



Cultural Heritage Agency
Ministry of Education, Culture and Science

Forts with a Museum Function

*An exploration of experiences in the repurposing
of fortification sites in Indonesia and the Netherlands*



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An exploration of experiences in the repurposing of fortification sites in Indonesia and the Netherlands.

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In recent decades the Dutch government has committed itself to the preservation of Shared Cultural Heritage (SCH). One of the aims of the policy, which was formulated by the Ministries of Foreign Affairs and Education, Culture and Science, is the durable preservation of shared heritage. The Cultural Heritage Agency of the Netherlands is one of the organizations that is responsible for implementing the policy. To this end, the Agency has set up its Shared Cultural Heritage Programme. Indonesia is one of the ten priority countries of the SCH Policy 2013-2016.

Practices point out that developments are happening worldwide, in which former military structures are being reused. Heritage professionals tend to repurpose forts with a museum function, more often than other purposes. Indonesia has numerous forts, a larger part of them remain from the colonial past with the Netherlands. This report explores the needs and the possibilities in the Indonesian and Dutch monument sector. It builds on the outcomes of the project on the documentation and identification of Forts in Indonesia that ran from 2007 until 2010, that has been made possible by the collaboration of the Directorate General of History and Archaeology of Indonesia, the Architecture Documentation Centre (PDA) and Dutch consultancy office Passchier Architect and Consultants (PAC).

The Shared Cultural Heritage programme comprises three main lines: Maritime Archaeology, Historic Inner Cities and Museum Collections. In this report built heritage and museum collections are combined in the focus on VOC and other forts with a (future) museum function. We want to exchange knowledge and expertise on the reuse of forts, which could be used to create favorable conditions for the sustainable conservation of the shared cultural heritage.

Pure conservation of built heritage is no longer the foremost adage in Europe, nor is it in other parts of the world. The Netherlands has been one of the front runners concerning this matter since the 'Nota Belvedere' became effective in 1999. The motto 'preservation by development' pushed the Dutch monument sector to approach built heritage in a more economical way; heritage sites needed to be repurposed rather than just being preserved.¹ In Indonesia new laws were instituted after the Reformation era of 1998-2002 in 2004. New governance has improved heritage protection in the last

decade.² Throughout the Indonesian Archipelago, more than 450 fortresses have been built over the last 600 years. Only a few are still being used by the military. New functions are being sought, and the government wants to reuse more of these sites for tourist purposes, like those on the island Ternate. Experience and knowledge on how to redevelop heritage sites with other functions, isn't always within their reach.³

Which factors determine the adaptive reuse of a fortress as a museum? When it comes to the rehabilitation of old military heritage, there are already a lot of good examples worldwide to point. In the Netherlands, as well as in other European countries like France or Poland, there are hundreds of fortresses still (in) visible. Notably since the end of the Cold War in the late eighties, military structures were abandoned. From that time on, lots of them were being redeveloped with different kinds of functions. Expertise on different fronts was brought into being. This know-how can be used for new repurposing-projects. Old fortresses own a peculiar set of characteristics. Although different, most of these characteristics are universal; so expertise used for one practice could also serve the next one. In many cases, policy makers/fort owners tend to opt for a museum function, because of the historical value of the fortress. There are different strengths and weaknesses, as well as opportunities and threats, when we repurpose forts as museums. This is the focus of this research, bearing in mind that it isn't useful in an economical way to only look at museum functions. In reality, the historical value is not always prevailing.

When we do convert forts into museums actually, examples should be promoted, and knowledge should be exchanged. In the end, it serves the conservation of heritage, which is a universal purpose. Fortresses are, and should be seen as, common property. To connect them to the public, a museum function is desirable. In that way, this exploration fits in the Museum Collections-theme of the SCH Programme of the Cultural Heritage Agency of the Netherlands. It could mean a contribution to the sustainable preservation of cultural heritage and also to the promotion of international relations.⁴

² M. Ibrahim, personal interview, 9 November 2015.

³ 'Ternate to be designed as tourism city' *Antara News*. 23 April 2014. <http://www.antaranews.com/en/news/93743/ternate-to-be-designed-as-tourism-city>; 'President Jokowi calls for more tourism promotions' *Antara News*. 24 June 2015. <http://www.antaranews.com/en/news/99320/president-jokowi-calls-for-more-tourism-promotions>

⁴ 'Mutual Cultural Heritage Programme 2013- 2016'. http://www.culturalheritageconnections.org/wiki/Mutual_Cultural_Heritage_Programme_2013-2016.

¹ K. Bosma, 'Authenticiteit: van substantie naar beeld en decor' in: Koos Bosma, Jan Kolen (red.), *Geschiedenis en ontwerp: Handboek voor de omgang met cultureel erfgoed* (Nijmegen 2010), 214, 215; Ministeries van OCW, LNV en VROM, *Nota Belvedere: Beleidsnota over de relatie cultuurhistorie en ruimtelijke inrichting* (Den Haag 1999); E. Kleijn (red.), *Jaarboek Monumentenzorg 2004. Op weerstand gebouwd. Verdedigingslijnes als militair erfgoed* (Zwolle 2004) 24.

This report is to:

1. Give an overview of the current experience in the repurposing of forts into museums
2. Give insight in the needs in Indonesia on this topic and the possible offer from the Netherlands

This exploratory research fits in with the work of different organizations like Europa Nostra, ICOFORT, AtFort, ECCOFORT and FORTIUS. Further research in this direction can be of use for everyone concerned with the future of fortification sites. The report is based on a structured literary review, multiple interviews with professionals who are concerned with the repurposing of forts, and also on the research and data analysis of (Nusantara and Colonial) forts in Indonesia, of the Defense Line of Amsterdam (*Stelling van Amsterdam*) and the New Dutch Waterline (*Nieuwe Hollandse Waterlinie*). To conclude this report, recommendations for further research and activities are proposed.

2.1 The distinguished nature of forts

Fortifications differ in general from other heritage buildings. There is one conformity they share, namely that they are 'very peculiar heritage because they were initiated to be used solely by the army.'⁵ 'Forts are utility buildings', says René Ros, manager of the documentation center of the Amsterdam Defense Line.⁶ In the terminology of the *Menno van Coehoorn Stichting*, the documentation center of built military heritage in the Netherlands, a fort is an 'independent, closed work, which is defendable at every site; by rule without any civilians.'⁷ It is clear that this is different for fortified cities or towns, where walls are built to protect the citizens within their boundaries. This research concerns the forts, not the fortified cities. Which features of fortresses determine their repurposing in to a museum? Do these characteristics solely have a negative effect on the redevelopment, like often is thought? And, in what ways can we use the adverse in our advantage? What other factors, besides the physical ones, determine the reuse of a fort (as a museum in particular)? This part of the research is focused on the different aspects that are of influence when repurposing fortifications into museums. Different Dutch examples are shown, which depict settings that can be seen as good practices. The second part of this paragraph is about the way different aspects determine the potential of a fort to become reutilized as a museum. Thereby the focus is more on the Indonesian fortresses.

It's true that forts aren't all the same, we can demonstrate different categories. The type of the fort affects the way it is or can be repurposed. So with forts, as with other buildings, the plans have to be made-to-measure. Redeveloping a VOC-fortress from the eighteenth century is rather different than repurposing a command center of the Cold War-era. The project team of the New Dutch Waterline categorized the forts in to batteries, small forts, medium forts, big forts and fortified cities. There are other ways to label fortifications. The Menno van Coehoorn foundation formulated a distinction between a unitary fortress, bastion fortress, detached fortress, coastal fortress, armored fortress, and a polygonal fortress. It is useful,

though, to compare the different forts, and to look at similarities and different ways people cope with them. Especially in case of the Dutch and Indonesian forts, because for the greater part, they 'share an architectural tradition.'⁸ According to historian John Verbeek.

Over 400 fortifications were identified in Indonesia, which were all built in over 600 years. Again there are different types of fortresses to discern. To distinguish the forts by the people that built them, is one way of categorizing them; there are the Nusantara forts, the European forts, and also the defense structures of the Second World War, which were built mainly by the Japanese army, but also by the Dutch and Allied Forces. The Nusantara forts, the ones 'that have been built by different communities of the Indonesian Archipelago possessing different cultures'⁹, are mainly walls for a greater part, which resemble old fortified cities. These are often characterized by an open floor plan, and most of them have largely vanished or remain in poor conditions. The first Portuguese forts in the archipelago mostly bear a resemblance to the medieval castles of Europe. And most of the Dutch VOC-fortresses were built according to the polygonal system. At the Spice Islands though, the Dutch merchants often chose to build redoubts: square towers, containing three storeys, surrounded by a wall and two bastions. As of the colonial period in the nineteenth century, the Dutch Government started to build more and more permanent forts, instead of the ones they built solely to protect their trade. These new forts resemble the big fortresses built in the Netherlands around the same time, like the ones of the New Dutch Waterline and later also the forts of the Defense Line of Amsterdam. The Japanese army built a coastal system of small fortifications, like pill boxes, tunnels and anti-air defenses during the Second World War. Most of them aren't very reusable because of their small size. That's why these aren't included in this research. The greater part of the museum forts of Indonesia are former Dutch forts from the colonial period.¹⁰

2.2 Physical aspects of a fort

We can make a distinction between physical and human factors influencing the reuse of forts as museums (and heritage sites in general). The physical factors are the attributes of the fortress, which causes it to differ from

⁵ P. Ros, 'The At Fort project: results of EU cooperation' *Proceedings of the International Conference on Fortified Heritage: Management and Sustainable Development Pamplona, 15-17 October 2014* (Pamplona 2014) 123.

⁶ R. Ros, personal interview, 30 October 2015.

⁷ Roughly translated 'zelfstandig, gesloten en naar alle zijden verdedigbaar werk; heeft als regel geen burgerbevolking.' In: P.J.M. Kamps, P.C. van Kerkum, J. de Zee (red.), *Terminologie verdedigingswerken, inrichting, aanval en verdediging* (Utrecht 1999) 21.

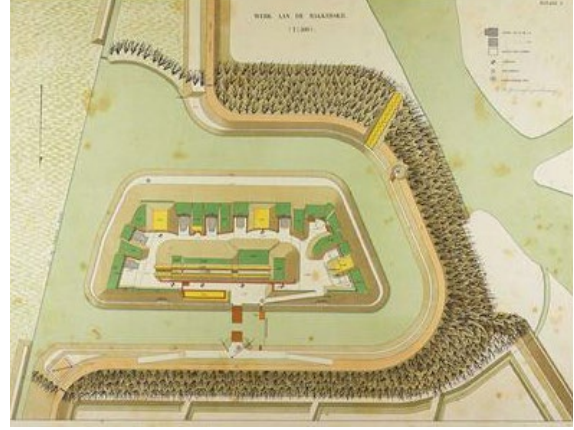
⁸ J. Verbeek, e-mail-interview, 17 November 2015.

⁹ Pusat Dokumentasi Arsitektur (red.), *Inventory and Identification Forts in Indonesia* (Jakarta 2010) 26.

¹⁰ *Ibidem*, 26–46.



A. Waterliniemuseum, Fort Vechten



B. Bed & Breakfast, Werk aan de Bakkerskil

other built heritage. The human factors affecting the success or failure of a redevelopment project are at the least equally important. These are the socioeconomic factors. Allow me now to turn to some of the most common aspects that can affect this museum repurposing. Although mainly museum examples are listed, some other experiences are also depicted. The latter could serve as useful examples for museum forts.

I. Climate: The climate conditions in a fortress can be problematic. Most of the time forts were constructed with thick walls, no windows, as compact buildings with compact spaces. Often these rooms served as a munition depot, so the temperature had to be constant. Nowadays, that temperature can be a problem. In the Dutch fortresses the temperature is constant, around 10 degrees Celsius. 'For museum visitors this isn't comfortable to walk around in,' according to Peter Ros, former project manager of the New Dutch Waterline.¹¹ Because nowadays the climate in these rooms is regulated by itself, it can get very humid inside. This air humidity only increases when more people are inside, so that's not beneficial for their comfort either. It affects exhibitions similarly, since showing sensitive artefacts becomes challenging. When the humidity is high, as is often the case in countries with a tropical climate like Indonesia, this will affect the museum pieces in a negative way. To regulate these matters, a good ventilation/air-con system is needed, which of course can get very costly. There are alternative ways to deal with this matter. For instance, at the Waterline Museum (*Waterlinie Museum*) In Fort Vechten the curator chose to show high-quality replicas and sculptures that are able to withstand the climate conditions. Furthermore, the building itself can

already be of great interest for a museum to show to their visitors. This can be a compensation for the delicate artefacts you cannot show.¹² There are alternative functions for a fort, where the difficult climate conditions serve beneficial. Like a storage room for wine, or a cheesemaker.

II. Facilities: Since forts are hard-edged buildings, reparations can get very expensive. Fixed measurements and powerful construction can however be advantageous to the architect as well.¹³ Unfortunately, lots of fortification sites lack facilities which are necessary for modern use. This is not the case for all the forts, since a great part of them were used in the twentieth century. Nevertheless, the lack of facilities, like electricity and water, is an issue at stake for many forts. The fortresses were built however to withstand attacks for several months, which means they had to operate independently during that time. 'Fortified sites have several advantages in this regard: good exposure to the sun, the availability of natural resources nearby ... Thus begins the task of seeking to satisfy the requirements with regard to respecting the architectural and landscape features.'¹⁴ An interesting example of dealing with this question is Fort Bakkerskil of the New Dutch Waterline, which was turned in to a bed and breakfast. The managers chose to use the wood from a natural reserve nearby to use as fuel, through a special woodchip boiler.¹⁵ The natural resources are used in a sustainable way.

¹² J. Verbeek, e-mail-interview, 17 November 2015.

¹³ Idem; P. Morel, personal interview, 17 November 2015.

¹⁴ M. Steenbergen (ed.), 'European Case Studies. Reconversion of fortified heritage, Preservation through development' *Vauban Network Publications—No.4* (September 2014) 50.

¹⁵ Ibidem, 53.

¹¹ P. Ros, personal interview, 27 October 2015.



C. GeoFort, Fort bij de Nieuwe Steeg



D. KunstFort, Fort bij Vijfhuizen

III. Space and orientation: Forts were constructed with small rooms and immovable walls, interconnected by a system of passages. This is not appealing for curators because these premises are not suitable in size for large exhibitions and large objects.¹⁶ It is also easy to get lost or lose track of the parts where a visitor has already been. A clear system of signage could tackle this problem. On the other hand, this labyrinth like structure can be engaging for adventurous visitors, like children. The charisma of a fort is that it is mystical, secretive, it is light versus dark, open versus closed. By turning your fortified site into an experience, rather than into a “regular” museum, you are using these appearances to your advantage. The GeoFort in Fort de Nieuwe Steeg uses this dysfunctional orientation aspect to educate children about navigation and mapping.¹⁷ In the Pampus Xperience at Forteiland Pampus the children are able to go on a museum quest, where they have to find clues on the walls with special black lights.

IV. Surface area: The surface area within a fort often is limited. ‘The building volume in comparison to the surface area differs from an old church, warehouse or factory for instance’, notes historian John Verbeek.¹⁸ But instead of only looking at the inside of a fort, we should include the ground around it as well, and the area on top of the fortress. The area around the fort used to be part of the fortification site. Laws and restrictions hold back new development on that territory. Fort Vijfhuizen of the Defense Line of Amsterdam has been repurposed in to Kunstfort, an art museum. The curators of Kunstfort makes effective use of the area around and on top of the

fort. The expositions in the museum include the inside and outside space of the site.

V. Location and accessibility: Fortification sites were often built at impossible to reach places, such as mountain peaks or sea cliffs. After all, their main purpose was to defend and protect a certain cause. That’s why the builders chose strategic sites to build upon. While this inaccessibility was one of their main strategic values, it has become one of the greatest issues nowadays. Again, this doesn’t count for every fort, because there is a category forts that served to put a stop to direct threats to a city center. These structures were placed in an urban setting, which is in their advantage: the access is easy, and they became part of the “urban DNA”. The repurposing of such a fort in to a museum, can be an addition to the historical sensation of the city. A nice case is the Sonneborgh rampart, which was built in the sixteenth century together with three other ramparts along the city borders of Utrecht. Nowadays it houses a museum on astronomy and urban history. The remote heritage sites don’t share this advantage with their urban counterparts. Their remoteness however can serve as an attraction, say for hikers and bikers. The fortifications of the Defense Line of Amsterdam in the north, like Fort Spijkerboor, are situated in the beautiful surroundings of the Beemsterpolder, though still close to the Dutch capital. It is ideal for making daytrips to escape the bustling city.¹⁹

Because of the location, the accessibility of a fort is often difficult. Most of the time there is hardly any connection to infrastructure like decent roads.

¹⁶ R. Ros, personal interview, 30 October 2015.

¹⁷ L. Jansen and H. Stelwagen, *Eindrapportage werkatelier Forten Honswijk en Fort Everdingen* (Maastricht 2011) 14.

¹⁸ J. Verbeek, e-mail-interview, 17 November 2015.

¹⁹ European Case Studies, 30; J.E. Abrahamse, ‘Interview naar aanleiding van het verschijnen van de Erfgoedbalans 2009’ *Vitruvius* nr. 9 (July 2009) 17; KPMG Klynveld Management Consultants, *European Defences: Rapport deel II: Exploitiemodel* (Utrecht 1994) 8.



E. Fort bij Spijkerboor

Sometimes spectacular interventions are needed to make the fortress accessible again. For instance, the *Forteiland* (Fort Island) IJmuiden has its own ferry for visitors to the fortress. This indeed, adds to the visitor experience.

2.3 Social factors of a fort

Equally important as the physics to the success of its reuse, are the social factors that influence a fort. The socioeconomic framework determines the continuation of the project.²⁰

I. Values: Different interests in fortification sites exist. Naturally, when diverse parties are involved, this also means that different values are at stake. Historical, natural, recreational and economical values can be distinguished. It is of great importance to map all these values and the parties involved. When rethinking the function of a fortification site, different values can cause difficult dilemmas. There is the dilemma of accessibility and economical redevelopment. When turning a fortification site into a housing project, it is no longer accessible to tourists. A second dilemma is that of nature versus historical visibility. Sometimes flora has overgrown the ramparts, thereby limiting the visibility of the former defense structures. Removing the greenery could enhance the historical visibility of the site, but obviously it doesn't help the natural values. A proper way to handle these and other problems is the multifunctional reuse of a site.²¹ Fort Vechten is now



F. Fort Abcoude

used as a museum, but is also used for weddings, congresses, business outings, different annual events, and nature trails. By choosing multifunctional reuse you are not only respecting different values, the exploitation is also more profitable.²²

Most fortifications are part of a larger ensemble. Multi-functional reuse could be deployed on a larger scale as well. *Natuurmonumenten* (Nature Monuments), a foundation for nature conservation, owns multiple forts of the Amsterdam Defense Line. The foundation chose to repurpose some of the forts with a new historical or economical purpose, while other fortresses were intentionally left as they are, to allow nature to reign supreme. Fort Abcoude for example, is now such a 'green fort'.²³

II. Identity: It is of great importance to create public awareness of military heritage. This can ensure conservation of the fortress. Marketing is needed to develop this kind of familiarity with the building. Publicity could also be generated by focusing on an ensemble of heritage, rather than only focusing on the individual structures. By strengthening the awareness of a heritage ensemble, the individual fortresses will become better known as well. The nomination of the waterlines in the Netherlands as World Heritage sites can serve as a good example. More knowledge of the cultural and historical values and its unique character ensures the conservation of the heritage site. The policymakers of the Amsterdam Defense Line, which has been listed as World Heritage since 1996, engaged the marketing bureau *De Cultuurcompagnie* (Culture Company) to create extra awareness for the Stelling van Amsterdam. It

²⁰ G. Perbellini, 'The re-use of large European military complexes in the list of redundancies' *Europa Nostra Bulletin* nr. 59 (2005) 50.

²¹ P. Ros, personal interview, 27 October 2015.

²² Idem.

²³ J. van Niekerk (ed.), *Groene Forten: Forten van Natuurmonumenten en Staatsbosbeheer in beeld* (Nieuwersluis 2015) 21.



G. Rondje Stelling

must be noted though, that this is in particular possible for these fortresses because they are relatively close to each other. Geographical vicinity is needed to strengthen an ensemble in its publicity. Proximity of the heritage sites is needed, so it can be more than just an abstract historical construction. Combining the forts with other (cultural or natural) heritage sites in the surrounding area could serve the same cause.

The awareness is not only useful to appeal to entrepreneurs and visitors, even more so, the direct environment has to become familiar with it as well. Better public awareness could mean the attraction of more volunteers. And most of the time, volunteers play an important role in the conservation of a heritage site.²⁴

Maulana Ibrahim of Ternate Heritage Society hopes to combine the nine fortresses on the island Ternate, Indonesia for educational purposes. By creating a trail, or event, people can visit the forts together. A current leisure trend in Indonesia, as in the Netherlands, are outdoor sport events, like marathons and cycle tours. Adapting to this trend, Garuda Airlines hosted the Ternate island tour, where 500 participants cycled from Tidore to Ternate. In the Netherlands a similar event is hosted every year, called *Rondje Stelling*, a cycling tour along the forts of the Amsterdam Defense Line.²⁵



H. Apartment complex, Fort aan het Steurgat

III: Governance and ownership: Proper management is needed to ensure the right conservation and reuse of fortification sites. Without this, and without a decent plan, the redevelopment is doomed to fail. ‘Think before you act,’ claims Peter Ros.²⁶ Forts are mostly equally useful for repurposing as other old buildings. But you need to design a qualified plan, before any preservation or consolidation is done. Without such a development plan, conservation is useless, because after a while the condition will be the same as before the restoration. Different kinds of action plans have been designed, as by the Menno van Coehoorn Stichting. In brief: 1. Look for the objects 2. Look for the story 3. Look for values 4. Investigate the interests 5. Rally supporters 6. Link publicity to your story 7. Find a function 8. Make a plan 9. Consult the interested parties 10. Adjust the plan 11. Seek for publicity for your plan 12. Carry out your plan.²⁷ Of course, this is not the only correct plan, but it can serve as an example.

There are different governance/management models. And every model has a different influence on its practice. In a broader sense, there are three types of governance models: state-owned, privately owned, and mixed ownership. Most of the military sites are owned by the government. State-owned patrimony could cause ‘increasing damage from passive care and from an incapacity to modern life.’²⁸ This happened in many parts of Europe, and also in Indonesia. Times are changing though, and the Dutch government for example, gave rise to the new Waterline Museum in Fort Vechten, and they have

²⁴ K. Blokland, R. Groot, ‘De Nieuwe Hollandse Waterlinie: Het geheime wapen van Nederland – Erfgoed in toekomstperspectief’ *Tussen Vecht en Eem*, Jrg. 25, nr. 1. (March 2007) 27; Staatsbosbeheer, ‘Oude Forten, Nieuwe Bestemmingen’ *Onverwacht Nederland: Magazine van Staatsbosbeheer* Jrg. 12, nr. 2 (June 2009) 23; *European Case Studies*, 41.

²⁵ M. Ibrahim, telephonic interview, 9 November 2015.

²⁶ P. Ros, personal interview, 27 October 2015.

²⁷ E.N. Westerhuis, ‘De bescherming van militair-historisch erfgoed’ *Saillant* nr.2 (Zutphen 2000) 3,4.

²⁸ ‘The re-use of large European military complexes in the list of redundancies’, preface.

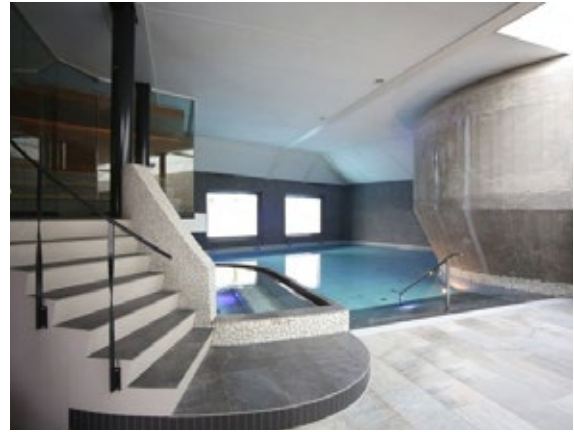


I. Fortpop, Fort aan de St. Aagtendijk

plans to install multiple museums for the Stelling van Amsterdam, like for Fort Benoorden Spaarndam. Usually, private owners won't develop museums, because it just isn't profitable. For instance, Fort aan het Steurgat has been repurposed into an apartment complex. This is one of the two privately owned fortress of the New Dutch Waterline. Fort Voordorp, the other one with private owners, is turned into a center for events and meetings.

IV: Social environment: Involve your neighbors. Paul Morel, project manager at *Stadsherstel* (City Recovery), tries to include interested parties at the beginning of the plan, instead of within the last phases, which often happens. The social environment actually, is crucial for the retention of a project. Inhabitants of the surrounding area are the ones that take care of the conservation of the redeveloped site. For instance, Fortpop in Fort Aagtendijk of the Stelling van Amsterdam is maintained communally. There's a foundation which preserves the fortress. Expositions are being held and tours are being operated by local volunteers. It can be very useful to catch up with local networks as well, to strengthen connection of the heritage site with its social environment.²⁹ Lastly, it is essential to listen to the neighbors to know about the capacity of the surroundings. In some cases, the (social) environment doesn't have the capacity to host groups of visitors. In that case, a touristic appropriation is not exactly the best choice. If so, the right measures should be taken first.

V: Leisure sector: When repurposing a fortification site, it can be useful to comply its new function with leisure trends. In the Netherlands more people prefer short-breaks for holidays. The heritage sector could



J. Fort Resort Beemster, Fort aan de Nekkerweg

anticipate this trend. For example, more accommodation options could be offered. In the Beemsterpolder, which can be seen as the northern front of the Stelling van Amsterdam, multiple fortresses exist with a welcome variety of modern functions. Fort Spijkerboor serves partially as a visitor's center, while the next fort in the area, Fort aan de Nekkerweg, was turned into a hotel/wellness. Another fortress in the area is also being reused as a wholesale market in wines.³⁰

²⁹ P. Morel, personal interview, 17 November 2015.

³⁰ Eindrapportage werkatelier Forten Honswijk en Fort Everdingen, 13.

2.4 Indonesian and Dutch forts and their potential

Having considered the different aspects that affect the repurposing of military heritage sites into museums, we will now take a look at how the characteristics together influence the touristic potential of a fort. Different data have been collected about the fortresses in the Netherlands and those in Indonesia. We've provided an overview of the forts of the Stelling van Amsterdam and the Nieuwe Hollandse Waterlinie. For these reports data was collected on ownership, dimensions, use and location. The Indonesian documentation center Pusat Dokumentasi Arsitektur (PDA) made an economic analysis of the forts in Indonesia. (Appendix A) The analysis covers the following aspects: Physical Condition, Availability of Historical Information, Accessibility, Location, Tourism Facilities, Status of Ownership and Operator, and Status of Law Protection. With the use of **Analytical Hierarchy Process (AHP)** every one of the aspects has a certain weight in this analysis. 'Weights process is determined by emphasizing on the level of importance among variables and sub-variables with respect to the investor point of view to develop BCB³¹ objects as a culture and history tourism.'³² Physical condition, accessibility and location received the most weight in this table. The next step, according to PDA, was to grade the most potential forts and to show them together in one table. It goes without saying that the uppermost potential – that is potential for tourism development - sites are pointed out by this table. (Appendix B)

Tables like these confirm the hypothesis that a holistic approach is needed when dealing with the reuse of military heritage. All these different factors control the potential success of a fortress. It can be of great use to map the strengths and weaknesses of the heritage site. Even when a fortress is in very bad condition, the combination of a good location and good accessibility can still ensure a successful conservation and reuse. Or vice-versa. It is important to notice, that the weight of the different aspects is not universal. Meaning that the weight can differ per country or area. Different conclusions can be drawn up when we study this data and the results:

I. The status of ownership and operator has quite a low priority in the table of PDA. But, like I argued in the previous chapter, management and ownership are of great importance for the success of a redevelopment

project. It looks like this effect is underestimated by PDA. Taking notice of the tables of the Stelling van Amsterdam and the Nieuwe Hollandse Waterlinie, we see a greater diversity in ownership and management than in the case of the Indonesian forts. We also see a greater diversity in new functions, which can be linked partially to the variety of ownership. In Indonesia though, almost every heritage site lies in the hands of the (local) government. With that in mind, it is reasonable that the priority of ownership and operator is relatively low.

- II. In the case of the Stelling van Amsterdam and the Nieuwe Hollandse Waterlinie, the accessibility to the nearest city center is always very high, as is the accessibility to the nearest capital city of the Province or District. So again, we should interpret this variable differently to the case of the Indonesian forts. The distinction between rural and urban in the Netherlands is not the same as in Indonesia. For outsiders a great part of the Netherlands is seen as urban, while Dutch people look at it in a more delicate way. Parts of the Randstad are, arguably, rural for a lot of citizens, while cities are relatively close by. In case of the Stelling van Amsterdam and the Nieuwe Hollandse Waterlinie, rural in almost every case means: away from the city, but easily accessible by public transport, bicycle or on foot. That's why accessibility, as is the same for location, should be weighted differently in the Dutch case.
- III. Unlike the forts in the Netherlands, still a lot of fortification sites in Indonesia are in poor condition. Many of them haven't been protected by laws or restrictions yet. The situation in the Netherlands is different: a greater part of the fortification sites, especially if they were built before the end of Second World War, are protected. So again, this variable is of other proportions in the Dutch cases.
- IV. As was the case with the different aspects, the perimeters itself aren't fixed either. The dimensions of a heritage site, for instance, could have significant impact on the choice of reuse. Deriving from the data, the museums of the NHW and SVA are mostly established in medium and large forts. Only one out of ten fort museums of the Nieuwe Hollandse Waterlinie is situated in a small fort or battery, while the waterline consists of 17 small forts, and at least another 13 intact batteries. (Appendix C & D) Three batteries are in use overall. In the case of the Stelling van Amsterdam this information is of lesser relevance, since this defense line mainly consists of

³¹ BCB (Bangunan Cagar Budaya) means Listed Heritage Building.

³² Pusat Dokumentasi Arsitektur, *Economic analysis of forts in Indonesia* (unknown) 1.

medium and large forts. Looking at the data of the Nieuwe Hollandse Waterlinie however, we could say that the type or size of a fortification site has impact on the reuse of it. This adds to the hypothesis that making an economic analysis with the use of AHP is variable. Different classifications can be used, and the weight of the different data depends on the area which you are investigating.

The Indonesian government has stated that they want more fortification sites to be redeveloped with touristic purposes. An economic analysis, like the one made by PDA, points out which fortresses have the most potential to become a museum. 63 Indonesian fortresses are designated to be highly potential. The second step is to determine the new function of the building. It seems that the touristic needs and the know-how aren't synchronizing currently in Indonesia. Nadia Rinandi, executive director of PDA, says:

'Because the state is owner of most of the heritage, the situation is that most of the managers have an archeology background, and that's why they can't think about new functions in the old buildings. The Dutch Agency of Cultural Heritage could serve to open their minds and show other examples and connect them to other professionals worldwide.'³³

Exactly what functions are convenient, can be derived by watching trends in the leisure market. This points out that an exchange of expertise and knowledge is welcomed by Indonesian experts. According to Maulana Ibrahim, researcher of the Ternate Heritage Society:

'They don't have any idea. I don't know why. It is all about the human resources. In Indonesia we don't have any conservation specialists. We don't have a conservation architect by qualification. We only have general architects. The architect don't have experience of knowledge about conservation. Mostly new designs don't fit with the area. So more experience from outside can be helpful.'³⁴

³³ N. Rinandi, e-mail interview, 8 November 2015.

³⁴ M. Ibrahim, telephonic interview, 9 November 2015.

I. The method of reusing a fortress is a holistic process; everything should be taken into account, a successful redevelopment project isn't possible otherwise. This is why an action plan is crucial for everyone who wants to revitalize military heritage. The character of the fortress is of importance for the eventual reuse of it. After all, there has to be a function that fits the building. Such an action plan is particularly useful when dealing with the physical aspects of the fortification. Of greater importance for the success of the redevelopment though, is the human factor. Who is the owner and which values are present, and what kind of legislation exists? The social environment of the heritage site should be taken into account at all times. Multifunctional reuse is a good solution to various socioeconomic issues. It is an option whereby different values can be respected. Dilemmas can be avoided that way and the profitability is higher.
Recommendation: Design a comprehensive action plan first; Combine the museum with other functions.

II. Most of the time fortresses are part of a larger system like the Amsterdam Defense Line or the New Dutch Waterline. With the right (marketing) strategy, the cohesion between the different elements of such a system could be exposed. This creates a better reputation of that system, which in turn creates more recognition for individual elements like the fortresses. With the right knowhow and information, connectedness could be created at other levels as well. For example, the interconnectedness of the Spice Island Forts of the Moluccas. A better reputation serves the conservation in the end. These other levels could even mean heritage sites other than the military ones, but with geographical proximity. Or even other museums. To a great extent, it depends on the (historical) interpretation, and the branding.
Recommendation: Make the connection between different heritage sites to benefit their public reputation.

III. To carry out analyses like PDA did for the Indonesian forts, can be of good use for policymakers. Such data shows interesting figures. Certain potential is filtered. PDA pointed out 63 Indonesian fortresses with high potential for touristic development. The significance of the kind of data differs per region. The variety of categories and their weight has a different relevance. The potential of fortresses in the Netherlands is based on a different set of categories than for instance in Indonesia, as is the weight of the categories.

Recommendation: Analyze the development potentials by weighing different data such as location, physical condition, and status of ownership (not only the historical value).

IV. When it comes to the reuse of fortresses, everything is more or less possible. Nearly every aspect that seems a disadvantage at first, could be turned into a merit. It depends on the expertise that is available and, of course, time and money. Paul Morel: 'Everything is possible basically. You just need the right expertise and the right understanding of building physics.' More cooperation and exchange of knowledge is therefore very welcome. We should not want to turn every fortress solely into a museum. There are other values at stake as well, like natural values. These need to be taken in account. Nonetheless, experiences with existing museum forts could stimulate new projects. An exchange of ideas could inspire new ones.

In Indonesia, there is a demand for conservation architects and most of the policy makers don't have a clear view on what is actually possible when redeveloping a fortress. Dutch experiences can be of service: to show that multifunctional reuse could serve museum forts; and to explain how to handle different threats and opportunities when repurposing forts as museums. Can it be profitable to compare fortification sites in such a way, with such remoteness? Yes, since a bigger part of them share the same building traditions and features. Even more so, Indonesian and Dutch professionals share and are able to exchange ideas on technology, methods, theory and styles of approach.

The next step is to figure out where the demand for knowledge is urgent. Who are in need of more exchange of expertise? And, who is in the position to offer these favored capacities and skills? There are other experts than the ones working for the Cultural Heritage Agency of the Netherlands, who can be of greater value for the demanding parties. On a local scale, mobile platforms can be set up, where professionals can share their ideas and there's room for discussion. On a larger scale, projects like AtFort can serve as a medium for professionals worldwide. The Cultural Heritage Agency of the Netherlands could act like an agent between different professionals, to connect expertise and development projects. The Shared Cultural Heritage Programme can serve as an excellent starting point.

Recommendation: To get a clear view on the interface of supply and demand, an expert meeting can be very helpful. My main proposition is to host

such a conference for, in first instance, demanding parties from Indonesia and experts on repurposing fortifications, at the other hand. 10 – 12 experts should be considered, which are people involved with various aspects of this matter, like policy makers; custodians of the fortification sites; entrepreneurs; researchers; museum developers; conservation specialists; and heritage experts.

Appendix A: Weights of Variable and Sub variable for Fort Tourism Development, Economic Analysis Forts in Indonesia by PDA

Weights of Variable and Sub variable for Fort Tourism Development, Economic Analysis Forts in Indonesia by PDA

No	Variable	Weights of Variable	Sub Variable	Weights of Sub Variable
1	Physical Condition • Completeness of the physical object BCB analyzed in comparison with the original structure	20,1		
2	Availability of Historical Information • Availability of historical information about the BCB object.	5,2		
3	Accessibility • Accessibility to reach the BCB object	21,6	• Accessibility to the city center, the nearest	7,2
			• Availability of Public Transport	7,2
			• Accessibility to the nearest capital city of Province or District	7,2
4	Location • Condition in surrounding area of BCB object	30,2	• Economic development in surrounding area	9,3
			• Cultural and heritage in surrounding area	8,6
			• Other tourism object	12,3
5	Tourism Facilities • Availability of facilities to support tourism activities.	5,0		
6	The status of ownership and operator. • Current owner and/or operator of BCB object	11,9		
7	The status of Law Protection • Current status of protection for the BCB object	6		
TOTAL		100,0		

Appendix B: Priority and Valuation of Fort as Potential Tourism Object in Indonesia, Economic Analysis Forts in Indonesia by PDA (including next page)

Priority and Valuation of Fort as Potential Tourism Object in Indonesia, Economic Analysis Forts in Indonesia by PDA

No	Fort	Province	No	1	2	3		
			Variable	Physical Condition	Availability of Historical Information	Accessibility		
			Weights	20,1	5,2	21,6		
			Sub Variable			Accessibility to the nearest city center	Availability of Public Transport	Accessibility to the nearest capital city of Province or District
			Weights Sub Variable			7,2	7,2	7,2
1	Rotterdam	South Sulawesi	score	10	10	10	10	10
2	Vredeburg	DI Yogyakarta	score	10	9	10	10	10
3	Marlborough	Bengkulu	score	9	9	10	10	10
4	Kuto Besak	South Sumatera	score	8	6	10	10	10
5	Van Der Wijk	Central Java	score	9	6	9	9	9
6	Japanese Cave at Bukit Tinggi	West Sumatera	score	9	1	10	10	7
7	Oranje	North Maluku	score	8	10	9	9	9
8	Tolukko	North Maluku	score	8	8	9	9	9
9	Cilacap	Central Java	score	8	7	9	9	9
10	Dutch Cave at Dago Pakar	West Java	score	8	3	10	10	10
11	Otahiya	Gorontalo	score	8	6	9	8	9
12	Ulupahu	Gorontalo	score	8	6	9	8	9
13	Japanese Cave at Dago Pakar	West Java	score	8	1	10	10	10
14	Kalamata	North Maluku	score	8	7	9	9	9
15	Vastenburg	Central Java	score	6	8	10	10	10
16	Japanese Cave Bedugul	Bali	score	8	1	8	6	8
17	Nieuw Victoria	Maluku	score	7	10	10	10	10
18	Otanaha	Gorontalo	score	7	6	9	8	9
19	Pillbox at Gunung Padang	West Sumatera	score	7	1	9	10	10
20	Tegal	Central Java	score	8	5	9	9	9
21	Belgica	Maluku	score	9	9	5	5	6
22	Tanjung Pinang / Prins Hendrik	Riau Isle	score	7	1	9	9	10
23	Het Fort Concordia te Kupang	East Nusa Tenggara	score	7	8	9	8	9
24	Bunker at Kampung Satu	East Kalimantan	score	8	8	8	7	8
25	Willem I	Central Java	score	8	7	7	8	8
26	Batavia Citywall	DKI Jakarta	score	3	10	10	10	10
27	Dutch Cave Liliba 1	East Nusa Tenggara	score	8	1	8	8	8
28	Buton Palace	Southeast Sulawesi	score	7	7	8	8	6
29	Oranye	Gorontalo	score	8	8	9	5	8
30	Surosowan	Banten	score	7	8	8	8	8
31	Juata Laut Defense System	East Kalimantan	score	8	8	8	7	8
32	Kuta Raja	NAD (Aceh)	score	4	6	10	10	10
33	Kota Janji	North Maluku	score	5	8	9	9	9
34	Fort de Kock	West Sumatera	score	3	6	10	10	7

No	Fort	4			5	6	7	TOTAL
		Location			Tourism Facilities	Ownership and Management Status	Law Protection	
		30,2			5,0	11,9	6,0	
		Economic development in surrounding area	Cultural and heritage in surrounding area	Other tourism object				
	9,3	8,6	12,3					
1	Rotterdam	8	8	9	8	10	10	941,9
2	Vredeburg	8	8	8	7	10	10	919,4
3	Marlborough	7	7	7	8	10	10	874,1
4	Kuto Besak	8	6	8	8	10	10	851,4
5	Van Der Wijk	7	7	7	10	10	10	846,9
6	Japanese Cave at Bukit Tinggi	8	7	9	8	10	10	844,8
7	Oranje	8	8	7	9	9	9	842,7
8	Tolukko	8	8	7	8	9	9	827,3
9	Cilacap	7	6	8	8	10	10	825,7
10	Dutch Cave at Dago Pakar	7	6	8	7	10	10	821,5
11	Otahiya	7	8	7	7	10	10	813,2
12	Ulupahu	7	8	7	7	10	10	813,2
13	Japanese Cave at Dago Pakar	7	6	8	7	10	10	811,1
14	Kalamata	8	7	7	7	9	9	808,6
15	Vastenburg	8	8	8	1	10	10	803,8
16	Japanese Cave Bedugul	7	9	9	9	10	10	801,6
17	Nieuw Victoria	8	4	8	1	10	10	800,5
18	Otanaha	7	8	7	7	10	10	793,1
19	Pillbox at Gunung Padang	7	7	8	7	10	10	792,4
20	Tegal	7	8	7	1	10	10	785,2
21	Belgica	6	8	8	5	10	10	784,5
22	Tanjung Pinang / Prins Hendrik	7	6	7	10	10	10	779,3
23	Het Fort Concordia te Kupang	7	7	8	1	10	10	777,2
24	Bunker at Kampung Satu	7	7	6	6	10	10	776,1
25	Willem I	6	8	8	2	10	10	774,8
26	Batavia Citywall	7	6	9	8	10	10	774,7
27	Dutch Cave Liliba 1	7	7	8	6	10	10	771,5
28	Buton Palace	7	8	7	7	10	10	769,5
29	Oranye	6	6	7	7	10	10	768,3
30	Surosowan	6	5	8	7	10	10	766,3
31	Juata Laut Defense System	7	7	6	4	10	10	766,1
32	Kuta Raja	7	6	8	8	10	10	761,7
33	Kota Janji	8	7	7	7	9	9	753,6
34	Fort de Kock	8	7	9	8	10	10	750,2

Priority and Valuation of Fort as Potential Tourism Object in Indonesia, Economic Analysis Forts in Indonesia by PDA

No	Fort	Province	No	1	2	3		
			Variable	Physical Condition	Availability of Historical Information	Accessibility		
			Weights	20,1	5,2	21,6		
			Sub Variable			Accessibility to the nearest city center	Availability of Public Transport	Accessibility to the nearest capital city of Province or District
			Weights Sub Variable			7,2	7,2	7,2
35	Van Der Capellen	West Sumatera	score	7	7	9	9	6
36	Japanese Cave Lawata	West Nusa Tenggara	score	8	1	9	6	9
37	None	East Nusa Tenggara	score	8	4	6	7	8
38	Japanese Cave at Klungkung	Bali	score	8	1	8	6	8
39	Amsterdam	Maluku	score	9	8	6	6	8
40	Indra Patra	NAD (Aceh)	score	8	6	8	7	8
41	Sorawolio I	Southeast Sulawesi	score	7	5	8	8	6
42	Ba'adia	Southeast Sulawesi	score	6	5	8	8	6
43	Somba Opu	South Sulawesi	score	4	8	8	9	8
44	Bukit Marapalam	West Sumatera	score	5	4	8	8	6
45	Amurang	North Sulawesi	score	8	6	9	8	8
46	Balangnipa	South Sulawesi	score	8	5	8	6	5
47	Lohayong/ Hendricus/Henricus	East Nusa Tenggara	score	7	8	8	6	8
48	Sorawolio II	Southeast Sulawesi	score	6	5	8	8	6
49	Pune	South Sulawesi	score	6	3	7	7	5
50	Nassau - Banda	Maluku	score	5	8	5	5	6
51	Het Defensief Kampement Te Tatas I dan II	South Kalimantan	score	3	7	10	10	10
52	MC Arthur HQ	Papua	score	7	4	7	7	8
53	Barneveld	North Maluku	score	8	8	7	5	6
54	Klandasan Batterij (Gunung Sentosa)	East Kalimantan	score	8	4	8	9	8
55	Poto Batu Defense System	West Nusa Tenggara	score	5	1	9	4	9
56	Asakota 2	West Nusa Tenggara	score	8	8	7	5	8
57	Awang Long	East Kalimantan	score	7	7	7	4	7
58	Maumere	East Nusa Tenggara	score	8	1	9	4	9
59	De Fort Gunung Madang/Benteng Madang	South Kalimantan	score	3	8	7	4	8
60	Gunung Meriam Defense System	East Kalimantan	score	7	5	8	6	8
61	Bandara Juata Defense System	East Kalimantan	score	4	8	8	7	8
62	Peningki Lama Defense System	East Kalimantan	score	6	8	6	4	8
63	Karungan Defense System	East Kalimantan	score	6	8	6	4	8

No	Fort	4			5	6	7	TOTAL
		Location			Tourism Facilities	Ownership and Management Status	Law Protection	
		30,2			5,0	11,9	6,0	
		Economic development in surrounding area	Cultural and heritage in surrounding area	Other tourism object				
	9,3	8,6	12,3					
35	Van Der Capellen	7	4	7	7	10	10	749,5
36	Japanese Cave Lawata	7	6	7	5	10	10	745,6
37	None	6	9	9	3	10	5	740,7
38	Japanese Cave at Klungkung	7	6	9	1	10	10	735,8
39	Amsterdam	5	5	4	7	10	10	734,1
40	Indra Patra	4	8	7	1	10	10	733,7
41	Sorawolio I	7	8	7	1	10	10	729,1
42	Ba'adia	7	8	7	5	10	10	729
43	Somba Opu	7	6	7	7	10	10	718,8
44	Bukit Marapalam	6	6	9	8	10	10	716,8
45	Amurang	7	6	5	3	10	5	714,2
46	Balangnipa	5	5	7	7	10	10	713,2
47	Lohayong/ Hendricus/Henricus	6	7	8	1	10	5	709,1
48	Sorawolio II	7	8	7	1	10	10	709
49	Pune	6	7	8	7	10	10	701,4
50	Nassau - Banda	6	8	8	5	10	10	698,9
51	Het Defensief Kampement Te Tatas I dan II	9	8	8	1	10	1	693,6
52	MC Arthur HQ	6	6	7	7	8	8	691,8
53	Barneveld	7	7	7	1	8	8	691,7
54	Klandasan Batterij (Gunung Sentosa)	7	6	6	1	10	1	682,1
55	Poto Batu Defense System	4	6	10	1	10	10	659,9
56	Asakota 2	4	6	7	1	10	1	651,3
57	Awang Long	6	8	1	4	10	10	642,6
58	Maumere	5	6	5	1	10	5	638
59	De Fort Gunung Madang/Benteng Madang	5	4	7	9	10	10	629,7
60	Gunung Meriam Defense System	7	6	1	1	10	8	626,1
61	Bandara Juata Defense System	7	7	6	1	10	1	616,7
62	Peningki Lama Defense System	4	4	6	1	10	8	609,2
63	Karungan Defense System	5	4	6	1	10	6	606,5

Appendix C:

Analysis of forts of the Nieuwe Hollandse Waterlinie

Analysis of forts of the Nieuwe Hollandse Waterlinie

Name	Use	Location	Ownership	type fort
Werken bij Griftenstein	none	urban	Gemeente De Bilt	battery
Batterij aan de Karnemelksloot	other	rural	Gemeente Naarden	battery
Franse Kamp	other	rural	Goois Natuurreservaat	battery
Batterijen aan de nieuwe Lingedijk	none	rural	Hoogheemraadschap Van De Alblasterwaard	battery
Batterijen aan de Overeindseweg	none	rural	State	battery
Batterij achter het Fort aan de Uppelse dijk	none	rural	State	battery
Werk aan de Groeneweg	other	rural	Staatsbosbeheer	battery
Batterij Brakel	none	rural	Staatsbosbeheer	battery
Batterij Poederoijen	none	rural	Staatsbosbeheer	battery
Batterij aan de Broekse sluis	none	rural	Staatsbosbeheer	battery
Batterijen aan de zuidelijke lekdijk	none	rural	Waterschap Rivierenland	battery
Batterijen aan de meerdijk	none	rural	Waterschap Rivierenland	battery
Batterijen bij Dalem	none	rural	Waterschap Rivierenland	battery
Vesting Naarden	museum	urban	diverse	fortified city
Vesting Woudrichem	other	urban	diverse	fortified city
Vesting Gorinchem	other	urban	Gemeente Gorinchem	fortified city
Muizenfort	museum	urban	Gemeente Muiden	fortified city
Muiderslot	museum	urban	State	castle fort
Vesting Loevestein	museum	urban	State	castle fort
Fort Pampus	museum	rural	Stichting Pampus	coastal fort
Fort Blauwkapel	none	urban	Gemeente Utrecht	large fort
Fort aan de Biltstraat	museum	urban	Gemeente Utrecht	large fort
Fort Rijnauwen	none	rural	Gemeente Utrecht	large fort
Fort Nieuwersluis	other	rural	Natuurmonumenten	large fort
Fort op de Voordorpse Dijk	other	urban	privately-owned	large fort
Fort Honswijk	none	rural	State	large fort
Fort Everdingen	none	rural	State	large fort
Fort op de Ruigenhoeksedijk	museum	rural	Staatsbosbeheer	large fort
Fort Vechten	museum	urban	Staatsbosbeheer	large fort
Fort bij t Hemeltje	other	rural	Staatsbosbeheer	large fort
Fort Nieuwe Steeg	museum	rural	Staatsbosbeheer	large fort
Fort Vuren	other	rural	Staatsbosbeheer	large fort
Fort Altena	other	rural	Stichting het Noordbrabants Landschap	large fort
Fort Giessen	other	rural	Stichting het Noordbrabants Landschap	large fort
Fort bij Jutphaas	other	urban	diverse	medium fort
Fort Ronduit	none	urban	State	medium fort
Fort Vossegat	none	urban	State	medium fort
Fort Hinderdam	none	rural	Staatsbosbeheer	medium fort
Fort Asperen	museum	rural	Staatsbosbeheer	medium fort
Fort Pannerden	Museum	rural	Staatsbosbeheer	medium fort
Fort Uitermeer	none	rural	Stichting Uiteeraard Uitermeer	medium fort
Werk aan de Hoofddijk	museum	urban	Universiteit Utrecht	medium fort

Analysis of forts of the Nieuwe Hollandse Waterlinie

Name	Use	Location	Ownership	type fort
Batterij Roskamp	none	none	none	none
Batterij op de Westoever	none	none	none	none
Batterij aan de noordelijke lekdijk	none	none	none	none
Batterij aan de diefdijk	none	none	none	none
Batterij aan de Krinkelwinkel	none	none	none	none
Fort Spion	other	rural	Gemeente Amsterdam	small fort
Werk IV	other	urban	Gemeente Bussum	small fort
Werk aan het Spoel	other	rural	Gemeente Culemborg	small fort
Westbatterij	other	urban	Gemeente Muiden	small fort
Verdedigingswerk te Vreeswijk	museum	urban	Gemeente Nieuwegein	small fort
Fort aan de Klop	other	urban	Gemeente Utrecht	small fort
Fort de Gagel	none	urban	Gemeente Utrecht	small fort
Lunetten op de Houtense vlakte I	other	urban	Gemeente Utrecht	small fort
Lunetten op de Houtense vlakte II	other	urban	Gemeente Utrecht	small fort
Lunetten op de Houtense vlakte III	other	urban	Gemeente Utrecht	small fort
Lunetten op de Houtense vlakte IV	other	urban	Gemeente Utrecht	small fort
Torenfort Ossenmarkt	other	urban	Gemeente Weesp	small fort
Fort Kijkuit	none	rural	Natuurmonumenten	small fort
Fort Steurgat	other	rural	privately-owned	small fort
Werk bij Maarsseveen	none	rural	provincie Utrecht	small fort
Lunet aan de Snel	other	rural	State	small fort
Fort bij Tienhoven	none	rural	Staatsbosbeheer	small fort
Werk aan de Waalse Wetering	other	rural	Staatsbosbeheer	small fort
Werk aan de Kortten Uitweg..	other	rural	Staatsbosbeheer	small fort
Werk op de spoordijk bij de Diefdijk	other	rural	Staatsbosbeheer	small fort
Werk aan de Bakkerskil	other	rural	Stichting het Noordbrabants Landschap	small fort

Appendix D: Analysis of forts of the Stelling van Amsterdam

Analysis of forts of the Stelling van Amsterdam

Name	Use	Location	Ownership	type fort
Muiderslot	museum	urban	State	castle fort
Fort aan het Pampus	museum	rural	Stichting Pampus	coastal fort
Fort bij IJmuiden	museum	urban	Rijkswaterstaat	large fort
Fort bij Spijkerboor	museum	rural	Staatsbosbeheer	large fort
Fort bij Veldhuis	Museum	urban	Staatsbosbeheer	medium fort
Fort bij Vijfhuizen	museum	rural	Provincie NH	medium fort
Fort aan den Ham	Museum	rural	Domeinen	medium fort
Fort bij Aalsmeer	museum	rural	Gemeente H'meer	medium fort
Batterij aan de IJweg	none	urban	Gemeente H'meer	battery
Batterij aan de Sloterweg	none	urban	Gemeente H'meer	battery
Fort benoorden Spaarndam	none	rural	Staatsbosbeheer	medium fort
Fort bij Hoofddorp	none	urban	Gemeente H'meer	medium fort
Fort bij Krommeniedijk	none	rural	Landschap NH	medium fort
Fort bij Edam	none	urban	Staatsbosbeheer	medium fort
Muizenfort	none	urban	Gemeente Muiden	medium fort
Fort Coehoorn	none	urban	Gemeente Muiden	residential building
Kustbatterij bij Durgerdam	other	rural	Staatsbosbeheer	coastal battery
Kustbatterij Diemerdam	other	rural	Stadsherstel Amsterdam	coastal battery
Fort bij Abcoude	other	urban	Natuurmonumenten	large fort
Fort aan de St. Aagtendijk	other	rural	Staatsbosbeheer	medium fort
Fort bij Velsen	other	urban	privately-owned	medium fort
Fort bij Penningsveer	other	rural	Domeinen	medium fort
Fort bij Kudelstaart	other	urban	State	medium fort
Fort bij Markenbinnen	other	rural	Staatsbosbeheer	medium fort
Fort aan de Jisperweg	other	rural	Natuurmonumenten	medium fort
Fort aan de Middenweg	other	rural	Natuurmonumenten	medium fort
Fort aan de Nekkerweg	other	rural	Landschap Waterland	medium fort
Fort benoorden Purmerend	other	rural	privately-owned	medium fort
Fort bij Nigtevecht	other	rural	Natuurmonumenten	medium fort
Fort Uitermeer	other	rural	Provincie NH	medium fort
Fort Waver-Amstel	other	rural	Natuurmonumenten	medium fort
Fort bij Hinderdam	other	rural	Natuurmonumenten	medium fort
Fort bij Uithoorn	other	urban	Staatsbosbeheer	medium fort
Fort aan de Drecht	other	urban	Gemeente Uithoorn	medium fort
Fort bezuiden Spaarndam	other	rural	Staatsbosbeheer	medium fort
Fort bij de Kwakel	other	urban	privately-owned	medium fort
Fort bij de Liebrug	other	rural	Staatsbosbeheer	medium fort
Fort Zuidwijkermeer	other	rural	Landschap NH	medium fort
Fort bij Kwadijk	other	rural	privately-owned	small fort
Westbatterij	other	urban	gemeente Muiden	small fort
Fort aan de Ossenmarkt	other	urban	gemeente Weesp	small fort
Fort aan de Liede	other	rural	Rijkswaterstaat	small fort

Analysis of forts of the Stelling van Amsterdam

Fort bij Heemstede	other	urban	Gemeente H'meer	small fort
Fort H	other	urban	privately-owned	small fort
Fort aan de Winkel	other	rural	Defensie	walls
Fort in de Botshol	other	rural	Natuurmonumenten	walls

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Illustrations

Cover: View on the city of Makassar on the island Sulawesi from 'Valentijn's Oud en Nieuw Oost Indie' (Nederlands Scheepvaartmuseum, n.d.).

A: Nationaal Waterliniemuseum (Provincie Utrecht, 2015).

B: Map of Werk aan de Bakkerskil (Kenniscentrum Waterlinies, n.d.).

C: Exposition GeoFort (Moto Productions, 2013).

D: Kunstfort Vijfhuizen (Cultuurcompagnie Noord-Holland, n.d.).

E: Air photo of Fort Bij Spijkerboor (Stelling van Amsterdam Provincie Noord-Holland, n.d.).

F: 'Nature' Fort bij Abcoude (Forten Stichting Liniebreed Ondernemen, 2015).

G: Cycling Tour 'Rondje Stelling' (Meerbode, 2015).

H: Apartment complex Fort aan het Steurgat (Hofstede Makelaardij, 2015)

I: Rehearsel space at 'Fortpop', Fort aan de St. Aagtendijk (Stichting Fortpop, n.d.).

J: Wellness at Fort Resort Beemster (Forten Stichting Liniebreed Ondernemen, 2015).

Tables

A: Pusat Dokumentasi Arsitektur, *Economic analysis of forts in Indonesia*, n.d., 9.

B: Ibidem, 11, 12.

C: J. Pardoel, *Analysis Forts of the Nieuwe Hollandse Waterlinie*, 2015.

D: J. Pardoel, *Analysis Forts of the Stelling van Amsterdam*, 2015.

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- Daan Lavies, MA (architectural historian) – consultant Bureau BUITEN
- Drs. John Verbeek (historian) – policy maker Dutch Ministry of Infrastructure and Environment
- Maulana Ibrahim, MEng (architectural engineer) – researcher Ternate Heritage Society
- Ir. Nadia Rinandi (structural engineer) – executive director Pusat Dokumentasi Indonesia
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- Ing. René Ros (information scientist) – researcher Documentation Center Stelling van Amsterdam



This report presents an overview of current experiences in the repurposing of forts into museums. Throughout the Indonesian Archipelago, more than 450 fortresses have been built over the last 600 years. A larger part of them remain from the Dutch colonial-era. New functions are being sought for the fortresses. To connect them to the public, a museum function is desirable. The outcomes of this research on the repurposing of forts contributes to the knowledge on sustainable preservation of cultural heritage and to the international relations between the Dutch and Indonesian monument sector.

The Cultural Heritage Agency provides knowledge and advice to give the future a past.