituent elements of the component part, as well as relevant historical documents stored in the component part.

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Chapter 6 Presentation and interpretation considering industrial system

Specify the method of in-situ presentation and interpretation of the component part and/or Area, based on the following points for the purpose of clarification and explanation of the specific industrial system.

(1) Zoning

- Considering both aspects of the whole industrial system of the Component Part and/or Area and public utilization of the constituent elements, put zoning in place appropriately and specify the methods for presentation, interpretation and improvement for public utilization according to each zone’s characteristic.
- Specify the methods for ideal visitor management of each zone as well as of all zones. If possible, set the ideal number of visitors.
- Specify the methods for effective interpretation based on zoning. As this issue is also related to (2) to (7) below, if appropriate, it may be mentioned in each item.

(2) Traffic and flow line planning

- Bearing in mind the image of the whole industrial system, specify the methods of traffic line for visitors and flow line of management in and around the component part.
- Specify also surface-finishing materials of visitors’ paths, etc. that will become traffic lines in the component part.

(3) Land formation/environmental improvement

- Based on the land formation, which is needed at minimum, specify the methods of water-supply/discharge, etc.
- Under the following 2 points, specify materials, construction methods, etc. used for presentation and enhancement of the remains so that the characteristics of the historical and archaeological remains/objects including scale/shape/character, and function/space structure/production mechanism are able to be shown in an appropriate manner.
 - Physical presentation and improvement method showing the relations among constituent elements in the industrial system in an easy-to-understand manner.
 - Comprehensible interpretation (information dissemination) about the relations among constituent elements in the industrial system
- Taking into consideration the geographic formation and character of the whole component part and its zones, specify a pavement method or ground cover as needed.

(4) Arrangement and improvement of landscape and planting vegetation

- Specify the method for arrangement and improvement from a viewpoint of (relict or active) landscape, including not only the constituent elements of the component part contributing to the Outstanding Universal Value but also other elements.
- Considering the function of vegetation, specify the arrangement and improvement method for landscape with appropriate species, number, and greenery amount of plants.

(5) Guide/Information facility (including signage)

- Specify the method of information provision of the whole World Heritage property consisting of 23 component parts and the relevant component part.

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- Depending on the quality and amount of provided information, specify the signs’ positions, designs, forms, contents, etc.

(6) Management facility and accommodations

- Ensuring visitors’ convenience, specify the location of the minimum number of rest areas, toilets, benches, lightings, etc. as well as design and structure of the facilities.

(7) Exhibition Facility/Utilizing Facility

- Through indoor exhibitions, experience learning, etc., specify the scale, form, appearance, location, etc. of the facilities that help public understanding of the whole World Heritage property consisting of 23 component parts and the relevant component part as needed.
- Specify appropriate utilizing methods of the items such as machinery installed in the architecture and of relevant historical documents stored in the component part.

Chapter 7 Arrangement and improvement for the landscape of the buffer zone

- For the buffer zone of the component part, specify the methods of arrangement and improvement from a viewpoint of landscape, etc.
- Specify the comprehensive arrangement and improvement method for public utilization related to the entire cultural resources centering on the component part including the relevant cultural assets inside and outside of the buffer zone.

Chapter 8 Public utilization as a cultural resource and/or information dissemination base

- Position the facilities, including guidance facilities (visitor centers), established in the component part and its surroundings as a part of cultural resource in the Area, and specify the method to utilize them as an information dissemination base.
- Specify the method of approaching the component part, such as visitor’s access and preparation of parking lots.
- Specify the method of participation of the local community in the projects of conservation, restoration, presentation, and public utilization.
- If possible, set the acceptable visitor threshold level and specify the methods of the visitor management.⁵
- Specify the method of capacity building of the people in the local community and relevant institutions involved in conservation, restoration, presentation and public utilization of the World Heritage component part and National Historic Site.

⁵ It is not possible to specify the acceptable visitor threshold level or the method for visitor management in the Plan of which development will be completed in 2017 because the survey of the number of visitors for setting the acceptable visitor threshold level will be conducted from 2016 to 2018.

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Chapter 9 Implementation of the projects included in the Plan

(1) Implementation schedule of the projects

- Specify the contents, implementation period, process, etc. of the projects. In that case, classify the projects into the following three groups and clearly show the relations among them by using a bar chart, etc.⁶
 - Projects that can be launched immediately
 - Projects that should be implemented systematically in the short term
 - Projects that should be aimed for implementation in the medium- and long-term
- Showing a rendering by perspective drawing, etc. is easily understandable

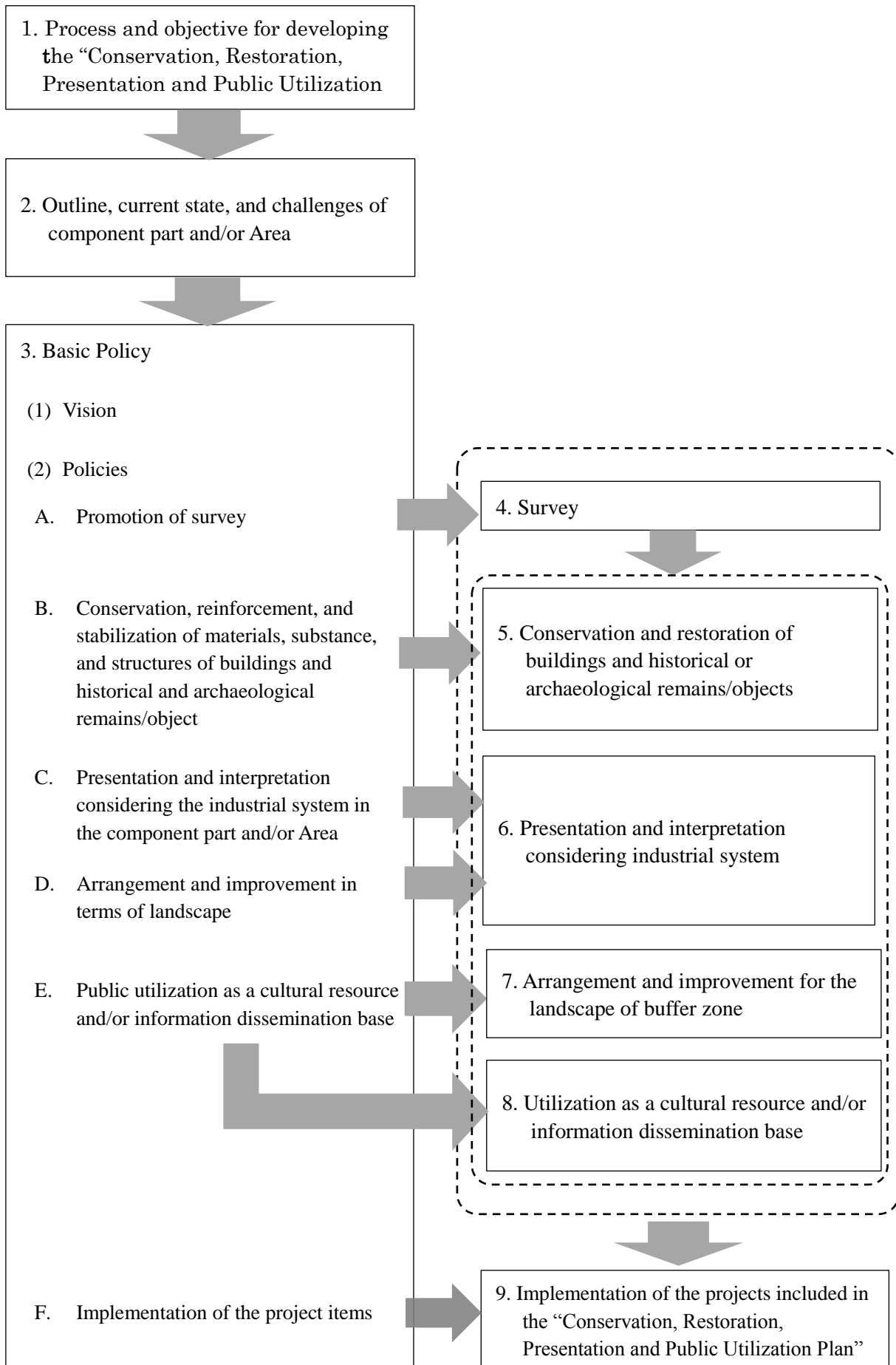
(2) Framework for Implementing the Project Items

- Specify the method of management and operation for the component part and/or Area, which is needed for each step of the implementation of the projects.
- Specify the concrete image of the framework for implementing the projects, responsibilities of the relevant departments and sections, cooperation method, and capacity building of staff in charge.
- Specify the method of follow-up for the progress of the projects.

⁶ Specifying the short term and medium- to long-term projects and specifying the contents, implementation period, processes, etc. in the “Chapter 9 Implementation of the projects included in the Plan” mean nothing less than specifying which project has high priority out of all projects for conservation, restoration, presentation and public utilization of the relevant National Historic Site. It has the same meaning as the “priority” required in Recommendation b).

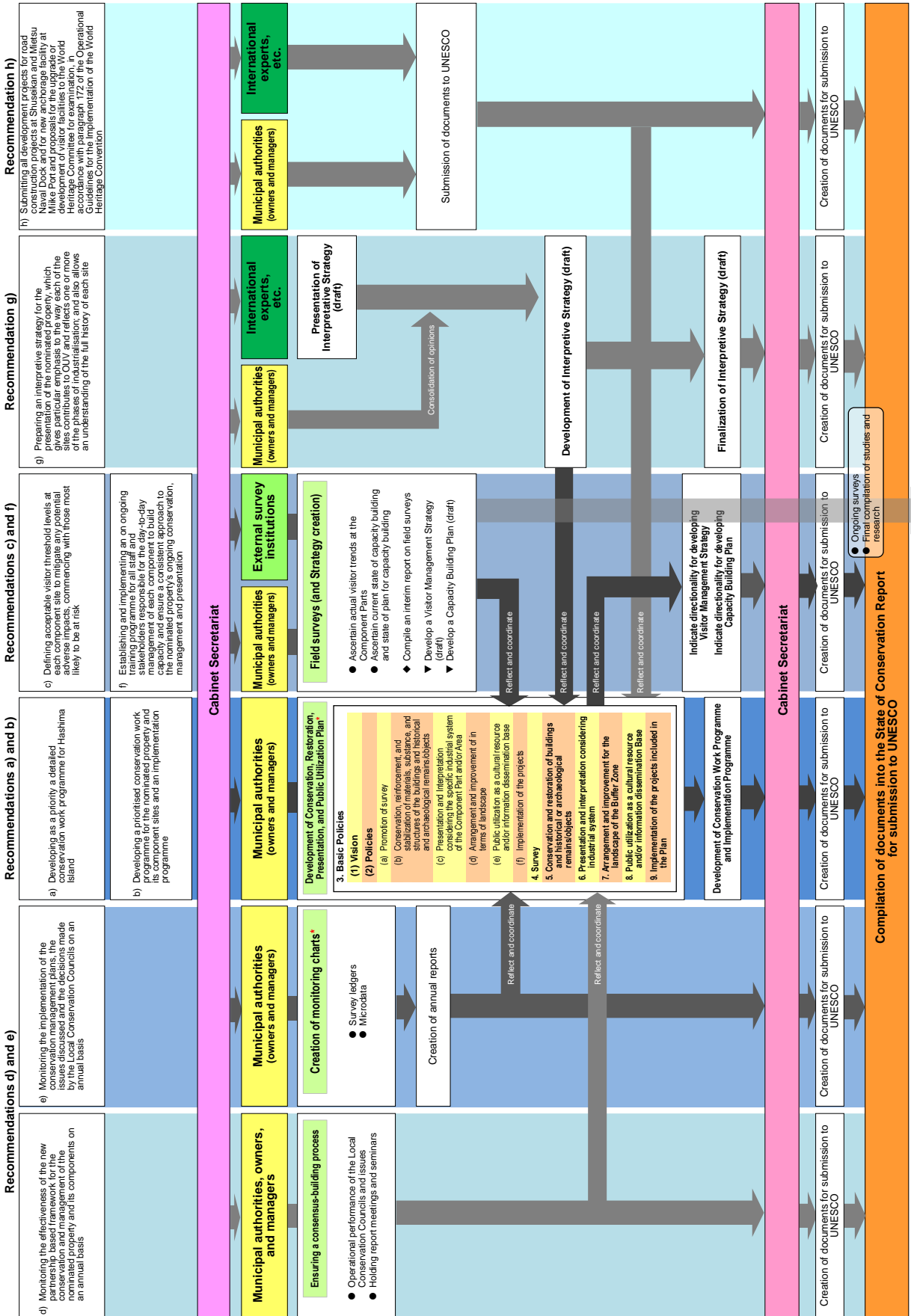
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Flow Chart of Developing the Conservation, Restoration, Presentation and Public Utilization Plan



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(Annex 1)



Correlation among the Recommendations of the UNESCO World Heritage Committee and Ways to Deal with the Recommendations

* Develop the Conservation, Restoration, Presentation and Public Utilization Plan and the monitoring charts targeting the non-working component parts. As for the working component parts, take measures considering their characters, development states etc. of the Conservation, Restoration, Presentation and Public Utilization Plan and the monitoring charts for the non-working component parts.

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(Annex 2)

Classification among Conservation Management Plan / Conservation, Restoration, Presentation and Public Utilization Plan / State of Conservation Report

1. Conservation Management Plan

- (1) Conservation Management Plan (hereinafter referred to as “CMP”) has been developed to show that the state of legal/administrative and financial protection of the Outstanding Universal Value of the Sites of Japan’s Meiji Industrial Revolution satisfies the sufficient conditions for its inscription on the World Heritage List.
- (2) CMP has described the basic policies for protection (conservation and management) specifying the constituent elements contributing to the Outstanding Universal Value; however, it does not specifically show the future image (vision) in view of location, form, and characteristic of individual component parts nor methods or processes to realize their future images because such basic policies are common to all 23 component parts.
 - * In cases of the past inscribed serial cultural heritage properties in Japan, Comprehensive Preservation and Management Plan developed for World Heritage nomination of the property as a whole also had a similar nature of CMP mentioned above, and the plan for the most of specific items for conservation, restoration, presentation and public utilization of each component part were developed after the inscription.

2. Conservation, Restoration, Presentation and Public Utilization Plan

- (1) This “Conservation, Restoration, Presentation and Public Utilization Plan” (hereinafter referred to as “Plan”) to be developed for each component part and/or Area includes the content of “Conservation Work Programme and Implementation Programme” pursuant to Recommendation b) of the Decision (39COM 8B. 14) by the World Heritage Committee at the time of inscription on the World Heritage List.

b) Developing a prioritized conservation work programme for the property and its component sites and an implementation programme

Since what is required in the above Recommendation b) is not a “plan” but a “programme,” we understand that it is required to submit a more specific conservation and restoration method that includes an implementation programme.

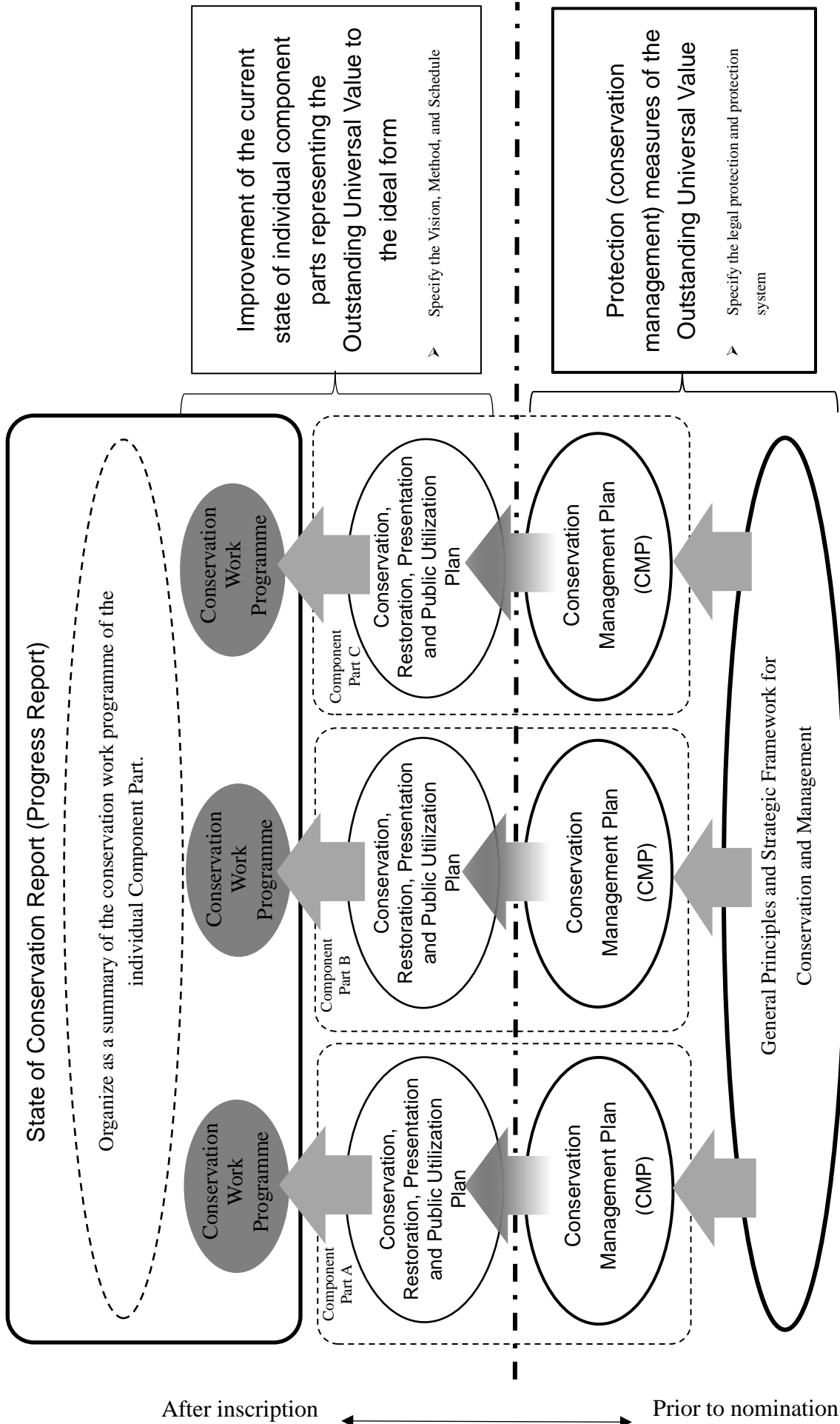
Therefore, from now on, “conservation work programme” to be developed on the basis of Recommendation b) should be distinguished from CMP which indicates the framework of the protection (conservation and management) of the property. Plan of each component part should be developed first, then some of the parts and items of the Plan relating to conservation and restoration should be extracted to complete the “conservation work programme” and “implementation programme”.

- * When any project of conservation, restoration, and utilization of designated National Cultural Property begins, the development of a same plan as the above Plan is required in advance regardless of the Recommendation by the World Heritage Committee.
- (2) To develop Plan, it is necessary to first show the future image of each component part and/or Area. In addition, the methods and processes for its realization must be specified. As for the visitor threshold level required in Recommendation c) of the Decision, the possibility of estimation will be considered only after envisioning such ideal future image.

3. State of Conservation Report

The “State of Conservation Report” (progress report) must be submitted to UNESCO World Heritage Centre by December 1st, 2017, to show the progress related to Recommendations a) to h).

Since the schedule, policy and measures for implementation of the prioritized projects will be included in the “Chapter 9 Implementation Projects” of the Plan of each component part, it is not needed to develop another plan with prioritized projects from the point of view of the property as whole.



Decision by the World Heritage Committee at its 39th session (Bonn, 2015)

Decision: 39 COM 8B.14 (Excerpt)

The World Heritage Committee,

4. Recommends that the State Party give consideration to the following:

- a) Developing as a priority a detailed conservation work programme for Hashima Island;
- b) Developing a prioritised conservation work programme for the property and its component sites and an implementation programme;
- c) Defining acceptable visitor threshold levels at each component site to mitigate any potential adverse impacts, commencing with those most likely to be at risk;
- d) Monitoring the effectiveness of the new partnership-based framework for the conservation and management of the property and its components on an annual basis;
- e) Monitoring the implementation of the conservation management plans, the issues discussed and the decisions made by the Local Conservation Councils on an annual basis;
- f) Establishing and implementing an on ongoing training programme for all staff and stakeholders responsible for the day-to-day management of each component to build capacity and ensure a consistent approach to the property’s ongoing conservation, management and presentation;
- g) Preparing an interpretive strategy for the presentation of the property, which gives particular emphasis to the way each of the sites contributes to Outstanding Universal Value and reflects one or more of the phases of industrialisation; and also allows an understanding of full history of each site¹;
- h) Submitting all development projects for road construction projects at Shuseikan and Mietsu Naval Dock and for new anchorage facility at Miike Port and proposals for the upgrade or development of visitor facilities to the World Heritage Committee for examination, in accordance with paragraph 172 of the Operational Guidelines;

5. Requests the State party to submit a report outlining progress with the above to the World Heritage Centre, by 1 December 2017, for examination by the World Heritage Committee at its 42nd session in 2018;

6. Also recommends that the State Party consider inviting ICOMOS to offer advice on the implementation of the above recommendations.

¹ The World Heritage Committee takes note of the statement made by Japan, as regards the interpretive strategy that allows an understanding of the full history of each site as referred to in paragraph 4.g), which is contained in the Summary Record of the session (document WHC-15/39.COM/INF.19).

Conservation work programme for the Hashima Coal Mine (Area 6 Nagasaki/ Component part 6-7)

Nagasaki City drew up the Conservation Work Programme for Hashima Coal Mine (hereinafter referred to as “Programme”) during FYs 2015 and 2017. This Programme is for detailed measures of conservation of the Hashima Coal Mine, which is a 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”), and is based on the Recommendation a) of the Decision: 39 COM 8B. 14 adopted by the World Heritage Committee at its 39th session in 2015.

1. Concept underlying the conservation work

The conservation work will be conducted to pass to the future generations the remains of the Hashima Coal Mine and coal mining community. The mine succeeded the mining technology of the Takashima Coal Mine, where Japan’s modern coal mining industry began, and developed as a base for undersea coal mining operations.

Area 6 Nagasaki to which the Hashima Coal Mine belongs encompasses eight of the 23 component parts of the Sites of Japan’s Meiji Industrial Revolution. These component parts relate to the shipbuilding and coal industries after the ban on building of large ships was lifted. All the sites are associated with Mitsubishi, founded by Yataro Iwasaki, who was employed in the Kaiseikan of the Tosa Clan, one of the central major clans in the Meiji Restoration, and with Thomas Glover, a driving force for industrialization from the end of Edo period to the early Meiji era.

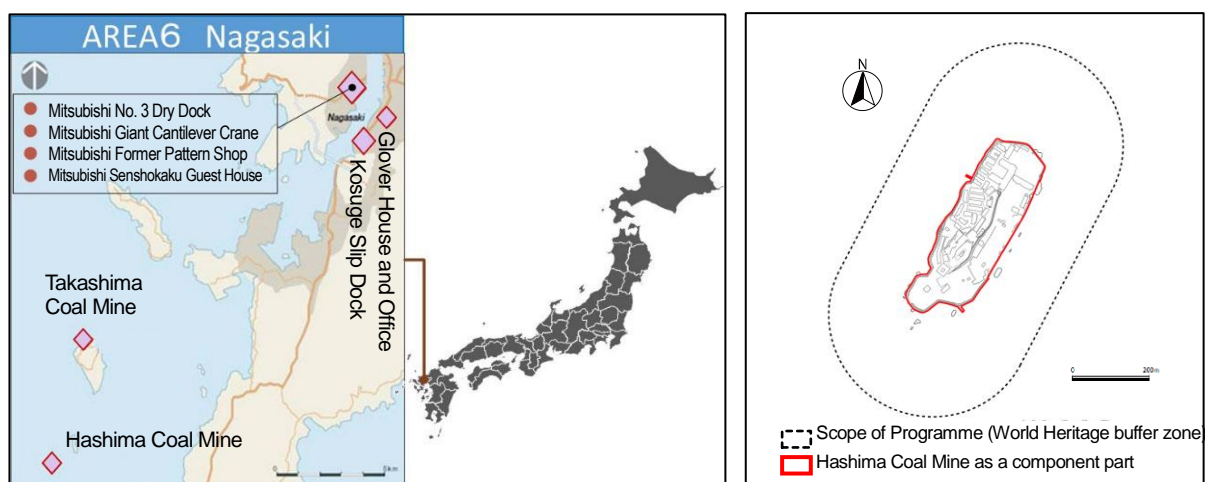


Figure 1: Location of the component part and scope of Programme

Coal supported the rapid industrialization of Meiji Japan, both as fuel for steamships and steam engines, and as coking coal for iron and steel making. The Hashima Island where the Hashima Coal Mine (Component Part 6-7) is located in approximately 3 kilometers southwest of Takashima Island, site of the Takashima Coal Mine. The Hashima Coal Mine belongs to the same mineral deposits as the Takashima Coal Mine (Component Part 6-6), the first place in Japan to introduce a steam engine. The coal mining techniques of the Takashima Coal Mine were passed on to Hashima. As electrification was introduced, both coal mines came to ship stable supplies of large amounts of coal. Shipment of coal from Hashima began in 1891, and by 1897 it had surpassed Takashima in

Appendix a)-2 “Conservation work programme for Hashima Coal Mine (Area 6 Nagasaki/ Component part 6-7)”

volume. As the amount of coal extracted grew, the coal wastes generated in the mining process were used to expand the landfill area around the island. The new land thus created around the rock of an island was surrounded by a fortress-like seawall to protect the island from high waves. At its peak, Hashima formed a coal mining community with the highest population density in the world.

The Hashima Coal Mine, which succeeded and developed the Western coal mining technology introduced in the Takashima Coal Mine, is a significant real-world example showcasing its development as a base for undersea coal mining operations. It represents the phase of “direct importation of Western technology” and “full-blown industrialization”. In the Conservation Management Plan (hereinafter referred to as “CMP”) for Takashima Coal Mine, which was prepared for nomination of “Sites of Japan’s Meiji Industrial Revolution” for the World Heritage inscription, the list of elements constituting the Hashima Coal Mine and their respective value categories was provided as shown in **Table 1** as below.

Component Part	Period		Element	Value Types of Element		
				OUV	Nat'l	Local/Other
Value Types of Hashima Coal Mine Production Facilities and Revetment Remains						
Hashima Coal Mine	Meiji	Initial Period	Adit remains	○	○	○
		Development Period	Revetment remains	○	○	○
			Former pit No. 2	○	○	○
			Pit No. 3	○	○	○
			Pit No. 3 Winding machine room (Material storage warehouse)	○	○	○
			Pit No. 4		○	
	Taisho		Pit No. 4 winding machine room		○	
		Showa (Pre-war)	Period of Influx	Loading pier		○
	Tipple				○	
	Loading belt conveyor				○	
	New pit No. 2				○	
	Pit No. 2 Capstan				○	
	Pit No. 2 winding machine room				○	
	Engineering section plant (finishing plant)				○	
	Coal storage yard belt conveyor				○	
	Tunnel conveyor				○	
	Loading office				○	
	13-ton crane mount				○	
	20-ton crane mount				○	
	15-ton crane mount				○	
	Compressor room				○	
	Material storage warehouse		○			
	Mine entry landing (physical inspection screening)		○			
Mine entry landing		○				
Coal weighing room		○				
RAW coal pocket		○				
Coal analysis room		○				

Appendix a)-2 “Conservation work programme for Hashima Coal Mine (Area 6 Nagasaki/ Component part 6-7)”

	Showa (Post-war)	Reconstruction Period	Smokestack		○	
			Blower room		○	
			Coal refuse conveyor belt entrance		○	
			Pit No.4 wind tunnel		○	
			Mine car repair shop		○	
			Flotation machine room		○	
			Coal-mining machine plant		○	
			Oliver filter room		○	
			Electric material warehouse		○	
			Iron pole plant		○	
	Showa (until Closure)	Redevelopment Period	Engineering section plant (smithy)		○	
			General office (Mine manager's office)		○	
			Freshwater tank		○	
			Water tank		○	
			Office		○	
			Main fan room		○	
			Substation		○	
			Compressor room		○	
			General office		○	
Dorr thickener				○		
Berthing dolphin		○				
Value Types of Hashima Coal Mine Housing Facilities and Outer Revetments						
Hashima Coal Mine	Taisho	Development Period	Building 30		○	
			Subcontractor housing		○	
			Building 16		○	
			Building 17		○	
			Building 18		○	
			Building 8		○	
			Building 23		○	
			Building 19		○	
			Building 20		○	
			Building 12		○	
	Showa (Pre-war)	Period of Influx	Building 50		○	
			Building 25		○	
			Building 56		○	
			Building 57		○	
			Building 66		○	
			Building 14		○	
	Showa (Post-war)	Reconstruction Period	Building 65 North		○	
			Building 65 East		○	
			Building 2		○	
			Building 67		○	

Appendix a)-2 “Conservation work programme for Hashima Coal Mine (Area 6 Nagasaki/ Component part 6-7)”

			Building 22			○
			Building 59			○
			Building 60			○
			Building 61			○
			Building 7			○
			Building 21			○
			Building 48			○
	Showa (until Closure)	Redevelopment Period	Building 31			○
			Building 65 South			○
			Building 68			○
			Building 69			○
			Building 70			○
			Pool			○
			Chidori-so (housing)			○
			Building 3			○
			Building 51			○
			Building 39			○
			Building 13			○
			Outer revetments (other than revetment remains)			○
			Period of Decline		Building 71	

Table1 Value types of Hashima Coal Mine (excerpt from CMP)

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

The Hashima Coal Mine went into operation during the Meiji era and closed in 1974, and the following remains still stand aboveground and underground: (1) Seawall revetments and retaining walls that are remnants of the expanded and developed part of the island (2) Coal production facilities that were kept updated in keeping with technological progress (3) Reinforced concrete housing facilities built to accommodate the island’s growing population. These remains ((1)-(3)) have not been properly maintained for more than 40 years since the closedown of the coal mine in 1974. Therefore, the buildings made of wood, steel, and reinforced concrete have fallen apart or irreversibly decayed. Since further damage and collapse are expected, the city will carefully consider the characteristics of these constructions and prioritize their conservation works.

In Area 6 Nagasaki, the Takashima Coal Mine and Hashima Coal Mine belong to the same mineral deposits, and can be seen as a unified resource enabling the history of the Mitsubishi coal industry to be experienced. From the standpoint of gaining an overall grasp of the Sites of Japan’s Meiji Industrial Revolution, the seawall and the production facilities that continued to be renewed with progress in technology, which both contribute to the Outstanding Universal Value of a World Heritage property, will be preserved. In addition, the elements that tell us about the mining community at the time the industry was started up will be preserved as important elements for showing the history of the region, taking into account the course of historical changes and development of the Hashima Coal Mine, even though they do not contribute to the Outstanding Universal Value.

In implementing the conservation work for the Hashima Coal Mine, the following three points are important:

- 1) Ensuring the sustainment and preservation of the Hashima Island with its revetments and retaining walls in order to protect the landscape of the island, which provides the foundation for preserving the remains and remnants on the island.
- 2) Maintaining in a stable condition the remains that represent the intrinsic value of the National Historic Site and contribute to the Outstanding Universal Value as a World Heritage component part.
- 3) Maintaining the relict landscape of the Hashima Island, including its unique silhouette resembling a battleship when looked from afar as well as the closeup view of decayed abandoned buildings and structures

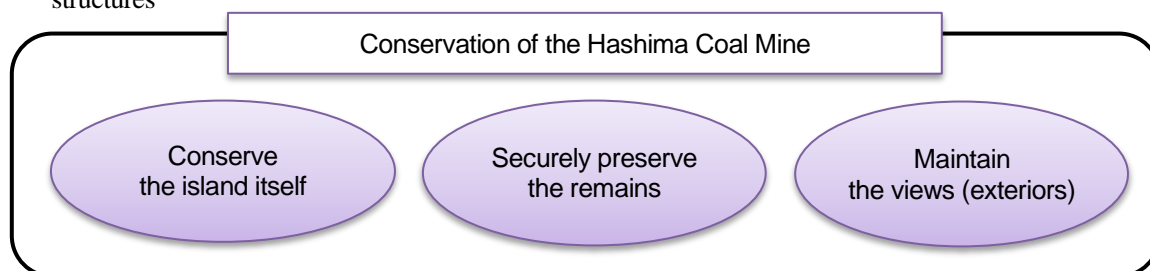


Figure 2: Conservation of the Hashima Coal Mine

The city will holistically look at each of the elements in terms of these three principles and prioritize them to plan and carry out physical improvement measures. It is technically impossible at this moment to keep intact the remains of reinforced concrete production and housing facilities that are increasingly deteriorating and damaged. However, the city plan to carry out conservation in stages, taking account of technical and financial issues.

The above three points can be rearranged as follows from the perspective of Outstanding Universal Value.

- 1) Conserve and restore elements that contribute to the Outstanding Universal Value (including the Meiji era seawall revetment, and production facility remains) to keep them stable.
- 2) Apart from elements that contribute to the Outstanding Universal Value, repair those elements that represent the intrinsic value of the National Historical Site (including concrete production and residential facility remains) to maintain the unique battleship-like silhouette, showcase the development and decline of the coal industry and preserve evidence of the realities of the community.
- 3) Make comprehensive and diverse evaluations and prioritize from a range of perspectives, including the state of deterioration of elements, the availability or absence of applicable conservation techniques, the degree of contributions to the Outstanding Universal Value, the impact of other constituent elements and visitor safety, and budget requirements, and commence restoration and conservation in phases.
- 4) Some steel reinforced concrete remains at the Hashima Coal Mine could be hard to conserve owing to advanced deterioration and damage. Although structural density will gradually decline of the long term, accord maximum care to maintaining the battleship-like silhouette when viewed from the surrounding sea.

2. Policy

Conservation work policy for the Hashima Coal Mine will be set forth based on the following five points:

(1) Promoting research and study

The city plan to launch the following projects in order to reaffirm and enhance the Outstanding Universal Value of the Hashima Coal Mine as a component part of the World Heritage Property: studies of the remains; studies of historical documents that show how the industrial (mining) system worked; studies of landscape of the component part and its surrounding; and studies of visitor number and their impact on the component part.

Furthermore, the city will conduct annual monitoring by using monitoring charts in order to assess the condition of the component part of the World Heritage property and its buffer zone. Then the city will provide

the assessment and an annual report to the Nagasaki Conservation Council, and reflect the Council’s feedback in the process of conservation, restoration, presentation and public utilization.

(2) Restoring the buildings and remains (preserving, reinforcing, and stabilizing materials, substance and structure)

In restoring and conserving buildings and remains, the city will prioritize work on elements that contribute to the Outstanding Universal Value.

The Programme is primarily to make improvements on conservation efforts to ensure that the remains will continue to exist in stable condition, providing day-to-day maintenance work and conducting monitoring. Then the city will holistically assess the roles of the remains and degradation levels to prioritize the needs and provide conservation work (e.g., reinforcement, stabilization) in stages. The Programme will focus particularly on the remains of seawall revetments in not only the coastline but also coal production facilities and housing facilities areas. The city will continue monitoring for any changes in the condition and take action if necessary to keep these remains intact. As for the remains of the coal production and housing facilities, the city will continue research for conservation, and restore the constructions according to the priorities to control degradation. The following are the policies on conservation work for the elements:

- Seawall revetment remains in the coastline

The seawall revetment remains in the coastline play a critical role in protecting the whole of Hashima from ocean waves. Therefore, the city should give the highest priority to actions for keeping them from collapsing. The city will take measures to prevent collapse attributable to the degradation of the current state, thereby keeping these revetments soundly functioning. The view of the island that looks like a battleship at sea (i.e., the exterior and silhouette) will remain as intact as possible.

- Retaining walls remains in the coal production and housing facilities areas

A tableland was made to create enough space on the small island for mining facilities and residents’ day-to-day living. Land was reclaimed by the ocean for expansion of the island five times during the Meiji era. It is inferred that these expansion projects pushed land and revetments by the water’s edge inland. The retaining walls remains found across the island today are the traces of the expansion efforts. Since these traces contribute to the Outstanding Universal Value, the city must prevent the collapse of these remains and keep them functioning. At the moment, the city have not found any spot in the remains that may lead to collapse and thus requires urgent conservation work.

- Production and housing facility remains

The city will repair and strengthen the reinforced concrete constructions to keep their structures intact and thereby retain the current shape. Since the characteristics and corrosion of the structures make it technically impossible to retain the shape permanently, the city will keep watch for advances in conservation technology to select the best possible means to preserve the remains.

The reinforced concrete structures of the housing facility remains suffer irreversible damage and degradation, and may collapse at any time. These buildings may be removed as an exception in order to ensure the preservation and safety of the other elements on the component part of the World Heritage property.



Figure 3: Constituent elements of Hashima Coal Mine

(3) Presentation of the mining system

The Hashima Coal Mine is related to the two phases of industrialization, the phase of direct importation of Western technology and the phase of full-blown industrialization. It is also closely involved in the interrelationship of three industrial fields, not only the coal industry itself but the iron and steel making and shipbuilding industries that developed thanks to coal. The Sites of Japan’s Meiji Industrial Revolution, in addition to the Mitsubishi Takashima Coal Mine and Hashima Coal Mine sharing the same mineral deposits, also include the Mitsui Miike Coal Mine. The Mitsubishi mines, however, have a particularly deep technological connection to the development of the Nagasaki Shipyard in the Mitsubishi Goshi Kaisha period. With the electrification of coal mining operations, the coal production infrastructure system was rapidly developed, and large volumes of coal were shipped. The coal wastes generated as a result were then used to expand the landfill area around the island. The new land created around the rock of an island was surrounded by a fortress-like seawall to protect the island from high waves.

By the time the industry reached its peak, Hashima had formed a Mitsubishi coal mining community that was the most densely populated in the world. The mine housing built on the landfill-expanded island to support the work of the coal industry testifies to the Mitsubishi corporate culture behind the rapid industrialization of the time. New viewing plazas will be installed within the minimum scope needed for clearly conveying the nature of the facilities on the island at the time the mine was in operation, so that visitors can understand them. These facilities are not only those for mining (vertical mine shafts), transporting, and preparation of coal, and for stockpiling and loading coal, but also the entire coal production system such as for drainage, electrification, and powering the operations. The viewing plazas will be equipped with small wireless transmitters for communicating information to mobile devices. Visitor understanding will be further enhanced by tying in with existing facilities, such as the Takashima Coal Museum on the Takashima Island, and the Nagasaki City Gunkanjima Museum located in Nomozaki.

(4) Retaining better views (exteriors) of the island

The city aims to pass down how the coal mining started and developed from the Meiji era and to conserve the distinctive views (exteriors) of the island as an undersea coal mine, namely: (i) Current views of the coal production facility remains that represent the island’s industrial structures (ii) Unique battleship-like views (exteriors) that consists of seawall revetments, coal production and housing facilities. (iii) Relict landscape of the ruins with degradation and damage further in progress.

As a rule, the city will maintain the upright seawalls that constitute a significant part of long-distance views of the Hashima Coal Mine. Primarily for the sake of short-distance views, conservation work on any part of the structures visible from passages must be done in such a way that retains the colors, shapes, and textures of the current views as much as possible. Any equipment needed for reinforcement will be installed inside the structure if possible.

(5) Implementing projects

Nagasaki City will develop an Action Plan that covers project deadlines, implementation techniques for phased work, what to do during each of the fiscal years, etc.

The city will check the progress of the project annually and share the information with people involved in the project. This is to make sure that the efforts to conserve and utilize the World Heritage component part will be properly managed and the projects for conservation, restoration, presentation and public utilization will methodically proceed. Moreover, since the city is the managing organization responsible for the operation of the overall component part that entails coordination between public relations, events, and stakeholders, the city will act as a liaison between people and organizations involved in the projects.

3. Methods

(1) Research and study

(a) Archaeological excavation and field study

Aboveground structures of the coal production facilities were demolished to be replaced by new facilities. This means that the coal production facilities continued to be upgraded. The housing facilities were also rebuilt anew after suffering a disaster or when their features needed upgrading. The masonry revetment remains were also rebuilt when a typhoon devastated them. Given these historical facts, it is unlikely that any of the original aboveground structures still remain, while it is likely that underground structures from that time still do.

For part that are likely to be the remains of production facilities from Meiji era, such as mine pits and winding machine rooms areas, survey of underground remnants as much as possible during structural repair, etc.

(b) Study of historical documents

With the aim to clarify the production system at each period and grasp detailed information about production facilities, the way of operation and technology, the city will study documents archived at research institutes, labor unions' publications, newspaper articles at the time, and old videos and photographs to ensure that the city have accurate knowledge of the history of Hashima as a thriving island of a coal mine. The city will also work with citizen groups to interview former miners and their families to learn about the realities of their labor and day-to-day lives in Hashima at the time.

(c) Research on structural materials

The city will analyze the materials of the reinforced concrete, masonry, and brick structures and test their strength to scientifically assess the structures' degradation levels. The city also plan to research how to conserve regular and reinforced concrete structures as well as specific ways of conservation in the current environment where no essential utilities are available. Before any conservation work on structures, the city will survey the facilities and research their structures, and the ground upon which they are built in order to ensure the safety of on-site research and conservation work and to assess the safety performance of the structures. Comparative study with similar cluster housing facilities will also be undertaken.

(d) Research on the number and movement of visitors

The city will research the number and movement of visitors to assess the impact of intense tourism on the remains and reflect the results in better utilization of Hashima.

(e) Monitoring

The city will prepare monitoring charts that systematically collect complete information about the constituent elements of Hashima in order to regularly assess the current condition of the component part and buffer zone. The city will also compile the results of monitoring into an annual report to provide it to the Nagasaki Conservation Council for feedback in accordance with the operation system for the “Sites of Japan's Meiji Industrial Revolution”. If any negative impact on Hashima and/or its buffer zone is found, the city will take action to eliminate the cause or to reduce the impact, conduct a follow-up inspection, and examine the effects of the measures the city have taken.

The city have surveyed the whole of the island with a 3-D laser (**Figure 4**), and will install four stationary cameras to record and monitor the current state. The city plans to identify individual spots on the remains of seawall revetments, coal production and housing facilities that are likely to need monitoring in order to measure any slant and widths of cracks every six months.



Figure 4:
3-D Model of Hashima
Coal Mine made from
3-D laser survey

(2) Conservation

(a) Approaches for gradual conservation of the remains

The relationship between the elements of the Hashima Coal Mine (remains of the seawall revetment, retaining wall, and production and residential facilities) and the three points relating to conservation of the mine that are indicated in the **Figure 2**, is as follows (**Table 2**).

Hashima Coal Mine elements	Contributions to conserving Hashima Coal Mine remains		
	(1) Conserving the island	(2) Securely preserving the remains	(3) Maintaining the views (exterior)
Seawall Revetment	○	○	○
Retaining walls	○	○	○
Production facilities		○	○
Residential facilities			○

Table 2: Relationship between conservation and elements of Hashima Coal Mine

In light of the three conservation points, Nagasaki City is prioritizing and implementing material improvements over three phases over 30 years for the seawall revetment, retaining walls, and production and residential facilities, constituent elements of Hashima Coal Mine.

The city will take measures to preserve the seawall revetment remains in the coastline starting from Phase I to “maintain their function well” because they are critical elements covered by all the principles of conservation.

The retaining walls are covered by all the principles just as the seawall revetment in the coastline, and their “forms will be maintained” as seawall revetments. Since these retaining walls have relatively few deteriorating spots, the city will take measures to preserve them starting from phase II, taking into account the progress of conservation work across Hashima. Coal production facility remains are elements covered by two of the principles “Securely preserve the remains” and “Maintain the views (exteriors).” Since these remains are critical to understanding the coal production system, the city will take measures to preserve them starting from Phase I to “maintain the current shape.” The housing facility remains are covered by “Maintain the views (exteriors).” The city will take measures starting from the later part of Phase I to “maintain the current shape,” taking into account the progress of conservation work across Hashima.

As part of the restoration process, the city will monitor and continue recording all the remains and conducting repairs in 10-year phases. In Phase I, places that require urgent work and for which established methods are available will receive conservation. The city will also conduct research into conservation

methods during this phase. From Phase II, the city will apply the research results to repairs. The city will also review the Programme every 10 years, taking account of the progress, finances, and preservation and other study results.

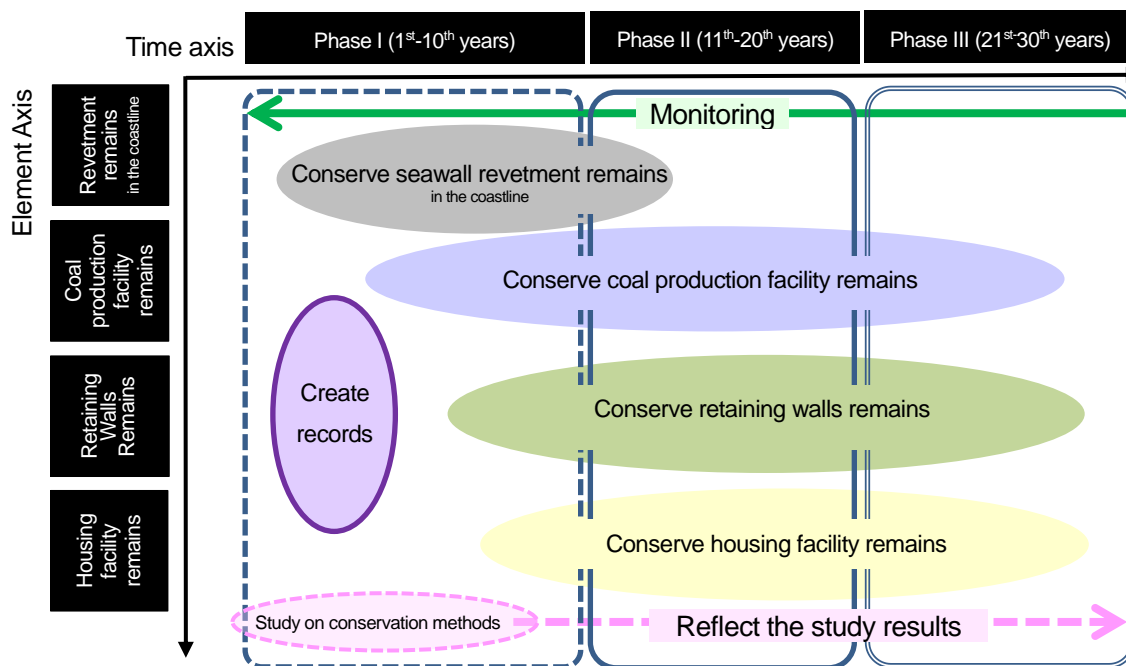


Figure 5: Approaches for phased conservation measures

(b) Approaches for prioritizing conservation measures for each element

Conservation measures are prioritized for each element of the remains from all angles, rather than from a single point of view. They include the extent of deterioration, applicable restoration and conservation techniques, the extent of contributions to the Outstanding Universal Value, the safety of other buildings and visitors, and the cost requirements.

In the process of conservation work for the seawall revetment remains in the coastline, the city will give priority to maintaining the World Heritage constituent elements. Therefore, places with damage that may significantly alter the shape of the remains of the seawall revetment in the coastline and impair their functions will be repaired first. Then the surrounding remains will be reinforced in order to maintain the seawall revetments' functions.

The remains of retaining walls are not damaged much at this moment, and thus the city will take maintenance measures if any, taking into account the progress of conservation work across Hashima. In the process of maintaining these remains, the city will give priority to conserving the World Heritage constituent elements. Therefore, parts of the remains with high levels of degradation will be repaired first.

In the process of conserving the coal production facility remains, the city will give priority to conserving the World Heritage constituent elements. Therefore, remains with high levels of degradation will be repaired first. Then a series of remains that show the workflow of the coal production system will be repaired.

In the process of conserving the housing facility remains, buildings that significantly contribute to the unique view (exteriors) of the island and show high levels of urgency and feasibility will be repaired first.

Element	Viewpoint for prioritization			Approach for prioritization by element		
Seawall revetment remains in the coastline	World Heritage constituent element	>	Factor for altering shapes	>	Degradation level (high to low)	Give the highest priority to conserving the World Heritage constituent elements. First repair places with damage that may significantly alter the shape of the remains in stages. Then reinforce the surrounding revetments.
Retaining walls remains	World Heritage constituent element	>	Degradation level (high to low)			Give the highest priority to conserving the World Heritage constituent elements. The retaining walls remains are essential to preserve the topography of the island. Repair them in stages, taking into consideration their degradation levels and the progress of conservation work across Hashima.
Coal production facility remains	World Heritage constituent element	>	Degradation level (high to low)	>	Contributions to coal production system (high to low)	Give the highest priority to conserving the World Heritage constituent elements. First repair severely degraded remains. Then repair a series of the remains that show the production system.
Housing facility remains	Elements related to maintaining the views (exteriors)	>	Feasibility of preservation (high to low)			First repair buildings that contribute significantly to the views (exteriors) of Hashima, where restoration and conservation techniques are well established and preservation is highly feasible.

Table 3: Relationship between conservation and elements of Hashima Coal Mine

(c) Conservation method

Hashima is perpetually exposed to the elements, suffering salt, wind and flood damage. Hence, many of the reinforced concrete structures are irreversibly damaged and degraded. At this moment, there is no established technology to preserve structures in this state. The following are conservation methods the city could turn to today. Attention should be given to the fact that the examples of these methods are current as of this moment, and that the city will continue to research and explore other methods and revisit these examples in the future.

● Seawall Revetment remains in the coastline

In the process of conserving the seawall revetment remains in the coastline, give priority to maintaining the World Heritage constituent elements. Therefore, first repair places with damage that may significantly alter the shape of the remains and impair the functions of the seawall revetments, where restoration and conservation techniques are sufficiently established for easy and instant repairs.

The method of restoration of the revetment remains described below was the subject of discussion at Nagasaki City Takashima Coal Mine Conservation and Utilization Committee established by Nagasaki City. However, in order to restore the revetment remains in a harsh environment, further consideration is required, from the technical point of view of the seawall strength aspect. Discussion will be continued in a working group composed of technical and specialized framework.

Fundamental policies

- Make drainage and outlets to drain seawater that wash over the seawalls into the island.
- Ensure that the shapes of the upright seawalls are visible. Do not install any protective structures (e.g., tetrapods) in front of the revetments.
- Install any facilities for reinforcement on land unless doing so is physically impossible.
- Install any structures needed to reinforce the masonry revetments of the seawalls located in areas visible to visitors. Ensure that the original masonry revetments are partially visible.

Examples of conservation methods

- Fill cracks with mortar (A & B)
- Fill damaged parts underwater (e.g., cavities in the revetments) with concrete (C-F)
- Coat existing revetments with concrete (G-N)
- As for the exposed masonry built using the *Amakawa* (traditional bonding agent of lime mixed with red soil), reinforce the back of the seawall revetments with concrete (G-N)
- Coat the exposed *Amakawa* masonry with a surface coating material to protect it from damage. Note that we will need to further research and explore technical methods that use coating materials. (G-N).

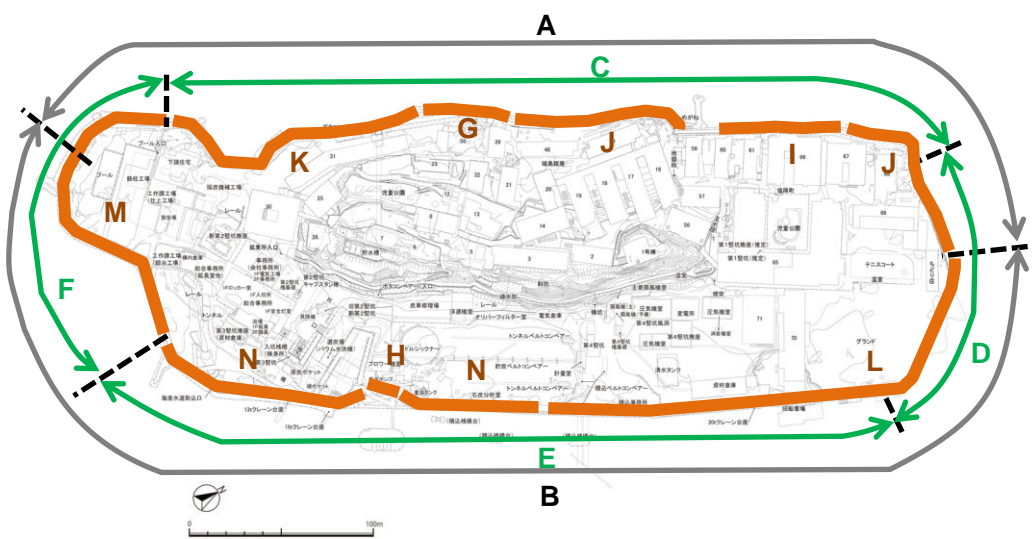


Figure 6: Map indicating the location of seawall revetment remains in the coastline to conserve with high priority (see the below table for details of the conservation methods etc.)

Zone	Conservation work with high priority	Reason for high priority
A	Repairing cracks (west side)	These cracks may significantly alter the shape of the remains and impair the functions of the seawall revetments. Those for which conservation and restoration techniques are established for instant repairs will be worked on.
B	Repairing cracks (east side)	
C	Filling underwater cavities (west side)	These cavities may significantly alter the shape of the remains and impair the functions of the seawall revetments. Those in the underwater revetments must be filled.
D	Filling underwater cavities (north side)	
E	Filling underwater cavities (east side)	
F	Filling underwater cavities (south side)	
G	Reinforcing the seawall revetments (west of Building 50)	These seawall revetments may significantly alter the shape of the remains and impair the functions of the seawalls. Structures for reinforcement need to be installed for the parts of the seawall revetments for which there are no established conservation and restoration techniques. The reinforcement method most suitable for this purpose will be selected from the three options below (Options 1 to 3).
H	Reinforcing the seawall revetments (south side adjacent to the pier)	
I	Reinforcing the seawall revetments (northwest side)	
J	Reinforcing the seawall revetments (north side)	
K	Reinforcing the seawall revetments (west side)	
L	Reinforcing the seawall revetments (east side)	
M	Reinforcing the seawall revetments (south side)	
N	Reinforcing the seawall revetments (southeast side)	

Table 4: Prioritized conservation work on the seawall revetment remains in the coastline

To reinforce Zones G to N (see above table), the city will examine following three Options:

- Option 1** Coat the top sides of the seawall revetments and part of the sides facing land with concrete. Avoid coating the *Amakawa* masonry revetments built during the Meiji era wherever possible.
- Option 2** Coat the top sides of the seawall revetments and the whole surface of the sides facing land with concrete.
- Option 3** Coat the top sides of the seawall revetments and the sides facing the ocean with concrete.

The method for Option 1 is to keep the *Amakawa* masonry revetments exposed wherever possible. It is to work mainly on places near tour spaces for visitors (**Figure 7**). The method for Option 2 is to reinforce the seawall revetments facing land. The method for Option 3 would be selected only when no space is available for construction on land.



Figure 7: Images of seawall revetments conserved by Option 1 (left: before conservation; right: after conservation)

● Retaining walls remains

Give priority to conserving the constituent elements that contribute to the Outstanding Universal Value of the World Heritage property. Therefore, start repairs from considerably degraded retaining remains. Note that the field study results concluded these remains currently have no spots that require urgent repairs.

Fundamental policies

- Maintain the current shape.

Conservation methods

- Coat the exposed *Amakawa* masonry with a surface coating material to protect it from damage. Note that we will need to further research and explore conservation methods that use coating materials.
- Fill the parts that fell off with sandstone (a material of the same quality) if they are structurally essential.
- Restore collapsed parts using materials of the same quality as the original wherever possible (i.e., cobblestones and ashlar for masonry walls; concrete and reinforced concrete for concrete walls).

● Coal production facility remains

The coal production facility remains are vital to understanding the industrial (mining) system at the time in that they are direct representations of the realities of the coal mining industry. Give priority to conserving the elements that contribute to the Outstanding Universal Value of the World Heritage property, and start conservation work from the series of the severely degraded remains that show the workflow of the coal production system. The fundamental policies and conservation methods for these remains are as follows:

Fundamental policies

- Maintain the current shape. Changes made to the exteriors must be minimum and only for the purpose of maintaining the structures.
- Any facilities needed to reinforce ferroconcrete structures should be installed in places invisible to visitors wherever possible (e.g., inside the constructions) so that they will not affect the exterior views.
- Conduct examinations before using rust inhibitors and impregnating and other agents to ensure that they do not harm the remains.

Conservation methods

(1) Reinforced concrete structures

- Reinforce beams and pillars mainly by placing steel frames inside or outside of them.
- Apply corrosion inhibitors to exposed steel frames.
- Apply impregnants of corrosion inhibitors to the exterior walls.
- Inject corrosion inhibitors into cracks in the building frames (pillars and beams).

(2) Brick structures

- Add new bricks to areas where bricks are missing to prevent further falling-off. Do not repair cracks (e.g., by applying mortar) in order to ensure reversibility.
- The addition of new bricks as stated above must be limited to the part of the arch crown and to the extent necessary to retain the structure (Figure 8).
- Ensure that the colors and shapes of newly added bricks are close to those of the existing ones on the severely degraded and damaged structures. Also ensure that these new bricks bear the mark “Repaired in 20XX” on the four sides (front, back, left and right) to distinguish them from original ones.
- Use lime mortar (with the ratio of lime to sand is 1:3) as a joint filler in order to prevent any impact on the surrounding original bricks and to ensure reversibility, since lime mortar’s bond strength is lower than that of cement mortar.
- Fix newly added bricks with anchor pins ($\phi 3 \text{ mm} \times 60 \text{ mm}$) to prevent them from falling off.

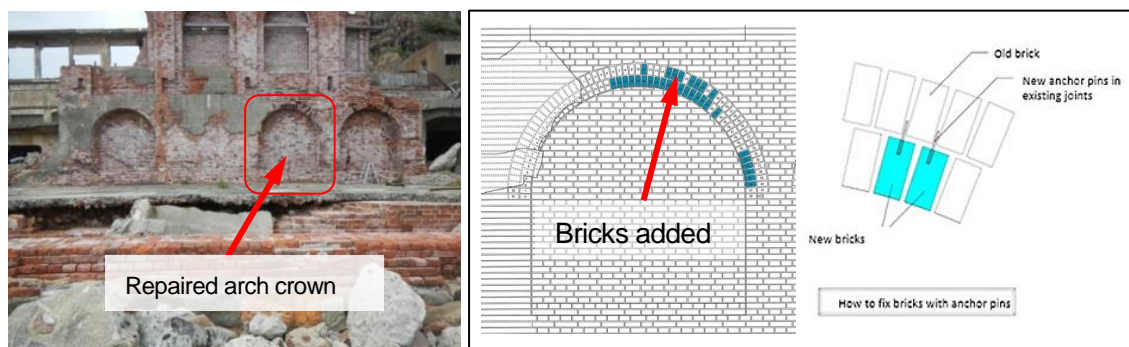


Figure8: Repairs to a brick structure

- Housing facility remains

The dilapidated housing facility remains soaring in clusters overwhelm visitors. These remains form the major part of the unique battleship-like views (exteriors) of the island. Begin repairs from housing facilities remains that contribute significantly to the views (exteriors) unique to Hashima Coal Mine and for which conservation and restoration techniques are established.

Fundamental policies

- As a rule, make no major changes to the exterior views.
- Repair and/or reinforce the interior of the buildings only to maintain the structures and any other work must be limited to the removal of obstacles to such repairs and reinforcement. Conserve the current condition wherever possible.
- As a rule, install any facilities for reinforcement in places invisible from the tourist routes, the sea, and thoroughfares in the area of the housing facilities.
- Research construction methods for degradation control and reinforcement of materials and structures and makes sure the methods work before applying them.
- Some of these remains may be removed as an exception in order to ensure the preservation of the other buildings or the safety of visitors.

Conservation methods

- Inject corrosion inhibitors into cracks in the building frames (pillars and beams).
- Apply impregnants of corrosion inhibitors to the exterior walls.
- Apply corrosion inhibitors and then mortar for coating to exposed reinforcing steel in pillars and beams visible from the tourist route.
- Wrap steel plates or carbon fiber sheets around exposed reinforcing steel in pillars and beams invisible from the tourist route, and then apply extra reinforced concrete.
- Place facilities for reinforcement inside the pillars and beams for further strength. (Reinforcement is mainly to prevent collapse under the pillars' or beams' own weight.)
- Waterproof the roofs with asphalt or an urethane coating.

Appendix a)-2 “Conservation work programme for Hashima Coal Mine (Area 6 Nagasaki/ Component part 6-7)”





Location	Facilities with high priority	Reason for high priority	Photo
A	<ul style="list-style-type: none"> ➢ Pit No.3 winding machine room ➢ Mine entry landing 	These are production facility remains in the Meiji era where visitors can imagine how miners entered and exited the mine.	 <p>Pit No.3 winding machine room Mine entry landing</p>
B	<ul style="list-style-type: none"> ➢ Dorr thickener ➢ Coal storage yard belt conveyer ➢ Loading belt conveyer 	These remains help visitors understand the workflow of coal transport that consists of coal cleaning, storage, and loading.	 <p>Dorr thickener</p>
C	<ul style="list-style-type: none"> ➢ Pit No.4 ➢ Foundations of the derrick ➢ Pit No.4 winding machine room ➢ Substation ➢ Compressor room (large and small) ➢ Main fan room ➢ Pit No.4 wind tunnel 	These remains help visitors understand the aboveground coal mining system.	 <p>Substation (right foreground) and others</p>
D	<ul style="list-style-type: none"> ➢ Building No. 1 	Workers prayed for work safety in labor-management cooperation in this building. These remains also form a part of the industrial landscape.	 <p>Building No. 1</p>

Table 5: Conservation of production facility remains: Priority (the letters under “Location” correspond to those in Figure 9)


Location	Facilities with high priority	Reason for high priority	Photo
E	<ul style="list-style-type: none"> ➢ Building No. 3 	The building forms a part of the battleship-like views of the island. It is also typical remains of the housing facilities.	 <p>Building No. 3</p>

Table 6: Conservation of housing facility remains: Priority (the letters under “Location” correspond to those in Figure 9)

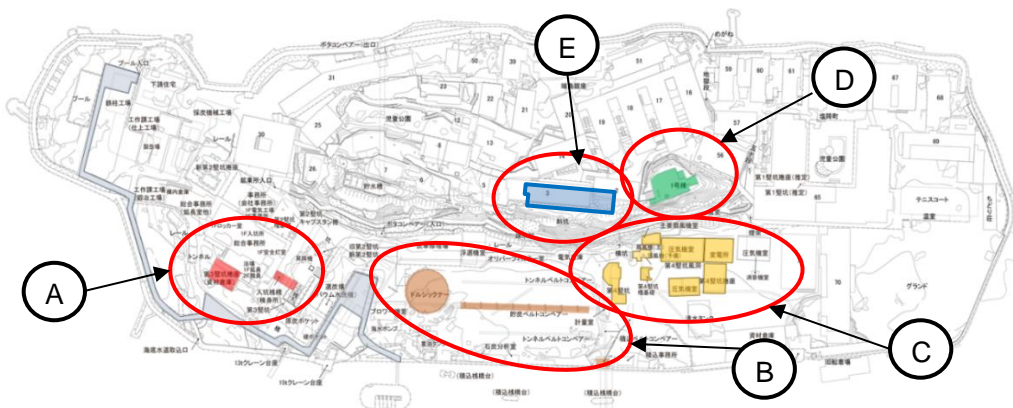
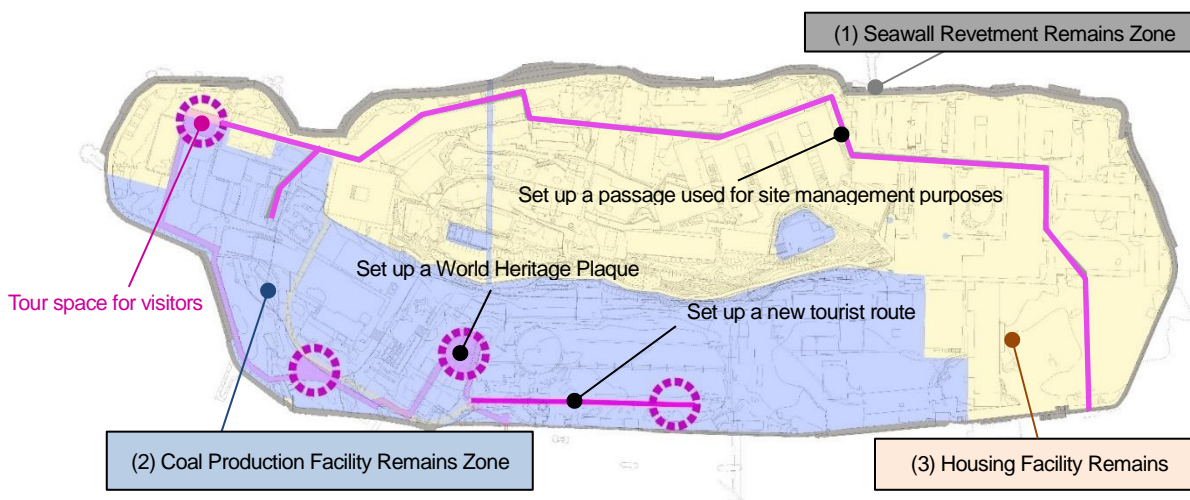


Figure 9: Locations of the facilities to conserve with high priority (coal production and housing facilities)

(3) Presentation of the mining system

The facilities for use will be set up in three different zones: Seawall Revetment Remains, Coal Production Facility Remains, and Housing Facility Remains Zones.



Zone	Methods
(1) Seawall Revetment Remains Zone	This zone is for the seawall revetment remains surrounding the island. Conservation will be primarily for preservation. No facilities for use will be set up.
(2) Coal Production Facility Remains Zone	This zone is for the coal production facility remains. It will be open only to visitors on the tourist route. Minimum facilities needed for research and study as well as for visitors will be set up. <ul style="list-style-type: none"> ➤ Set up a new tourist route in a minimum size
(3) Housing Facility Remains Zone	This zone is for facilities connected to day-to-day living of miners and other workers. Minimum facilities needed for research and study will be set up. <ul style="list-style-type: none"> ➤ Set up a passage used for site management purposes

Figure 10: Zoning and locations of main facilities to set up

(a) Paths

Set up a new tourist route in the Coal Production Facility Remains Zone, and a passage needed for studies of and academic research on the remains, and Conservation work in the Housing Facility Remains Zone.

Keep the height of the new tourist route as low as possible to make it easy for visitors to imagine what the facilities in operation were like. Considering concrete that is less bright to match the look of the ruins, pave the route with concrete slabs to preserve the remains and ensure the route will blend in with the surrounding buildings. In addition, the possibility of setting up the light and simple path using grating so as to see the road direct under the path will be examined.

As for the passage used for site management purposes, make its width minimum to ensure it will not affect the surrounding remains.

* Notes on the maintenance of the passage used for site management purpose

- a. Move fragments of certain size to the edges of the passage if pieces of rubble are scattered over the floor.
- b. As a rule, sweep soil and stone to the sides of the passage, or move them someplace else on the island if they cannot be swept to the sides.
- c. If heavy loads may be carried on the passage, cover the



Figure 11: Current site management passage

Appendix a)-2 “Conservation work programme for Hashima Coal Mine (Area 6 Nagasaki/ Component part 6-7)”

original concrete surface that must be protected with a sheet or an iron sheet, or pave it with concrete for protection.

(b) Trees and plants

Branches and roots of trees may affect the buildings, and trees may fall at any time. Hence, fell trees that may affect the preservation of the remains on the island as necessary, and ensure that no more trees will be planted.

(c) Signposts and information boards

In consideration of the decayed landscape of the Hashima Island, no information boards, etc. will be newly set up. A signpost indicating the name of the island as a National Historic Site and a World Heritage Plaque will be set up in first visitor area.

(d) Facilities for site management and convenience for visitors

Set up refuge facilities needed for academic research (used as an evacuation place when weather is inclement and for storing monitoring and survey equipment, etc.) in locations invisible from the tour spaces for visitors (see **Figure 15**). Keep these facilities for site management and convenience minimum. No rest facilities, toilets, benches, and lighting for visitors will be set up (visitors will use the toilets on the ship that carries them to the island)

(4) Arrangements and improvements for the buffer zone

The city currently have no plan to set up any new structures in the adjacent seas that serves as the buffer zone. The city will continue to protect the zone in accordance with the Coast Act, the Port and Harbor Act, and the Nagasaki Prefecture Sea Control Ordinance.

4. Implementation of the projects (schedule)**(1) Review of implementation schedule**

Nagasaki City will prepare under this Programme a project schedule for the 30 years that starts at 2018. This Schedule will cover projects taken in stages during each of the decades, and will be reviewed every ten years from a perspective gained after examining the progress, finances, and results of research on technical methods for conservation.

Details of Conservation Work	Preparation Period (2014-2017)	Phase I (1-10years)		Phase II (11-20 years)	Phase III (21-30 years)
		(1-5 years)	(6-10 years)		
(1) Repairing and reinforcing the revetment retains					
a) Repair the revetments (west of Buildings No. 31 and 51)	↔				
b) Repair cracks in the revetment remains		↔			
c) Fill underwater cavities		↔	↔		
d) Reinforce the revetments		↔	↔		
e) Protect the surfaces of the masonry seawall revetment remains				↔	↔
f) Survey of the current state of underwater seawall revetment and its height		↔	↔	↔	↔
(2) Protecting the retaining wall remains					
a) Protect the surfaces of the masonry retaining wall remains				↔	↔
(3) Repairing and reinforcing the coal production facility remains					
a) Provide temporary reinforcement of the pit No.3 winding machine room	↔				
b) Provide temporary reinforcement of the mine entry landing	↔				

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c) Repair and reinforce the pit No.3 winding machine room			↔		
d) Repair and reinforce the mine entry landing			↔		
e) Repair and reinforce the coal storage yard belt conveyor			↔		
f) Repair and reinforce Dorr thickener			↔		
g) Repair and reinforce the pit No.4 winding machine room			↔		
h) Repair and reinforce the pit No.4			↔		
i) Repair and reinforce the Foundation of the derrick (pit No.4)			↔		
j) Repair and reinforce Building No. 1			↔		
k) Repair and reinforce the Loading belt conveyor			↔		
l) Repair and reinforce the Substation			↔		
m) Repair and reinforce the Compressor room (large)			↔		
n) Repair and reinforce the Compressor room (small)			↔		
o) Repair and reinforce the Main fan room			↔		
p) Repair and reinforce the Pit No.4 wind tunnel			↔		
q) Provide regular repair work for the production facility remains that have already been repaired and reinforced				↔	↔
(4) Controlling the degradation of the housing facility remains					
a) Backfill the scoured part of the foundation of the housing facility remains (Building No. 70)	↔	↔			
b) Research construction methods for preservation of the housing facility remains (Building No. 16)			↔		
c) Take measures to control the degradation of the housing facility remains (Building No. 3)			↔	↔	
d) Provide regular repair work for the production facility remains that have already been repaired and reinforced (Building No. 3)				↔	↔
(5) Continuing studies of the remains					
a) Study the masonry revetment remains			↔	↔	↔
b) organize the records of the remains and relics			↔	↔	↔
(6) Setting up facilities needed for studies of the remains etc.					
a) Set up passages			↔	↔	
b) Set up private facilities				↔	
(7) Safety measures etc.					
a) Fell trees as necessary, remove rubble in high places, take measures to prevent exterior walls from collapsing, etc.			↔		
b) Remove rubble in high places (e.g., roofs of buildings), taking measures to prevent exterior walls from collapsing, etc.			↔	↔	↔
(8) Setting up facilities needed for academic research etc.					
a) Set up passages			↔	↔	
b) Set up private facilities				↔	
(9) Organize the records of the remains and relics					
a) Organize the records of the remains and relics			↔	↔	↔

Table 7: Project Schedule * changing will be expected

(2) Project cost estimate and financial resources

Nagasaki City estimates that the costs of the current action plan over 30 years (including costs relating to promotion) will amount to approximately 10.8 billion yen. Nagasaki City will make effective use of the Hashima (Gunkanjima) Provision Fund set up in 2015, etc.

(3) Order of priorities

The targets are “seawall revetment,” “retaining walls,” “production facilities,” and “housing facilities.”

In Phase I, the city will work on places that require urgent conservation. The city will also conduct research on technical methods for conservation during this phase (Figures 13 and 14).

In Phase II, the city will continue repairs that reflect findings from the research on technical methods for conservation (Figure 15).

The time before the start of Phase I (FY2018) is defined as a preparation period. During this period, the city will take actions urgently needed for conservation, and then carry out the following items that are preparations for conservation work: (i) a survey of the current condition of structures to conserve (ii) taking safety measures in areas where visitors are warned to watch their heads, e.g., removing rubble and working on the exterior walls to prevent them from collapsing (iii) taking measures to maintain structures assessed as “structurally unstable,” e.g., providing temporary reinforcement.

a) Urgent actions during the preparation period

Any urgent actions will be taken as the need arises (Figure 12).

The facility remains listed below are not only severely degraded but also at high risk of collapsing, which poses a threat to the preservation of the surrounding remains. Hence, the city gave priority to these facilities and started works to conserve their structures as urgent actions from 2014. These actions were completed by the end of FY2018 before the projects based on this Programme begin.

- A: Seawall revetment reinforcement (west of Building No. 31) - Complete in September 2015
- B: Seawall revetment reinforcement (west of Building No. 51) - Complete in September 2015
- C: Repairs to and temporary reinforcement of the coal production facility remains’ brick walls (pit No.3 winding machine room) - Complete in March 2017
- D: Temporary reinforcement of the coal production facility remains (mine entry landing) - Complete in March 2017
- E: Design of the process of backfilling the scoured areas in the foundations of the housing facility remains - 2018~

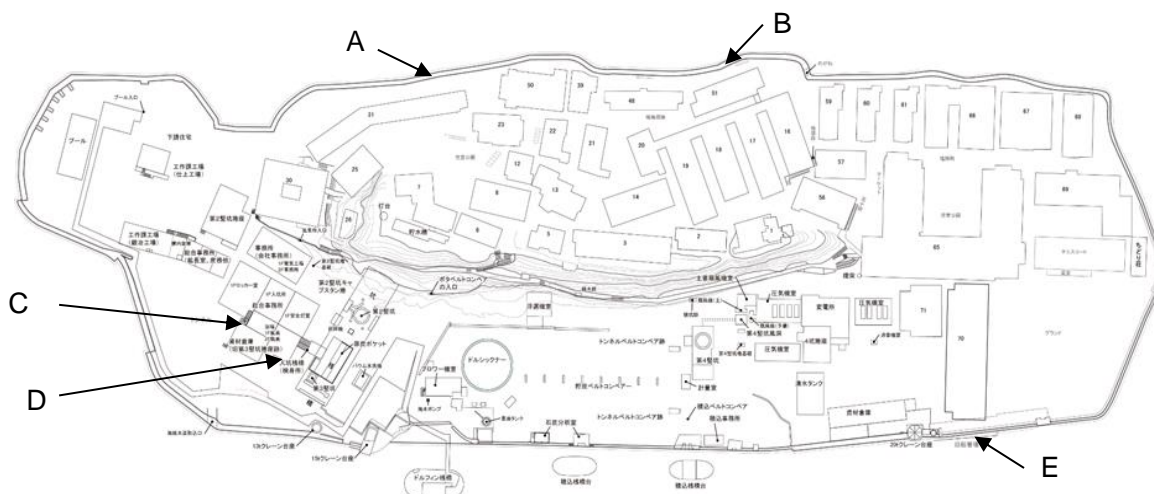


Figure 12: Locations of urgent actions A-E during the preparation period

Appendix a)-2 “Conservation work programme for Hashima Coal Mine (Area 6 Nagasaki/ Component part 6-7)”










Location	Before action	Progress state
A	<ul style="list-style-type: none"> ➤ The back of the seawall revetment was scoured and caved in 	<ul style="list-style-type: none"> ➤ The cavity facing the sea is closed with concrete. ➤ The caved-in part is filled with concrete. 
B	<ul style="list-style-type: none"> ➤ The back of the seawall revetment was scoured by typhoons and caved in. 	<ul style="list-style-type: none"> ➤ The cavities facing the sea is closed with concrete. ➤ The caved-in part is filled with concrete. 
C	<ul style="list-style-type: none"> ➤ One wall stands alone, which is structurally unstable. There are cracks all over it. Bricks in the arch crown are missing. 	<ul style="list-style-type: none"> ➤ Bricks have been added to the parts of the arch crown where bricks were missing. ➤ Temporary facilities for reinforcement of the revetments have been set up. 
D	<ul style="list-style-type: none"> ➤ The truss-like steel frames that once supported the stepped passage corroded and crumbled, leaving only the concrete structure. The whole shape became bowed, and the supporting point of the steel is degraded. 	<ul style="list-style-type: none"> ➤ Temporary facilities for reinforcement have been set up. 
E	<ul style="list-style-type: none"> ➤ The typhoon in 1991 scoured the building to expose the foundations of concrete piles, and some of the piles were lost. 	<ul style="list-style-type: none"> ➤ The construction work for backfilling the scoured part has been designed. ➤ This construction will be carried out after FY 2017.

Table8: Urgent actions during the preparation period (FY2014-FY2017) (See Figure 12 for the locations of A-E)

5. Maps of Phased Plans

Each of the projects and its location that will be implemented in Phase I-III is as shown in Figures 13-16.

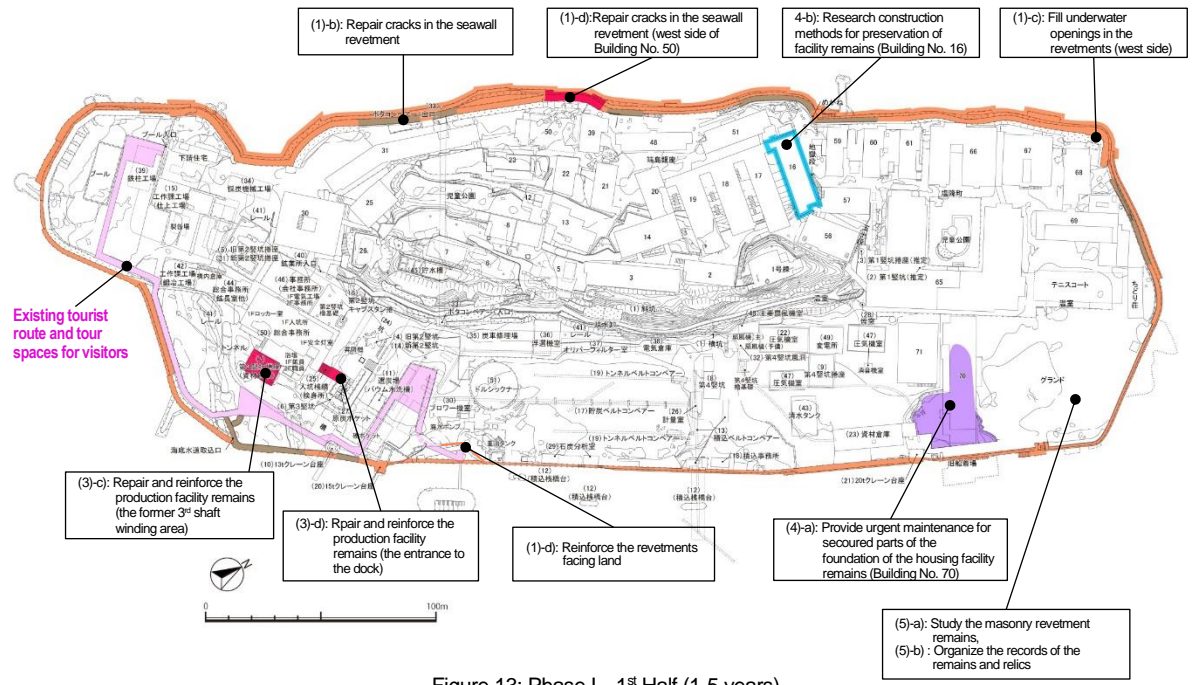


Figure 13: Phase I---1st Half (1-5 years)

(The numbers indicated in each of the boxes in the Figure 13 are identical to those in the Table 7)

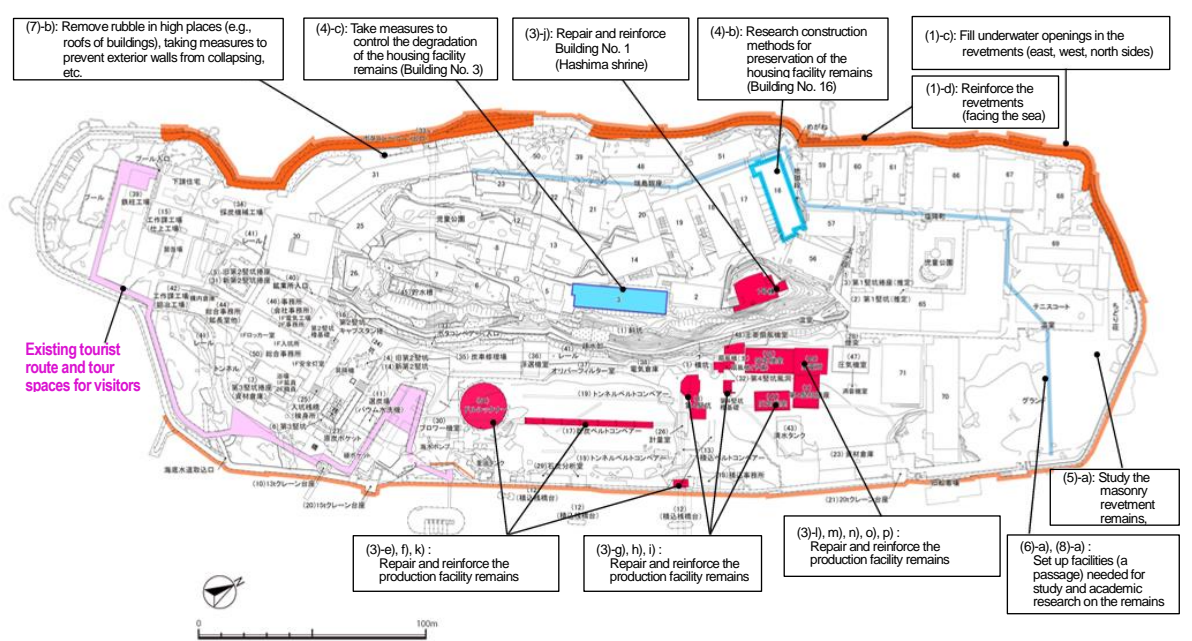


Figure 14: Phase I---2nd Half (6-10 years)

(The numbers indicated in each of the boxes in the Figure 14 are identical to those in the Table 7)

Appendix a)-2 “Conservation work programme for Hashima Coal Mine (Area 6 Nagasaki/ Component part 6-7)”

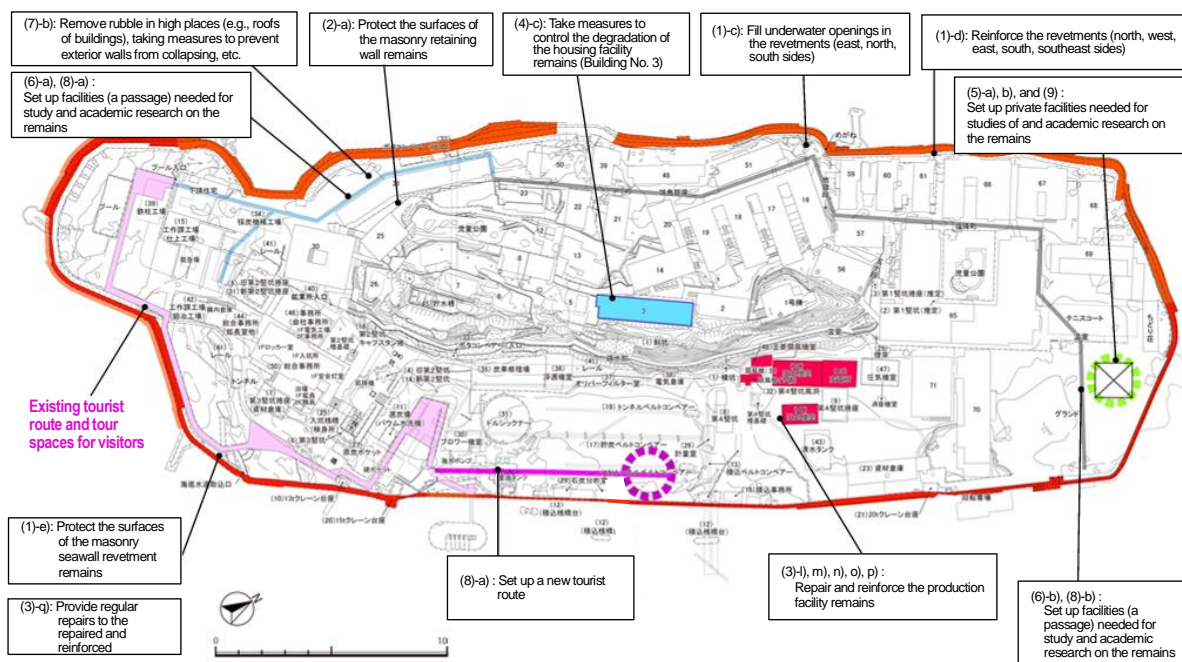


Figure 15: Phase II (11-20 years)

(The numbers indicated in each of the boxes in the Figure 15 are identical to those in the Table 7)

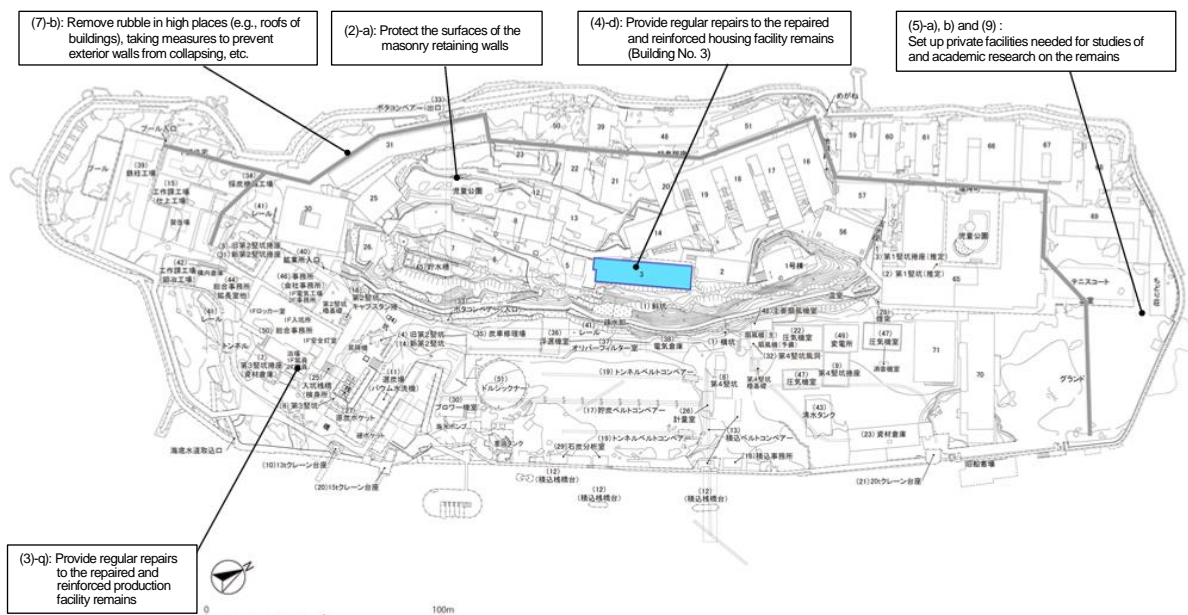


Figure 16: Phase III (21-30 years)

(The numbers indicated in each of the boxes in the Figure 16 are identical to those in the Table 7)

6. Other matters

An excerpt of the Plan for the Conservation, Restoration, Presentation and Public Utilization of the Hashima Coal Mine, which served as the basis for formulating the Programme, is available on Nagasaki City’s website (URL; <http://www.city.nagasaki.lg.jp/kanko/840000/843000/index.html>).