Ombilin Coal Mining Heritage of Sawahlunto (Indonesia) No 1610

Official name as proposed by the State Party
Ombilin Coal Mining Heritage of Sawahlunto

Location
West Sumatra Province
Sawahlunto Municipality
Solok Regency
Solok Municipality
Tanah Datar Regency
Padang Panjang Municipality
Padang Pariaman Regency
Padang Municipality
Indonesia

Brief description
Ombilin Coal Mining Heritage of Sawahlunto is a complex industrial system established for extracting, processing and transporting high-quality coal from a remote area of West Sumatra. This system was built by the Netherlands colonial government from the late 19th century until early 20th century. Mining continued under Indonesian government ownership after the colonial period until 2002.

The nominated property comprises three geographically distinct but functionally integrated areas namely the mining site and company town (Area A), the coal storage facilities at Emmahaven Port (Area C) and the railway network linking the mines to the costal facilities (Area B).

Deep-pit mining required considerable capital investment and technological ability; and included open pit mines, tunnels, air compressor and ventilation system, river-water pumping station, coal-fired power plant, coal-processing facilities, and the company town of Sawahlunto. These elements comprise the nominated serial property, together with 155 km of railway through challenging terrain which delivered the coal to the storage and export facilities at the Indian Ocean coastal port of Emmahaven. The Mining School was an important contributor to the long-term capacity of the coal-mining enterprise, as the labour and know-how needed to establish and operate this integrated system was considerable. The many skilled and unskilled workers included local Minangkabau people, contract workers from Java and China, and convict labourers called 'chained people' or *orang rantai* from Dutch-controlled areas within present-day Indonesia.

The Ombilin coal field is known for the high quality of its coal deposits and Ombilin Mining Company quickly rose to become one the major coal producers in Asia in the early 20th century. The property is nominated to demonstrate the system's technological innovation, educational achievements and cultural exchanges.

Category of property
In terms of categories of cultural property set out in Article I of the 1972 World Heritage Convention, this is a serial nomination of 12 *sites*.

1 Basic data

Included in the Tentative List
30 January 2015
'Sawahlunto Old Coal Mining Town'

Background
This is a new nomination.

Consultations and Technical Evaluation Mission
Desk reviews have been provided by ICOMOS International Scientific Committees, members and independent experts.

An ICOMOS technical evaluation mission visited the property 3-7 September 2018.

Additional information received by ICOMOS
A letter was sent to the State Party on 1 October 2018 requesting further information about the comparative analysis; extent of underground elements in relation to the boundary of Area A; mining operations; impacts from the Trans-Sumatra Railway project; legal protection; sustainable tourism strategy; and the forced and Indigenous labour employed in the mining activities.

An Interim Report was provided to the State Party on 21 December 2018 summarising the issues identified by the ICOMOS World Heritage Panel. Further information was requested in the Interim Report including: legal protection, characteristics of 'fusion' between local and European knowledge, presence of mining machinery, buffer zone protection, future mining plans, social history research plans, zoning for the Sawahlunto company town, and minor adjustments to component boundaries.

Additional information was received from the State Party on 31 October 2018 and 28 February 2019 has been incorporated into the relevant sections of this evaluation report.

Date of ICOMOS approval of this report
13 March 2019

2 Description of the property

Note: The nomination dossier and additional information contain detailed descriptions of this property, its history and its state of conservation. Due to limitations on the length of evaluation reports, this report only provides a short summary of the most relevant aspects.

Description and history

The Ombilin basin is located in the inland area of the Indonesian province of West Sumatra. The extensive and high-quality coal resources had been surveyed by Dutch geologists in the 1860s, but the remoteness from transportation networks, deep deposits and mountain topography posed significant technological challenges. The Ombilin coal mining system represents an early application of deep-pit mining, requiring considerable technological ability and capital investment. In 1898, coal mining at Soengai Doerian was the biggest mining project operated by the Netherlands colonial government.

This serial property of 12 components occurring in three geographically distinct but functionally integrated areas demonstrates the complex industrial and social system established for extracting, processing and transporting coal from a remote area of West Sumatra. The serial property includes the mining compounds of the Soengai Doerian site, coal processing plant, the company town of Sawahlunto, the railway to Padang, and the coal storage facilities at the Indian Ocean port of Emmahaven.

The mining facilities for the extraction and processing of coal are located within Area A (6 components), including the rich Ombilin coal fields, mining pit compounds, approximately 10 km of underground tunnels, the coal processing plant (for coal sizing, cleaning, dewatering, workshops and transportation), air compressor and ventilation system, the water pumping station, power plant (now a mosque), the Mining School, and the company town of Sawahlunto.

A Mining School (Mijnbouw School) (A2) was established in 1916 to address shortages in skilled labour; the building now functions as the office of the Civil Service Police Unit. The School continued following Indonesian independence, and is a focus of knowledge exchanges. Mining education continues at Sawahlunto, and the Soengai Doerian Mining Pit Compound (A1.3) is used as an Underground Mine Training Centre (which is to become Underground Mine Polytechnic).

The company mining town of Sawahlunto had a population of more than 7000 inhabitants. Many buildings exhibit the characteristics of the 'Indies style' of architecture. The town provided housing for all employees of the mine and the facilities needed for their daily lives, such as food services, health, education, religious services and recreation – all organised according to the hierarchical structure of the labour force and the colonial society. This structure established the European engineers and administrators at the top, through to a range of white-collar workers, to the mine labourers that included convicts and contract workers.

The railway facilities and rail line that linked the Ombilin Mines to the Emmahaven Port are included in Area B (5 components). This rail corridor was built from 1887-1891 and made the coal mining enterprise possible. It is 155 km long and connects the remote mountain region of the Ombilin valley with the Indian Ocean coast. The terrain posed technical challenges, and the rail line features an inventive rack-railway, as well as parabolic arc rail bridges, tunnels and three stations.

The export of coal from the coastal port is demonstrated by the Emmahaven Port coal storage facility in Area C (one component). The Emmahaven Port (now called Teluk Bayur port) was built in 1888 by the Netherlands colonial government.

From the 19th century, European powers sought to access and utilise the natural resources of the region through colonisation and rapid industrial development. The Ombilin mining enterprise began with open pit mining in 1892 after the construction of the railway between Sawahlunto and the Emmahaven Port. During the Netherlands colonial period, coal production peaked in 1939 (600,000 tonnes per year). A Japanese company took over the Ombilin coal mining enterprise from 1942; and in 1945, it was taken over by the Indonesian Government. The last delivery of coal to the port by train occurred in 1999, and coal production officially ceased in 2002. Current plans aim to re-open the railway and other components for tourism. Aspects of the coal mining and transportation system at Ombilin were applied elsewhere, including in operations by the Netherlands in South Africa.

The labour and know-how needed to establish and operate this integrated system for mining, processing and transportation was considerable. During the colonial periods, Dutch or Dutch-educated Javanese (and Indo-European) workers were the administrative personnel and technical engineers of the Ombilin Coal Mining Company. Initially, the local Minangkabau people were not willing to work underground due to their cultural beliefs, and although this changed over time, Minangkabau workers tended to work in above-ground contexts such as building construction and carpentry.

There were three types of labourers: daily labourers who worked on a daily wage basis (primarily local Minangkabau people); contract labourers who worked for a fixed-term of 3 to 5 years (generally from poor areas in Java or Chinese workers recruited via Singapore and Penang); and forced labourers, convicts from Dutch prisons in Java, Bali, Makassar and other Dutch-controlled parts of the Indonesian archipelago. These were people convicted of crimes and serving prison sentences of hard labour, known as 'chained people' or *orang rantai*, for which the Ombilin mines became infamous. The Museum 'Orang Rantai' located in the Soengai Doerian component was initiated in 2018, and is due for completion in 2020.

There was considerable conflict between the three classes of labourers, due to the poor working conditions (particularly in the earlier periods). Protests about food

quality and distribution, and inadequate healthcare occurred; and there was competition for scarce privileges between ethnic and linguistic groups. From the 1920s, the company was required to improved working conditions in order to sustain the productivity of the mines. Efforts to reduce conflict included division of the workforce into discrete work crews, and the creation of separate residential accommodation for convict labourers. Over time, there were many inter-marriages between the miners and local women, and today the population of the town traces its origins widely – including Chinese Malay, Javanese and local Minang.

The Ombilin coal field was known for the high quality of its coal deposits and the company quickly rose to become one the major coal producers in Asia in the lead up to the first World War, and in the inter-war period. The property is nominated to demonstrate the system's technological innovation, educational achievements and cultural exchanges.

Boundaries

The nominated area of 12 components totals 268.14 ha, and is enclosed by a single buffer zone of 7356.96 ha.

The State Party has aimed to represent the components as an integrated system and has aligned the boundaries of the nominated property to the location and extent of the Ombilin mining concession and associated facilities in the late 19th and early 20th centuries. The boundaries are based on historical records, consideration of the setting, and practical matters such as ownership and the designations of legal protection.

The single continuous buffer zone has been established by the State Party in order to ensure the coordination of protection across seven administrative jurisdictions, as well as recognising the environmental setting of the nominated property. Important views and topographical features have been taken into account. In some parts – particularly around the rail corridor (Area B), the buffer zone takes into account main roads and existing/proposed legal designations.

Additional information provided by the State Party demonstrates that a number of underground tunnels extended beyond the property boundary (in Area A). The State Party has advised that coal transportation tunnels that are still intact occur within the boundary of Area A, and can be utilised for education and heritage tourism purposes. Those historically located outside the property boundary occur within the buffer zone are no longer extant as they have been closed and filled with sand.

ICOMOS considers that the boundaries and buffer zone are well-defined and appropriate. Based on a suggestion from ICOMOS, a minor adjustment to the boundary of component B2 (Babu Tabal Station) was made to incorporate the water tower, and the area calculations for the property and buffer zone have been adjusted. For the purposes of their conservation and interpretation, some elements could be better delineated within these larger boundaries in order to clearly indicate their contributions to the proposed Outstanding Universal Value (eg. within component A1.3, and the elements associated with the railway stations B2, B3 and B5).

State of conservation

The nomination dossier presents a thorough rating of the state of conservation of the nominated components, based on condition surveys conducted in 2015 and 2017. ICOMOS considers that these have provided a good baseline for future monitoring.

Many components are in fair condition (eg. Emmahaven Coal Storage facilities in Area C); and others are in poor condition, particularly the disused mining pits and compounds in Area A (eg. A1.2, A1.5, A6.1). Some components, such as the Salak Power Plant (A6.1), have little remaining evidence of their original function and require interpretation. In general, the buildings in the town component (A5) are in good condition, due to their continuing use and opportunities for adaptive reuse.

The rail transport components included in Area B have been subject to upgrading of the tracks and stations, and many of these are in good condition as a result of the program of investment and revitalisation. The train route is maintained in its original location, within its original easement; although the timber sleepers have been replaced with cement ones, and new signalling equipment has been inserted to comply with regulatory requirements. The railroad is still functional, although only the Teluk Bayur-Kayu Tunam network is currently active. The work undertaken since 2015 between Kayu Tunam to Muara Kalaban has aimed to return it to service in anticipation of the possible World Heritage inscription; and there is anticipated future demand for a tourism train journey from Padang City to Sawahlunto. A historical railway engine (called *Mak Itam*) has been refurbished and is housed at the historic Sawahlunto Station.

ICOMOS considers that there are some inconsistencies in the assessment of the condition of some components (particularly B1, B2, B3 and C). Based on the observations of the ICOMOS mission, these seem to be in 'fair' or 'fair-poor' condition.

Aside from these adjustments, based on the information provided by the State Party and the observations of the ICOMOS technical evaluation mission, ICOMOS considers that the state of conservation is acceptable, although it is vulnerable due to the prevailing climate conditions, the large size of the property, and the diverse past and present uses of the components.

Factors affecting the property

ICOMOS considers that the main factors affecting the property are uncontrolled small-scale domestic and commercial development, and deterioration of the physical fabric of the nominated property due to high humidity levels and uncontrolled vegetation growth.

Uncontrolled small-scale domestic and commercial development is particularly evident along the rail corridors and stations. There are issues associated with the traditional clan ownership of lands and the application of regulatory frameworks that need to be sensitively addressed.

Although not identified as a factor affecting the property by the State Party, extreme weather events affected the West Sumatra Province during the evaluation of this nomination. Given that the nominated property traverses a large area, crossing various landscape types, ICOMOS considers that greater attention to disaster risk reduction is warranted.

The Sawahlunto town components (Area A) are subject to issues of new development, car parking and other decisions about new uses. Larger-scale developments include the World Maritime Axis Plan (which could affect Area C); and the Trans-Sumatra Railway to connect Sumatra from the west to the south, and involves upgrading of railway tracks and stations (Area B). The additional information reports that the Ministry of Transport is responsible for the rehabilitation of the railway, and consults with the Ministry of Education and Culture in accordance with the Law No. 11 of 2010 concerning Cultural Property for all affected elements more than 50 years old. Heritage Impact Assessment will be carried out prior to all works on rail infrastructure within the nominated property. Maintenance of these features is the responsibility of the Indonesia Rail Company.

In exchanges with the State Party, ICOMOS was concerned to clarify whether there are current mining activities in the property or its buffer zone (or any potential for mining in these areas in the future). Additional information was requested during the evaluation process. Currently there are no mining activities within the boundaries of the nominated property. There are three companies with current mining concession permits, the largest of which is the state-owned enterprise Bukit Asam Company-Ombilin Operational Unit (area 2935 ha), the direct successor to the colonial-era Ombilin Mining Company. Bukit Asam Company has been directly involved in the World Heritage nomination process, is the owner of a number of the assets identified as potential attributes of Outstanding Universal Value, and participates in the management secretariat.

The Sawah Luwung Underground Mining Tunnel was opened in 1978 and closed for mining operations in 2016 and now serves as a mining education centre facility under the operation of the Ministry of Energy and Mineral Resources. Additional mining education and mining tourism interpretation facilities at the nearby Langkok Village are planned.

The two other companies are small-scale mining enterprises: Tahiti Coal CV and Nusa Alam Lestari NAL Company with a total area of 100 ha, located outside the buffer zone. All infrastructure associated with these operations is located outside the buffer zone.

The Additional Information provided by the State Party shows that while mostly located outside the buffer zone, each of the three existing concessions has at least some area inside the buffer zone. The Nusa Alam Lestari Mining Concession appears to either abut or overlap part of Component A6 (Salak Power Plant and Rantih Water Pumping Station). A significant portion of the buffer zone is located inside the concession area of the Bukit Asam Company which also seems to overlap with Components A1 (Soengai Doerian Mining Site), A3 (Coal Processing Plant Compound) and A5 (part of the Company Town).

However, the State Party has confirmed that there is no mining in the nominated property and none is planned or will be permitted in the future. Furthermore, the State Party has clarified that coal production activities within the buffer zone of Area A are not allowable by law. On the basis of these assurances, ICOMOS agrees that mining is not a factor affecting the nominated property.

3 Proposed justification for inscription

Proposed justification

The nominated property is considered by the State Party to be of Outstanding Universal Value as a cultural property for the following reasons:

- The nominated property is an outstanding example of a pioneering technological ensemble built by European engineers in their Asian colonies in the globally important period of industrialisation in the late 19th and early 20th centuries;
- The rail system devised to transport the coal from the remote and inaccessible region involved state of the art technology including rack rail tracks, long tunnels and parabolic arc rail bridges;
- The system demonstrates the organisation of industry, and exchange and fusion between European and local knowledge and practices within the context of global industrialisation and colonisation;
- The experiences gained from this mining enterprise in Sumatra were further refined in Netherlands colonies in other parts of the world;
- The Ombilin training/education facilities formalised the transfer of knowledge within the colonial and post-colonial contexts, including coal mining within tropical climates.

Comparative analysis

The Comparative Analysis focuses on possible comparisons with other mining sites, including those on the World Heritage List, Tentative Lists and other known coal mining areas of a similar historical period. Four key aspects are considered as a basis for the analysis with other mining sites and collieries: exhibit an exchange of educational values that have empowered the local community; have introduced an exchange of social values through establishment of mining and socio-economic development; have applied a deep-pit mining technique in similar periods; and have established an integrated

technological ensemble that links the mining areas, railway network and shipping/storage facilities.

On this basis, the State Party briefly considers the property within its own national context, within southeast Asia, and worldwide. In some respects, the analysis finds common characteristics with World Heritage properties in the United Kingdom (Cornwall and West Devon Mining Landscape; Blaenavon Industrial Landscape) and France (Nord-Pas de Calais Mining Basin).

Looking more widely than the World Heritage List and Tentative Lists it suggests some useful comparisons with the Pengaron 'Oranje Nassau' site in Indonesia, the Brooketon Colliery/Maura Coal Mine in Brunei Darussalam; and sites in Chile, Alaska, Norway and Australia, including the coal mining region of the Hunter Valley/Newcastle in New South Wales.

ICOMOS considers that the method of framing the comparative analysis is unnecessarily specific, and that a more general comparison of 19th century coal mining complexes was warranted, particularly within the geocultural area and context of European colonial enterprises in Asia. Nevertheless, the comparative analysis covers the necessary ground and confirms the ability of the nominated property to represent the processes of interchange and the application of coal mining and transportation technologies.

ICOMOS considers that the comparative analysis justifies consideration of this property for the World Heritage List.

Criteria under which inscription is proposed

The property is nominated on the basis of cultural criteria (ii) and (iv).

Criterion (ii): *exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning and landscape design;*

This criterion is justified by the State Party on the grounds that the property demonstrates a significant interchange of human values between Europe (Netherlands) and its colonies in the 19th and early 20th centuries, including the transfer and adaptation of a complex technological ensemble for coal mining. This was a fully-integrated system to enable efficient deep-bore extraction, processing, transport and shipment of coal. Importantly, the interchange also included the transfer of engineering knowledge and mining practices to south-east Asia. Local knowledge concerning the tropical environment, geology, and local social structures and traditional cultural practices were components of this complex exchange.

ICOMOS considers that the application of this criterion is appropriate within the context of processes of European colonisation, exploitation of natural resources and industrialisation in Asia. Traditional techniques for locating coal seams and the sand-filling mining method are evidence of the ways in which local knowledge shaped the coal mining enterprise.

Criterion (iv): *be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;*

This criterion is justified by the State Party on the grounds that the nominated property represents an outstanding example of a complex technological ensemble for the efficient extraction of industrial grade coal during the period of global industrialisation from the second half of the 19th century to the period prior to the second World War. This technological innovation is associated with the exponential expansion of industrial capacity and the associated globalisation of commerce, and consists of specific technologies for mining, processing and transportation, as well as the company organisation, division of labour, mining school, and a planned mining town for more than 7000 inhabitants.

ICOMOS agrees with the arguments proposed by the State Party.

ICOMOS considers that the 19th century industrialisation of southeast Asia, and coal mining in general are under-represented in the World Heritage List, and that the nominated serial property potentially fills this gap.

ICOMOS considers that the serial approach is justified and that the nominated property meets criteria (ii) and (iv).

Integrity and authenticity

Integrity

The integrity of the nominated serial property is based on the rationale for the selection of the components and their ability to fully convey the potential Outstanding Universal Value; the intactness of the individual components and the series as a whole (including consideration of the adequacy of their boundaries); the state of conservation and the way major pressures are managed. The State Party asserts that the integrity of the serial property is met by the inclusion of all functional components of the industrial system: the mines, company town, processing areas, rail transportation and port terminal, including a number of locations and traversing a large area within the Province of West Sumatra from the remote mining area to the port facilities in Padang. The State Party has provided additional information detailing the extant machinery within the nominated components, including: *in situ* compressor and ceiling mounted crane rails (component A1.1); *in situ* coal processing machinery (component A3); relocated turbine engines (components A4.2 and A6.1); and *in situ* water pumps (components 4.2, A6.1, and A6.2).

ICOMOS considers that each of the three areas includes the necessary attributes to understand the integrated system of coal exploitation and transportation, and to

express the proposed Outstanding Universal Value of the property. The components that comprise the company town and railway line continue to function; whereas the mining components are no longer in use. The overall integrity of the nominated serial property is currently good/satisfactory, including the visual integrity; although the tropical conditions and fast rate of growth of vegetation create significant challenges for conservation, and ad hoc small-scale development is an issue for many elements and components (such as A1.1; A1.2, A1.4; A6.1). The integrity of other components has been impacted by more recent developments and re-use (such as the Polytechnic facilities at A1.3; extraneous structures at A3, A6.1, around railway stations in Area B; and the storage facilities in Area C). Some components have been adapted for new uses, such as the mosque (A4.2), Site Management Office, and interpretation (Soup Kitchen A5.2). The integrity of the component in Area C could be improved by more clearly expressing the historical and operational relationship between the coal storage and the Emmahaven Old Wharf.

Authenticity

The authenticity of the nominated serial property is based on the 'as built' form, materials, design and function of many of the components. Where the functions have changed, the adaptions are generally sympathetic.

ICOMOS considers that the nominated serial property of 12 components is able to be understood as an integrated *system* for the extraction, processing and transportation of coal. The presence of the company town enables the human dimension of this system to be understood.

ICOMOS considers that the requirements of integrity and authenticity have been met for the series as a whole. Some recommendations to reduce the vulnerability of the integrity of some components are provided at the conclusion of this report.

Evaluation of the proposed justification for inscription

ICOMOS considers that the proposed justification for inscription is appropriate; and that while narrowly framed, the comparative analysis justifies the consideration of the nominated property for inclusion in the World Heritage List. ICOMOS considers that criteria (ii) and (iv) have been demonstrated, based on the complexities of the industrial system, including the contribution of local knowledges to the technological adaptations and operations of the system.

Attributes

The attributes that contribute to the Outstanding Universal Value of the nominated property are: all above and below ground evidence of coal mining; the elements of the railway transportation system (corridor, signalling equipment, stations, bridges, tunnels, water towers and associated infrastructure); the coal storage facility at the port; and the town plan and many extant buildings, structures and features of the company town.

The State Party has identified 24 attributes that convey the proposed Outstanding Universal Value of this property. ICOMOS considers that these are clearly significant, but that additional attributes and associated features can be also be identified within the nominated components. The documentation and protection of this wider suite of detailed attributes should be undertaken.

ICOMOS considers that the nominated serial property is supported by a relevant comparative analysis, meets criteria (ii) and (iv), and meets the requirements for authenticity and integrity. The identification of attributes by the State Party has omitted a number of relevant features and requires revision.

4 Conservation measures and monitoring

Conservation measures

The management plan provides policies and overarching guidance for the conservation of the property components, and a systematic maintenance plan is proposed.

The Management Plan outlines future actions, organised according to the 'Factors Affecting the Property', including monitoring, organisational responsibilities and timeframes. ICOMOS considers that this could be augmented with details of planned conservation works, and more explicit conservation principles for adaptive reuse.

The nomination dossier presents the conservation works undertaken for the nominated property over more than a decade, particularly within the Sawahlunto company town. This represents a sustained investment and coordination between various owners and stakeholders. Conservation works have been recently completed for some of the property's components, including the train stations (B2, B3 and B5), and the Soup Kitchen complex (A5.2.c). Revitalisation of the railway has included replacement of sleepers and strengthening of bridges, led by the Indonesian Railways Company heritage division in consultation with the Site Management Office.

In Sawahlunto, the Site Management Office is currently working on the conservation of the Labour Quarters Compound (A5.2) including the removal of intrusive additions. Based on the condition assessment of the structures, 10 million Indonesian rupiah has been allocated for this work. The Site Management Office is also developing planning regulations that will allow needed non-permanent elements such as carports to be installed at the residential buildings, enabling their ongoing use.

Monitoring

A monitoring system is set out in the nomination dossier covering indicators and monitoring responsibilities. Monitoring is oriented at the state of conservation of the property as a whole; and according to the factors affecting the property (development, environmental factors, natural disasters, visitation and tourism and inhabitants).

ICOMOS considers that the monitoring system is generally adequate, but could be more directly oriented at the condition and state of conservation of the attributes.

ICOMOS considers that the conservation measures are appropriate, although actions by the different governments, private owners and communities must be well-coordinated and the Management Plan could be augmented with details of planned conservation works, and more explicit conservation principles for adaptive reuse. The monitoring arrangements are adequate, but will require coordination across a wide number of stakeholders. The indicators could be further improved by more directly monitoring the condition of the property's attributes.

5 Protection and management

Documentation

The nominated components have been adequately documented by the Site Management Office in collaboration with the Ministry of Education and Culture. The nomination dossier lists the inventory records held for the nominated property, including archaeological studies, old town database, inventory of heritage assets, and mapping of old town buildings.

ICOMOS considers that the documentation could be further enhanced to provide a good baseline for future decisions. For example, all the rail infrastructure such as the signalling equipment and the turntable in B3 should be identified and better documented. These elements were critical to the historical functioning of the rail network that enabled the Ombilin coal to be exported and should be retained.

Legal protection

The legal protection of the nominated property and buffer zone is provided through the application of national, provincial and local laws.

At the national level, the main legal instruments are the National Law no. 11 of 2010 on Cultural Property (which applies to nationally designated properties); and National Law no. 26 of 2007 on Spatial Management (which provides for the designation of national strategic areas, and strategies for the conservation, management and presentation of World Heritage properties). Also relevant are National Law no. 9 of 2015 on Regional Government guides the implementation of spatial management at the province, district and municipality levels and the duties of local governments; and Government Regulation no. 26 of 2008 on National Spatial Planning, which outlines policies to integrate national, provincial, and municipal/regency spatial planning, and the designation of National Strategic Areas.

Some components of the nominated property are designated as national cultural property within the National Law no. 11 on Cultural Property (Decree no. 345/M/2014 on the Establishment of Geospatial Unit of Old Coal Mining Town of Sawahlunto), namely the Sawahlunto mining sites and company town (Area A). However, at least one attribute in Area A (A1.5 mining tunnel), and all of Areas B and C have not yet been awarded this national level of protection. The State Party has advised that the six proposed attributes in Components B and C were formally designated as Provincial-level Cultural Property in February 2019 (Governor of West Sumatra Province Decision 432-144-2019). The further process to achieve the designation of these components as national-level cultural property is expected to be completed by the end of June 2019.

The State Party has indicated its intentions to designate the entire nominated property as a National Strategic Area *(Kawasan Strategis Nasional)* after it is inscribed in the World Heritage List. This process is the responsibility of the Ministry of Public Works and Public Housing. The Regulation of Minister of Public Works No. 15/PRT/M/2012 identifies spatial planning for designated areas as a national priority, and establishes Guidelines for Preparing National Strategic Area Spatial Plans.

Additional information provided by the State Party confirms that the zoning study being undertaken by the Site Management office for the Sawahlunto Company Town (A5) was completed in January 2019. Company town zoning regulations to govern the designation of area boundaries and spatial utilisation based on the Cultural Property Law was established by the Letter of Decision by Mayor of Sawahlunto No. 188.45/59/WAKO-SWL/2019 (24 January 2019). Because of development pressures in the town, this mechanism to identify locations (zones) where development and other functions (such as car parking) can be located is considered by ICOMOS to be important. At this stage, there are proposals that could impact on the Labour Quarters Compound (A5.2) and Health Facilities (A5.3) that should be assessed for their heritage impact.

Heritage Impact Assessment (HIA) is required for proposals within Indonesia's World Heritage properties. The State Party has initiated training activities to implement the requirement for HIA throughout Indonesia, including at Sawahlunto.

The nominated property occurs within four municipalities and three regencies. The buffer zone is protected by a number of different legal mechanisms that are described by the State Party as a series of 'nested' layers of protection.

- In Area A, some parts of the buffer zone are within the National Heritage Area (Minister of Education and Culture Decree no. 345/M/2014); and the remainder is subject to the Sawahlunto Municipality Regulation No. 8/2012. This establishes various zones for river border and/or city forest protection, and residential, industrial, dry land agriculture and paddy field uses, supported by spatial planning documents.
- In Area B, the buffer zone is also protected by several legal mechanisms, including: Law No. 23 of 2007

and Government Regulations No. 56 of 2009 which provide for a Supervision Space around the railway tracks, infrastructure and train stations; the Minister of Forestry Degree No. 35/Menhut-11/2013 which protects some areas of buffer zone as part of a nature reserve and/or protection forest (designated for water management, flood prevention, erosion control, prevention of seawater intrusion and protection from landslides); and the Padang Panjang Municipal Regulation No. 02/2013 applies to some small areas of cultural property, river and river border, as well as a wide range of specific municipal land use designations, including the tourism zone. In the Lembah Anai area, most of the buffer zone is within the Lembah Anai Nature Reserve Area. The Law No. 5 of 1990 concerning Conservation of Biological Natural Resources and the Ecosystems provides specific protection to plants, animals and ecosystems.

- In Area C, the buffer zone is provided by the Padang City Regional Regulation No. 4 of 2012 concerning the Padang City Spatial Plan 2010-2030. Some of the buffer zone is within a green belt provided for water catchment and to create balance between the urban and natural environments (building is prohibited); and the remainder is within the Teluk Bayur Port which is designated as a Strategic Area due to its economic importance. The Decree of the Minister of Transportation No. KM74 of 2004 concerning the Teluk Bayur Port Master Plan requires an Environmental Impact Assessment prior to development. The offshore areas within the buffer zone are in zones established for marine tourism and fisheries by the Padang Municipality.

Management system

Most of the components in Area A and the coal storage facility in Area C are owned by the Bukit Asam Company; and the railway network and stations in Areas A and B are owned by the Indonesia Railway Company. The Soengai Doerian Mining Pit compound (A1.3) is owned by the Ministry of Energy and Mineral Resources; several features such as the Power Plant site (A4.2) are owned by the Sawahlunto Municipal Government; and some key features in Area A are leased to the Sawahlunto Municipal Government. Within the town, some identified attributes are privately owned or owned by other government bodies.

The Ministry of Education and Culture has overall responsibility for Indonesia's World Heritage properties. A governance and consultation framework has been established for the management of nominated property from the policy and planning levels, to the operational level. The key bodies responsible for the property's conservation and management are the Board of Directors and the Site Management Office.

The Board of Directors was established by decree in 2016. It consists of representatives of 12 ministries responsible for the conservation and management of cultural and natural heritage properties; and members from the relevant municipalities. The Board meets once each year, and sets policies for works, approves the work plan, and allocates funds for the implementation of the work plan.

The Site Management Office (SMO) will be established according to Law no. 11 on Cultural Property. Its role is to implement the management plan and maintenance plan; develop and report on the annual action plan and budget; evaluate all development proposals (including changes to private and residential buildings); develop guidance and provide support and advice for owners and managers; and coordinate the activities of all stakeholders and the expert Advisory Board.

ICOMOS considers that the management system will be adequate when the SMO is fully operating and could be improved by a more explicit articulation of the decision-making processes. This is important given the multiple stakeholders who may have competing priorities, and the various layers of government and legal frameworks that apply.

Details of the staffing levels and expertise are provided in the nomination dossier. Archaeologists and engineers are available at the local, municipal and national government levels, including: Ministry of Education and Culture, Office of Cultural Properties and Preservation of West Sumatra, Office of Cultural Values Preservation in Padang, and the Indonesia Railway Company Heritage Unit. In addition, the Office of Cultural Affairs, Historical Relics and Museums has established a Site Management Office in Sawahlunto with 39 skilled conservation staff.

Staffing levels and expertise are adequate, however expertise in interpretation could be enhanced, and capacity building should ensure a consistent conservation and management approach across all components of the nominated property.

A management plan has been developed to provide policies and guidance for the property's conservation and management. The Management Plan outlines the coordination structure and identifies future actions, organised according to the 'Factors Affecting the Property'. The Management Plan sets out the monitoring, organisational responsibilities and timeframes for all the actions.

Although the level of engagement by diverse stakeholders is a strength of the process to develop the nomination and management system, this will be an ongoing challenge that should be addressed through ongoing capacity building activities.

The Management Plan outlines the risks of disasters from landslide, flood, fires, tsunami and earthquake. Because the property traverses a large and varied terrain, the assessed risks vary. The Management Plan outlines policies for managing natural disaster factors.

Visitor management

The State Party aims to transform Sawahlunto from a coal mining town to a heritage and tourism town. With the decline and cessation of coal mining, the local government is developing tourism as its main economic activity. Currently, the majority of visitors are domestic and numbers have steadily grown since 2004. In 2015, the number of tourists visiting Sawahlunto was 810,000, a significant and steady increase in numbers from 2006 (377,220). The most visited sites are within the town (Lapangan Segitiga, Lubang Mbah Suro, Sawahlunto Train Station and the Soup Kitchen Complex); and efforts to improve tourism facilities have focused initially on these places. There is an expectation that tourism numbers will continue to increase if the property is inscribed in the World Heritage List. The West Sumatra Provincial Regulation No. 3 includes a regional tourism development master plan 2014-2025. The State Party intends to position Ombilin as a cultural tourism destination, and to reopen the railway for tourism uses.

The management plan outlines objectives and actions to develop visitor and tourism facilities and experiences; and a Sustainable Tourism Strategy is being prepared. This Strategy has three main objectives: ensuring that development does not have a negative impact on the environment and potential Outstanding Universal Value; ensuring that sustainable tourism will empower and benefit local communities and the people of West Sumatra; and development of a visitor management system to enhance the visitor experience. Actions are being developed for each stakeholder.

The Sawahlunto municipal government has initiated programmes and activities for the interpretation and presentation of the nominated property. The Sawahlunto mining sites and company town (Area A) currently provide visitor and tourism experiences including seven local museums and a visitor centre, many of which focus on the local history and culture such as the mining museum, former Soup Kitchen, and Sawahlunto train station museum. The components are currently interpreted and presented by means of on-site signage (in both Indonesian and English) and a brochure.

No visitor and tourism facilities or experiences are provided in Areas B and C. The Indonesia Rail Company has commenced work to revitalise the railway between Padang and Solok to provide a tourism experience along the historic rail route. There is a proposal to develop the silo at the Emmahaven Port coal storage facilities as a staging point for the presentation of the property and as an entry point for visitors from outside West Sumatra.

ICOMOS considers that an overall interpretive strategy and plan is required, based on the management plan policies, that clearly defines the overarching interpretive themes and how all the components contribute to the proposed Outstanding Universal Value of the nominated property. ICOMOS considers that the histories of local people and workers from other parts of Indonesia and Asia, as well as the European and Indo-European workers and managers should be recognised in the interpretation of the nominated property; and that interpretation and tourism strategies are of particular importance for components of the system that are difficult to read, such as the disused mining infrastructure and operations.

Community involvement

According to the State Party, there are 2514 inhabitants within the nominated property, and 22,597 inhabitants in the buffer zone. The town of Sawahlunto has grown rapidly in the past 5 years; in 2013 the total population was 58,972 citizens. The local community has been involved in the development of the nomination of this property to the World Heritage List. Consultation activities included meetings, lectures, tours and seminars at each Area, supported by printed materials and signs. The Management Plan sets out policies for ongoing community education and engagement in the conservation, management and presentation of the nominated property. Indonesia's Ministry of Education and Culture has initiated an annual programme titled 'World Heritage Camp Indonesia' which provides high school and university students to attend one to two week camps at inscribed and tentative World Heritage properties.

Evaluation of the effectiveness of the protection and management of the nominated property

All components are protected at the Provincial-level, and national cultural property designation should be completed in 2019. ICOMOS therefore considers that the legal protection is adequate. The mechanisms for protection of the buffer zone are complex and diverse, and will require a high degree of coordination and monitoring. Because these are not especially formulated for the purposes of providing further protection to the proposed Outstanding Universal Value, ICOMOS suggests that reviewing and streamlining these arrangements would be worthwhile. The management system seems appropriate. Given the coordination challenges for this large serial property, these arrangements should be implemented urgently, and monitored for their effectiveness.

ICOMOS considers that the current legal protection is adequate due to the recent completion of the designations at the provincial level, and notes that national level designations should be completed shortly. The mixture of mechanisms for buffer zone protection seems complex and should be further streamlined. The management system is considered to be appropriate, but needs to be fully implemented. Its effectiveness should be closely monitored. The approach to monitoring and implementation of conservation measures involves a number of organisations and will require significant coordination efforts. The monitoring arrangements should be improved by orienting indicators more explicitly at the condition of the attributes.

6 Conclusion

The extraction of high quality coal from the Ombilin basin for over a century is an exceptional example of a complex, technologically advanced system that was established within the context of European colonisation in Asia and continued beyond that time. Importantly, the nominated property of three major areas that span more than 155 km from the remote mountains to the coastal port via a railway system is able to demonstrate coal mining as an integrated system. Connecting the mines, processing facilities, company town, railway and port facilities allow the connections between the mining enterprise and the processes of globalisation and colonisation to be understood. ICOMOS therefore supports the serial approach taken by this nomination.

The Ombilin coal mining system is a highly significant example of the European colonial efforts at industrialisation and resource exploitation in southeast Asia, demonstrating both an important interchange of human values (criterion ii), and an outstanding example of a type of technological ensemble/township (criterion iv) within the geocultural context of colonial and post-colonial histories of Southeast Asia. ICOMOS considers that each of these criteria is demonstrated.

Based on the submissions by the State Party and the technical evaluation mission by ICOMOS, the property meets the requirements of authenticity and integrity. The boundaries of the 12 components and the single encompassing buffer zone are appropriate. Twenty-four potential attributes of Outstanding Universal Value have been identified by the State Party, but ICOMOS considers that within the 12 components that comprise the serial property there are easily more than these that carry the important identified values of the nominated property, and recommends continuing efforts at detailed inventorying and mapping within the nominated property components.

The key issues for continued work by the State Party are to complete the national-level designation of legal protection for all the nominated components (including the possibility of establishing a National Strategic Area); consider possible means of streamlining the mechanisms for protection of the buffer zone; implement the zoning plan for the Sawahlunto mining company town component (A5) in order to respond to the pressures of new development and reuse in the town; to develop sustainable tourism initiatives for the property; and ensure the continued exclusion of mining activities from the serial property and the buffer zone.

The main factors affecting the property are uncontrolled small-scale domestic and commercial development, and deterioration of the physical fabric due to high humidity levels and uncontrolled vegetation growth. Tourism and visitor pressures are not currently a major factor, but will grow if the State Party's aspirations for tourism growth are realised. There are several large-scale projects of transportation infrastructure that could have impacts on the nominated property. These are subject to Heritage Impact Assessment within the provisions of national legal frameworks. There is no mining in the nominated property or its buffer zone and none is planned or will be permitted in the future.

The management system seems adequate, but is not yet fully implemented. This should be progressed as matter of urgency, and the effectiveness of the arrangements should be actively monitored. The Management Plan provides a useful framework, but it could be further improved by incorporating conservation measures, and the principles for decision making on conservation projects (especially for adaptive reuse of historic structures). The monitoring system will require active coordination of many stakeholders and owners, and should focus more explicitly on the state of conservation and condition of the attributes.

Finally, ICOMOS considers that in its interpretation efforts, the State Party should take the opportunity to more visibly include the many labourers and workers that contributed to the establishment and operation of this coal mining system. The story of the local population, and those that arrived to this work as convicts, day labourers, indentured labourers and company officials suggests that there is an important social history that should augment the narrative of industrial technological innovation and achievement.

7 Recommendations

Recommendations with respect to inscription
ICOMOS recommends that Ombilin Coal Mining Heritage of Sawahlunto, Indonesia, be inscribed on the World Heritage List on the basis of **criteria (ii) and (iv)**.

Recommended Statement of Outstanding Universal Value

Brief synthesis

Ombilin Coal Mining Heritage of Sawahlunto is an outstanding example of a pioneering technological ensemble planned and built by European engineers in their colonies designed to extract strategic coal resources. The technological developments demonstrate both European engineering knowledge and the contribution of local environmental wisdom and traditional practices in the organisation of labour. It also exemplifies the profound and lasting impact of the changes in social relations of production imposed by the European colonial powers in their colonies, which provided both the material and labour inputs that underpinned the world-wide industrialisation of the second half of the 19th century and early 20th century. The many skilled and unskilled workers included local Minangkabau people, contract workers from Java and China, and convict labourers called 'chained people' or *orang rantai* from Dutch-controlled areas within present-day Indonesia.

Built to exploit the exceedingly rich Ombilin coal deposits, located in the inaccessible mountains of West Sumatra, the Ombilin Coal Mining Heritage of Sawahlunto is an extensive technological ensemble consisting of twelve

components located in three functionally-related areas: Area A, consisting of open pit mines and labyrinthine underground mining tunnels together with on-site coal processing facilities, supported by a full-facility purpose-built mining town nearby at Sawahlunto; Area B an ingeniously engineered rack mountain railway together with numerous rail bridges and tunnels, linking the mines to the coastal seaport, across 155 kilometres of rugged mountain terrain; and Area C, a dredged harbour and newly-constructed seaport at Emmahaven on Sumatra's Indian Ocean coast from where the coal was shipped throughout the Netherlands East Indies and to Europe.

Criterion (ii): Ombilin Coal Mining Heritage of Sawahlunto exhibits a significant interchange of mining technology between Europe and its colonies during the second half of the 19th century and early 20th century. This complex technological ensemble was planned and built as a fully-integrated system designed to enable efficient deep-bore extraction, processing, transport and shipment of industrial-quality coal. Its overall design and staged execution shows a systematic and prolonged transfer of engineering knowledge and mining practices intended to develop the mining industry in the Netherlands East Indies. This was further shaped by local knowledge concerning geological formations in the tropical environment, and by local traditional practices.

Criterion (iv): Ombilin Coal Mining Heritage of Sawahlunto is an outstanding example of a technological ensemble designed for maximum efficiency in the extraction of a key, strategic natural resource – in this case industrial grade coal. It illustrates characteristics of the later stage of global industrialisation in the second half of the 19th century and early 20th century, when engineering technologies and complex systems of production gave rise to the globalised economy of industry and commerce. The engineering technologies included deep bore vertical tunneling of mine shafts, mechanical ore washing and sorting, steam locomotion and rack railway, inclined and reverse-arc rail bridge construction, rock-blast railroad tunnels, deep-dredge harbours, and coal storage in climate-controlled silos. These were complemented by the construction of a purpose-built, planned modern mining town of more than 7000 inhabitants complete with all facilities – housing, food service, health, education, spiritual, and recreational – designed to cater to a strictly hierarchical structure of industrialisation and division of labour.

Integrity

Each of the three areas includes the necessary attributes to understand the integrated system of coal exploitation and transportation – with its systemic linkage of shaft-and tunnel mines, a 155 km long mountain railway system, and seaport. The components that comprise the company town and railway line continue to function; whereas the mining components are no longer in use. The overall integrity of the serial property is currently good/satisfactory, including the visual integrity; although the tropical conditions and fast rate of growth of vegetation create significant challenges for conservation, and ad hoc small-scale development is an issue for many elements and components. Some components have been adapted for new uses.

Authenticity

Ombilin Coal Mining Heritage of Sawahlunto is a technological ensemble consisting of twelve components. Despite the deterioration of many disused elements, the technological ensemble of mines, mining town, railway, and port facilities meet the requirements of authenticity in relation to their original form and design, materials and substance, location and setting.

Management and protection requirements

Located in three regencies and four municipalities of the West Sumatra Province, the property is protected through two main legal instruments, the National Law No.11 of 2010 for the protection, development and utilisation of cultural property in Indonesia at the national, provincial, and regency and municipal levels and the National Law Number 26 of 2007 for the arrangement of special plans and spatial plans at national, provincial, regency and municipal levels. As of February 2019, all components have protective designations at the provincial and/or national levels, and the national level protection for all components is expected to be in place shortly. The process for establishing the World Heritage property as a National Strategic Area (*Kawasan Strategis Nacional*) will be initiated by the State Party following its inscription in the World Heritage List.

The property's state of conservation and the condition of the material attributes contained within the property's boundaries are monitored through conservation frameworks. A governance and consultation framework has been established for the management of property from the policy and planning levels, to the operational level. The overall coordination for the management of property is undertaken by the Board of the Directors for the Ombilin Coal Mining Heritage of Sawahlunto which consists of relevant ministries and members from the relevant municipalities.

Once fully established, the Site Management Office (SMO) for the Conservation of the Ombilin Coal Mining Heritage of Sawahlunto will implement the management plan and maintenance plan; evaluate development proposals; provide guidance and support for owners; and coordinate the activities of all stakeholders and the expert Advisory Board. A Management Plan is in place and provides a useful framework that could be further improved by incorporating conservation measures and principles for decision making on conservation projects (especially for adaptive reuse of historic structures).

In light of the decline in coal mining, Sawahlunto is developing heritage tourism as its main economic activity, and visitor numbers are expected to increase. West Sumatra Provincial Regulation No. 3 includes a regional tourism development master plan 2014-2025. The

management plan outlines objectives and actions to develop visitor and tourism facilities and experiences; and a Sustainable Tourism Strategy with the objectives of ensuring that sustainable tourism will assist with the conservation of the property, enhance the experience of visitors, and empower and benefit local communities. The Sawahlunto mining sites and company town currently provide visitor and tourism experiences including seven local museums and a visitor centre. The Indonesia Rail Company has commenced work to revitalise the railway to provide a tourism experience along the historic rail route. There is a proposal to develop the silo at the Emmahaven Port coal storage facilities as a staging point for the presentation of the property and as an entry point for visitors from outside West Sumatra.

Additional recommendations

ICOMOS further recommends that the State Party give consideration to the following:

a) Completing the processes to provide national cultural property designation and protection for the entire of the property,

b) Considering the possibilities for streamlining the various local, provincial and national legal designations that have been used to provide protection to the buffer zone, and ensuring that these arrangements can prioritise the protection of the Outstanding Universal Value of the property,

c) Continuing to exclude future mining operations from the property and buffer zone,

d) Implementing the protective zoning established for the Sawahlunto Company Town, ensuring that all attributes are protected,

e) Broadening and deepening the identification and protection of attributes within the 12 property components, including all attributes at railway stations (eg. signalling equipment and other infrastructure), and along the railway corridor prior to the approval of future works on the Trans-Sumatra Railway Project and projects to refurbish the operations of the railway,

f) Developing and providing an updated inventory and maps of all attributes and associated elements, including areas of archaeological importance,

g) Preparing a detailed program of conservation measures as part of the implementation of the Management Plan, including the maintenance requirements for each component and group of attributes,

h) Developing explicit conservation principles for adaptive reuse of identified attributes, particularly in the Company Town,

i) Developing and implementing disaster risk reduction strategies that are applicable across the different areas and terrains that are traversed by the property,

j) Developing and implementing 'Heritage Impact Assessment' for all development proposals that could have an impact on the property (such as the World Maritime Axis Plan),

k) Conducting further archaeological research and documentation including: tunnel entrances and airshafts (A1.1, A1.2., A1.4); functional links between the coal processing plan (A3) and Loento Mining Pit Compound (A1.4); original Padang Pandjang Station (B3); connections between the Emmahaven coal storage and old wharf (Area C),

l) Developing and implementing capacity building programs for staff and stakeholders in order to ensure a consistent approach to conservation, management and presentation of each area and/or component,

m) Completing and implementing the Sustainable Tourism Strategy,

n) Developing an overall interpretive strategy and plan to clearly define the overarching interpretive themes and how all the components contribute, and ensuring that the rich social histories of local people and workers from Europe, and other parts of Indonesia and Asia are recognised,

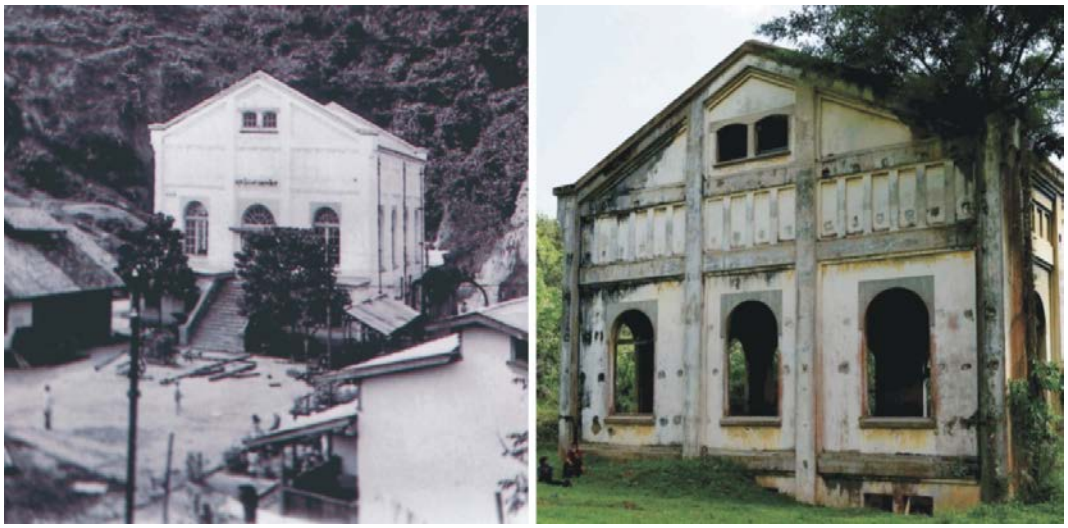
o) Improving the monitoring arrangements by orienting indicators more explicitly at the condition of the attributes,

p) Ensuring that all major projects that could impact on the series are communicated to the World Heritage Centre in line with paragraph 172 of *Operational Guidelines for the Implementation of the World Heritage Convention*,

q) Submitting to the World Heritage Centre and to ICOMOS by 1st December 2021 a report on the implementation of the recommendations set out above;

Map showing the location of the nominated components

Aerial view of Coal Processing Plant compound



Compressor building at Doerian Mining Pit Compound
Left : Historical photo dated 1920 / Right : current state

Padang Panjang Train station

Aerial view of Emmahaven Port coal storage