

BITENHOF-NOORD

the reuse of low valued buildings

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Cultural Value Assessment

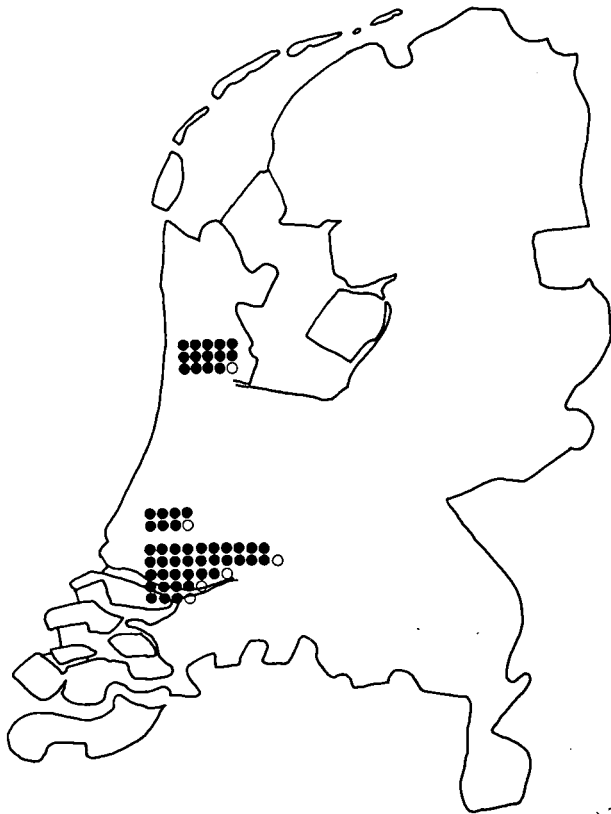


Fig. 1: ERA in the Netherlands (Priemus & van Elk, 1971)

Introduction

The transformation of buildings is one of the main emergent themes in contemporary architecture. This does not only count for monuments, but also for the existing housing stock. The topic of the studio "Re-Housing: Luxury, Energy, Economy" deals exactly with this topic, the transformation of post war mass housing in the Netherlands. It is always important to assess the cultural value of buildings, when dealing with a transformation project to ensure that a building or parts of a building which are from cultural significance won't be destroyed. This ensure that the collective memory of a place stays untouched and historic structures remain as examples of the past. The following essay assess the cultural value of the ERA-buildings in Buitenhof-Noord and the urban context in which they were placed. Even though, it seems that there is almost no cultural value at the site of Buitenhof-Noord, I will show, why it is still important to keep those buildings. To do so the exploration will follow Steward Brand's system of the 6 layers (site, skin, structure, space plan, service, and stuff) and the added layer of story.

The Building-System

The buildings on the chosen site are constructed in the ERA-system (van Eesteren Rationale Aanpak), a building system, in which large steel tunnels with a span of 7.8 m are placed on site and are used to pour concrete in-situ (Fig. 2). The system was developed in the 1960's by J. P. van Eesteren and used by the contractor's company ERA (Priemus & van Elk, 1971).

It was applied 62 times all over the Netherlands between 1964 and 1973. The biggest application of the system is Ommoord, Rotterdam, in which 2016 apartments were built (era contour, 2016).

Characteristic for the system is, that it was highly standardized and could be applied due to its repetitive character in a very effective and fast way. Due to the combination of the in-situ concrete structure with a prefabricated façade and interior, the building process was finished shortly after the structure was finished (Priemus & van Elk, 1971).

The floorplans of the different buildings differ just slightly. The floorplan designed by R.H. Fledderus



Fig. 2: Steel moulds (era contour, 2016)

(Rotterdam Ommoord: Een wederopbouwgebied van nationaal belang) remains its high flexibility till today (Fig.3).



Fig. 3: Original floorplans, Ommoord (era contour, 2016)

Buitenhof-Noord

After extensive analysis about the site Ommoord in Rotterdam, I shifted my attention to the site Buitenhof-Noord (Fig. 4). In which the ERA-system was applied in a less successful way.

After the second world war Delft expanded, like many places in the Netherlands. Delft expanded especially towards the south with the erection of a high number of mass housing. The neighbourhood Buitenhof-Noord is part of this city extension. The four ERA-buildings which are placed in parallel strips (Figs. 6+7+9) were, erected in 1969 (Bert Spaan, n.d.). The way the buildings are placed in its urban context and the fact that each building can host 196 households implies, that there was no intensive planning process as it was the case in Ommoord, which indicates furthermore, that the intention of the buildings, was mainly to provide many people with housing in a fast way.

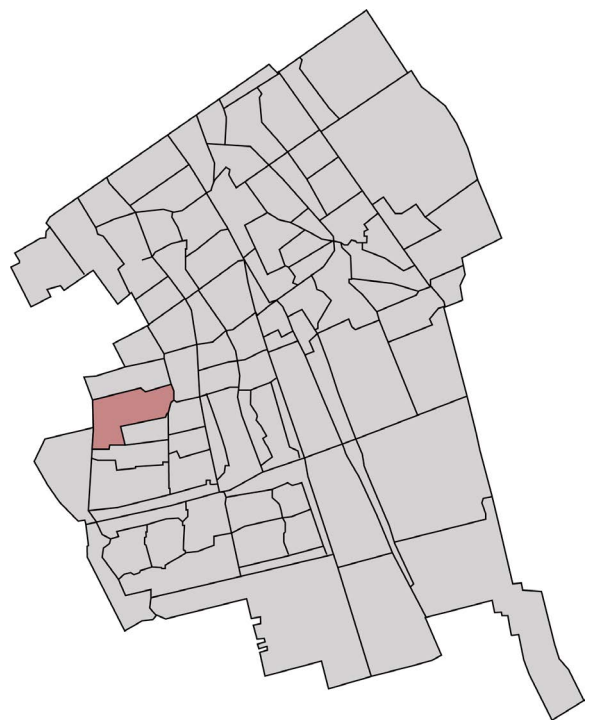


Fig. 4: Buitenhof-Noord

Exploration

After analysing the ERA-buildings and the site Ommoord, Rotterdam, it became clear that the urban plan and the arrangement of the ERA-buildings are in the ideal situation. Ommoord does not face major problems and the inhabitants highly value their apartments. The urgency for change is missing in this area. Compared to Ommoord, in Buitenhof-Noord the ERA-buildings were positioned in a bad way (Fig.5+6). The lack of urban planning here has a great impact on the neighbourhood. Resulting in a neighbourhood which transformed from a middle-class neighbourhood into a neighbourhood with large socio-economic problems (Vakteam Wijkzakken, 2010).

Since the values which were highly appreciated in Ommoord are not given in Buitenhof-Noord. One could say it is from low cultural value and not worth to keep. But I believe, that the ERA-buildings in Buitenhof-Noord should be transformed, due to social, economic and sustainability reasons.

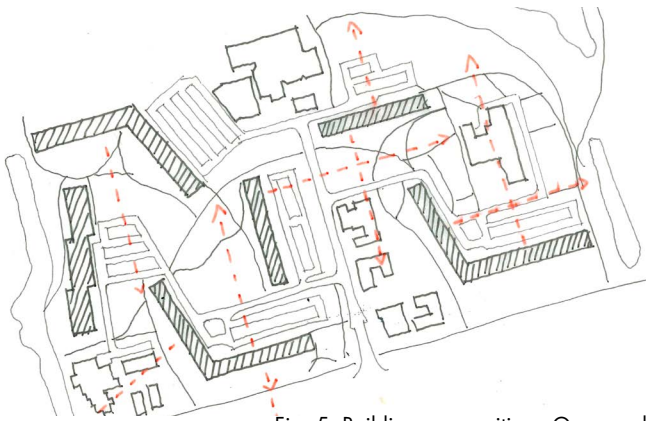


Fig. 5: Building composition - Ommoord

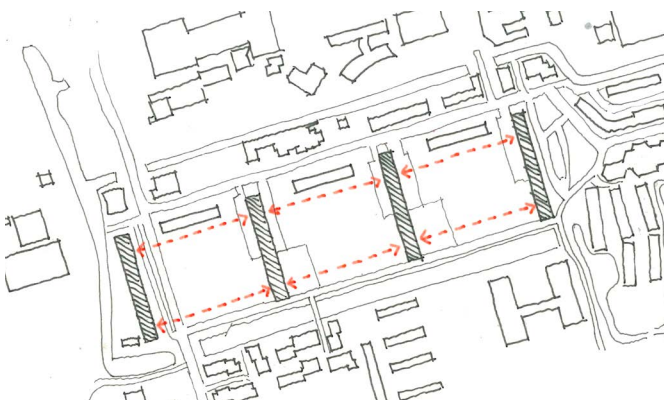


Fig. 6: Building composition - Buitenhof-Noord

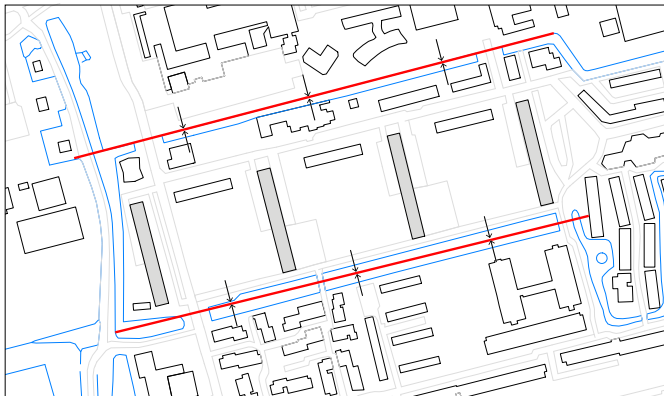


Fig. 7: Buitenhof-Noord - disconnection



Fig. 9: Buitenhof-Noord - green space



Fig. 8: Green space



Fig. 10: Green space

Site

As mentioned already, the ERA-buildings in Buitenhof-Noord are placed as parallel strips. This results in a couple of problems and causes the fact, that there is almost no value embodied in the layer of the site.

The first problem at hand is, that the composition of the ERA-buildings together with low rise strips results in a disconnection (Fig. 7) from other parts of the neighbourhoods. This composition forms, green spaces between the high-rise strips, which can be perceived as left over spaces, which lack aesthetical and programmatic design (Figs. 8-10).

The biggest problem of the composition is the fact that the parallel placed buildings create a degradation of views. While the highest floors enjoy far and nice views, the lowest floors have views, which are just directed on tree trunks and the parking places. Simultaneously to the degradation of views, the quality of living degrades as well, which is displayed in a high moving rate at the lower floors (Fig. 11).

Nevertheless, the site has a certain degree of historical value, since the bad urban design represents the

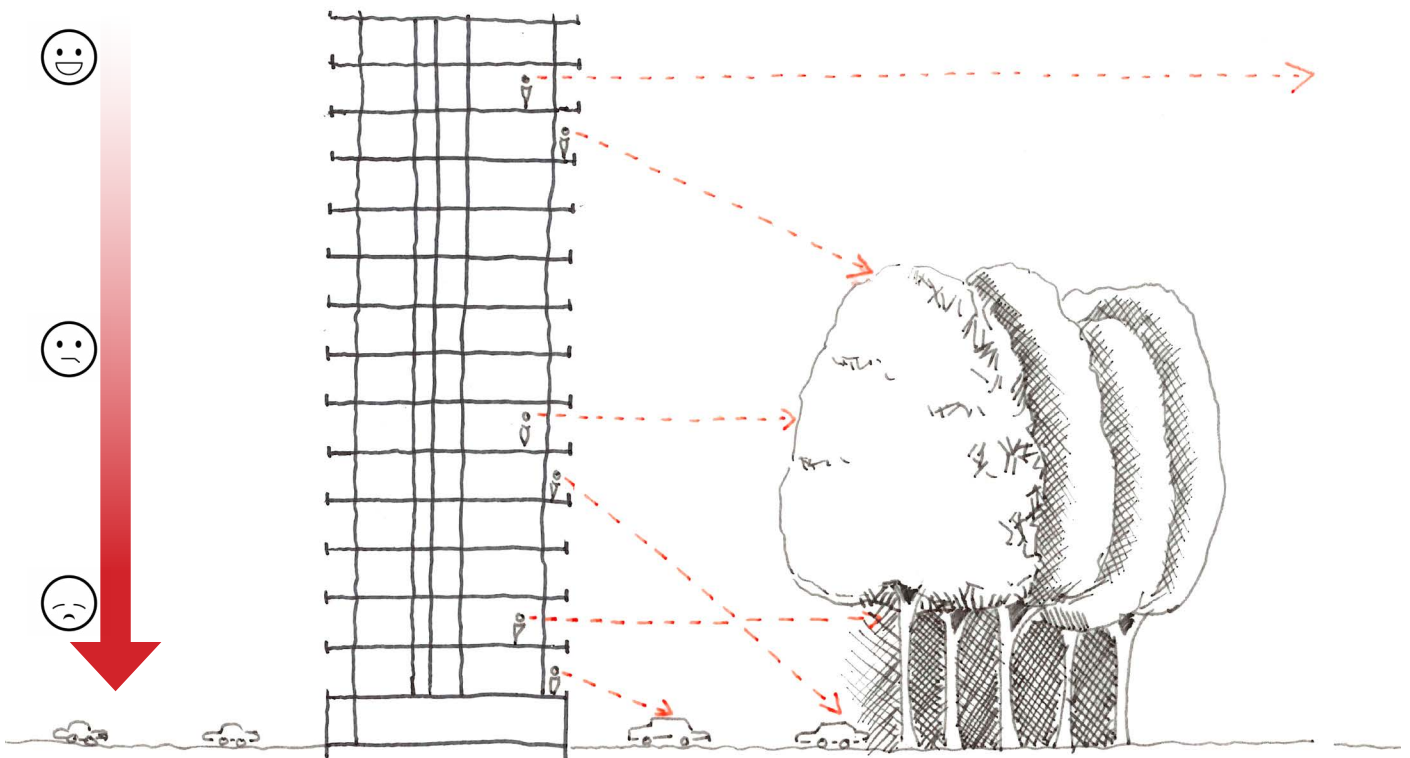


Fig. 11: Degradation of views



Fig. 12: Existing structure, Ommoord (Google)

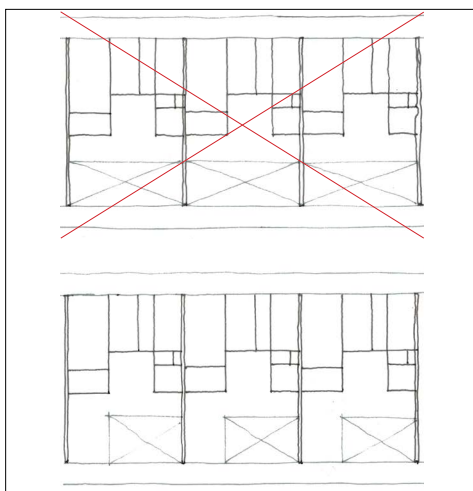
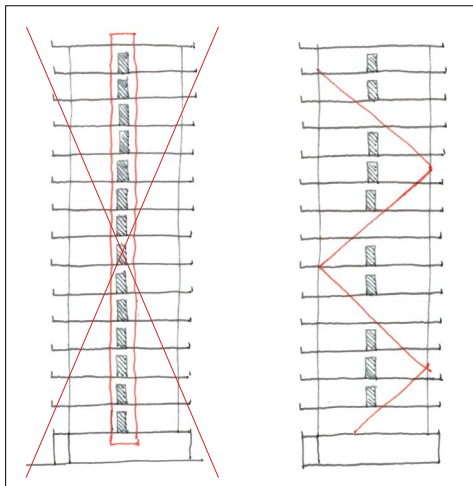


Fig. 13: Structural Intervention

urgency to overcome the housing shortage of that time and the hurriedness, in which this was executed.

Structure

Probably the most useful value of the ERA-buildings in Buitenhof-Noord is in the structure. The structure is still in perfect shape and remains its high use value till today (Fig. 12). The large span of the structure adds a high degree of flexibility to the buildings. Changes, like small openings in the loadbearing walls and the floor slabs, are possible to make, if those changes improve the quality of living for the inhabitants. Those structural changes cannot be done everywhere in the building, to not damage the stability of the structure (Fig. 13) (Dral, 2014).

The structure as most important result of the ERA-system is also from high historical value, since it embodies a part of the Dutch culture, even though it is a non-traditional system. However, in the Netherlands, there are much better examples of ERA-buildings. Due to the bad urban design of Buitenhof-Noord, the historical value has rather low national significance.

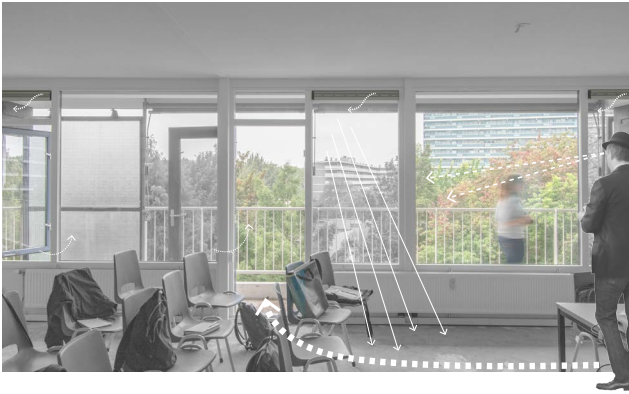


Fig. 14: Use value - skin

Skin

As the structure, the skin has a certain degree of use value. The façade remains its functions of having daylight, the possibility to ventilate and a certain degree of insulation (Fig. 14). But here lays also the potential to improve. The ventilation and the insulation properties can be improved. The large glass surfaces on the side of the balcony is highly valued, due to the huge amount of daylight which enters the apartments, in contrast to that the openness of the façade on the gallery side, is sometimes seen as a problem, due to the lack of privacy in the kitchen and in two of the sleeping rooms (Fig. 15). The façade should therefore be improved, in terms of privacy, insulation and ventilation, while remaining the quality of daylight.

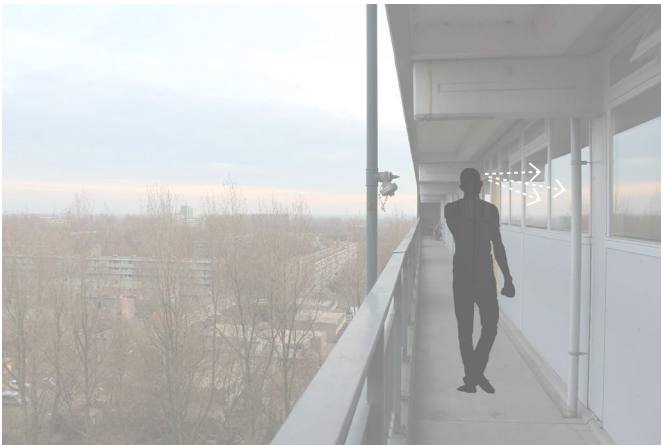


Fig. 15: Privacy problems

Service

The services of the buildings have again just use value. Nevertheless, the services need to be replaced at some points, since they are outdated. Improvement can be done especially in the heating and the ventilation system. The improvement of the services gives also the possibility to hide exposed pipes and to improve the aesthetics of the apartments (Fig 16) and to improve the energy efficiency of the buildings.



Fig. 16: Exposed pipes

Space Plan

The original space plan is from high use value as well. The layout of the apartments around a central hall way functions very well. In Buitenhof-Noord changes were made, to transform the apartments in shared flats for students. Those changes seem to be provisional solutions and lower the clarity of the floorplan. In many single and two persons' household's rooms end up unused due to their small size and proportion (Fig. 17). Changes in the floorplans could be made to meet the needs of the users and contemporary living standards. Besides a bigger variance of different floor plans could suit more different user groups. The highly valuable flexibility of the floorplan makes those changes easy (Figs.

18+19). The inner walls of an apartment are not loadbearing and can be rearranged. This flexibility is just limited by the vertical shaft and the meter cupboard. One apartment itself might be very flexible but ends at the edge of an apartment. This results in one type of apartment which is repeated and does not serve different user groups. The aforementioned changes in the structure would make it possible to serve different user groups and change the social mixture in the neighbourhood.

Stuff & Story

The stuff in the building has also some use value and reuse of some parts is possible.

The ERA-buildings and the urban plan in Buitenhof-Noord are not really valued by the inhabitants, which is especially displayed in the high moving rate, which increases, according to Robert Nottrot, to the bottom of the buildings. There is low chance to disturb the collective memory of people, since many people see it just as temporary living space.

To summarize, the ERA-buildings in Buitenhof-Noord have historical and typological value, since they are built in the ERA-system, they incorporate historical value in the layer of site, since it represents the planning manner of that time. Those values are important in the local context, but have rather low national significance. The dominant value, is the use value.

Conclusion

As shown above, the value of the ERA-buildings in Buitenhof-Noord is mainly use value. On a first sight, it seemed like there is no historical value in the site. Deeper analysis of the case has shown that there is a certain degree of historical value in the structure and the site, since they are representative for the time of construction. Nevertheless, this historical value is not from great national significance, due to the high number of ERA-buildings in the Netherlands which are often better examples, because of a better urban design. One example is Ommoord.

Since there are many other examples of the ERA-buildingsystem in the Netherlands, one could argue, that



Fig. 17: Original floorplans

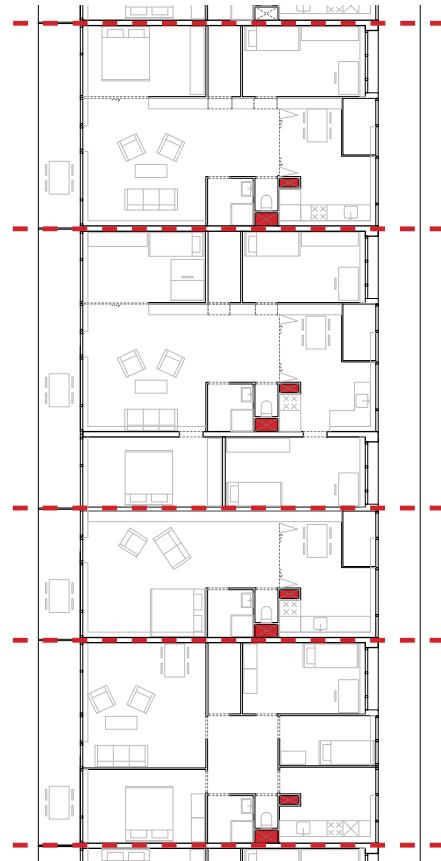


Fig. 18: Possible Interventions

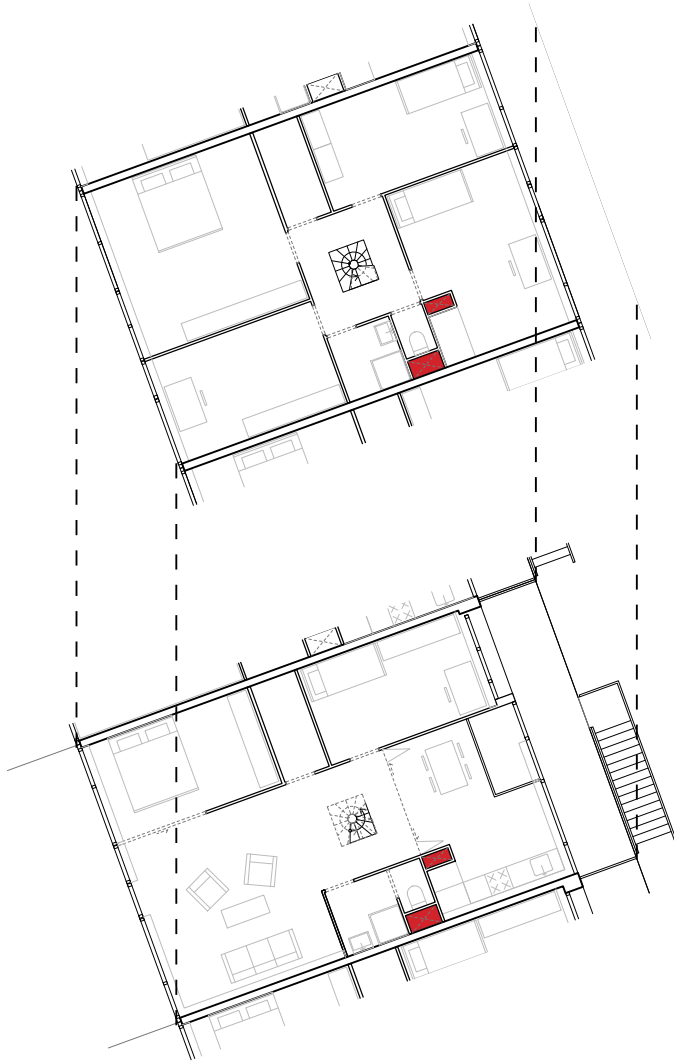


Fig. 19: Possible combination of apartments

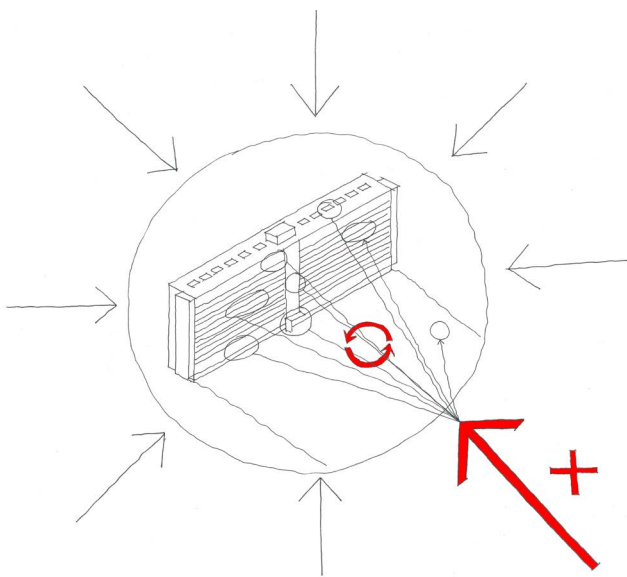


Fig. 20: Re-use and adding value

the buildings should be demolished and replaced, due to their low cultural value and the high number of problems coming along with them. Nevertheless, I state that the buildings should be preserved, due to especially ecological and social reasons. I believe that it is possible to improve the buildings in a way that value is added and the quality of living can be improved.

In the strong use value of the buildings, lays till today the potential of the buildings, since it gives the possibility to renew the buildings in an environmental friendly way. The transformation of buildings is, furthermore, almost always more energy efficient than the demolition and a new construction (Frey, et al., 2011). "Moreover, it can take between 10 and 80 years for a new, energy-efficient building to overcome, through more efficient operations, the negative climate change impacts that were created during the construction process." (Frey, et al., 2011, p. XI) In a comparable case in Portland, where a new construction was compared to a renovation, the new building overcame the negative climate impacts after a 20-year lifetime.

In this it is important to negotiate between a transformation which improves the energy efficiency of the building and a low impact approach which decreases the amount of materials used to protect the quality of the ecosystem (Frey, et al., 2011). The strong use value of the buildings gives the possibility to reuse parts of the building, so that the material input is kept low, the quality of the ecosystem can be protected and energy is saved.

The reuse of the buildings would therefore protect the environment in several ways. The transformation is therefore the preferable option.

The buildings provide, furthermore, 784 households with an affordable living space. If the buildings would be demolished, this area would probably not be rebuilt in such a dense way. In the Randstad, there is already now a shortage of housing and especially in the sector of social housing. It is therefore important to keep those buildings as social housing.

To sum it up, even though there are many problems in and around the buildings and the buildings have low cultural value, it is important to reuse the buildings and to add new value to the buildings, due to social and ecologic reasons. By making use of the use value, which is very strong in the buildings, the buildings can be transformed in an effective way, without greater interventions, which protects the environment and keeps the dwellings affordable.

Appendix

Matrix

The ERA-buildings in Buitenhof-Noord are exemplary for the late reconstruction phase in the Netherlands. Compared with other neighbourhoods, where ERA-buildings were erected, Buitenhof-Noord faces major problems. Analyses have shown that there is more urgency for intervention in Buitenhof-Noord than in Ommoord.

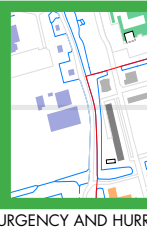
The matrix, which assess the cultural value of Buitenhof-Noord shows a strong use value in almost all the layers. Only the site and the building system show another value, historical value. The colours used in the matrix indicate the strength of the different values. This makes clear that even the historical value, is not from high value, since it can be adjusted.

Remarkable is that there is no value and layer which should not be touched at all. This shows the comparably low value of the buildings and the site.

Remarkable is also, that there is significantly less value, when comparing Buitenhof-Noord to other ERA neighbourhoods, like Ommoord. Here the historical value was much stronger, aesthetic /artistic value was found and the use value was even stronger than in Buitenhof-Noord. Important is also that the layer of story was filled, which is completely missing in Buitenhof-Noord, due to a lack of social rootedness.

- High Cultural Value
- Medium Cultural Value
- Low Cultural Value

	Conflict	Age
Site		
Structure		
Skin		
Services		
Space Plan		
Stuff		
Story		

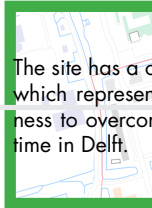


Historical	Artistic/ Aesthetics	Commemorative	Use	Newness	Dilemma
 <p>WILLINGNESS TO OVERCOME HOUSING SHORTAGE</p>		 <p>LOW USE VALUE OF THE SITE</p>			
 <p>CONSTRUCTION SYSTEM</p>		 <p>RE-USE OF THE CONSTRUCTION</p>		 <p>ADJUSTMENTS IN THE STRUCTURE</p>	
		 <p>VENTILATION / DAYLIGHT / INSULATION / VIEWS</p>			
		 <p>HEATING / VENTILATION / WATER</p>			
		 <p>FLEXIBILITY OF THE FLOOR PLAN</p>			 <p>LIMITING FLEXIBILITY</p>
		 <p>RE-USE OF STUFF</p>			

Matrix

Conflict Age

Site



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URGENCY AND HURR

Structure



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Skin

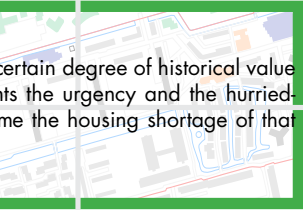
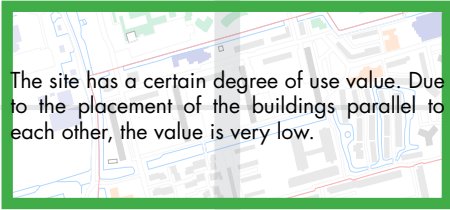
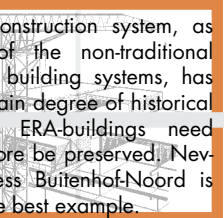
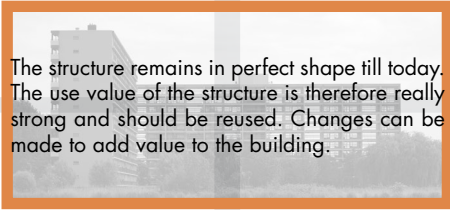
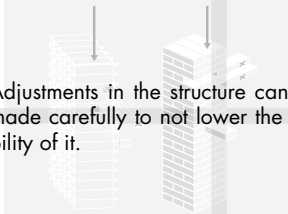

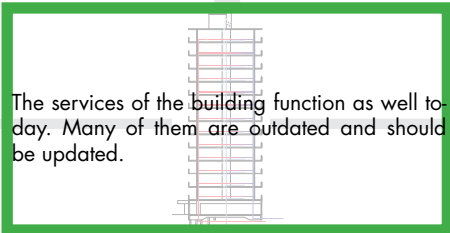
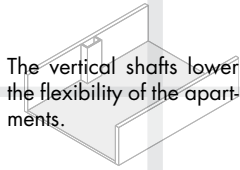
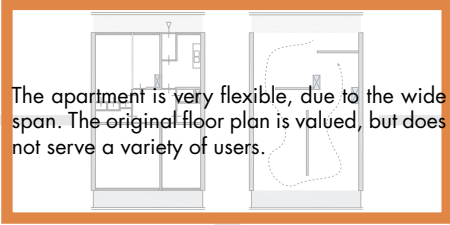
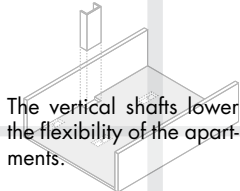

Services

Space Plan

Stuff

Story

- High Cultural Value
- Medium Cultural Value
- Low Cultural Value

Historical	Artistic/ Aesthetics	Commemorative	Use	Newness	Dilemma
 <p>A certain degree of historical value exists due to the urgency and the hurried construction of the housing shortage of that time.</p> <p>WILLINGNESS TO OVERCOME HOUSING SHORTAGE</p>			 <p>The site has a certain degree of use value. Due to the placement of the buildings parallel to each other, the value is very low.</p> <p>LOW USE VALUE OF THE SITE</p>		
 <p>Construction system, as one of the non-traditional building systems, has a certain degree of historical value. ERA-buildings need to be preserved. Nevertheless, Buitenhof-Noord is the best example.</p> <p>CONSTRUCTION SYSTEM</p>			 <p>The structure remains in perfect shape till today. The use value of the structure is therefore really strong and should be reused. Changes can be made to add value to the building.</p> <p>RE-USE OF THE CONSTRUCTION</p>		 <p>Adjustments in the structure can be made carefully to not lower the stability of it.</p> <p>ADJUSTMENTS IN THE STRUCTURE</p>
			 <p>Also the skin has a strong use value and functions. The insulation and ventilation properties should nevertheless be improved.</p> <p>VENTILATION / DAYLIGHT / INSULATION / VIEWS</p>		
			 <p>The services of the building function as well today. Many of them are outdated and should be updated.</p> <p>HEATING / VENTILATION / WATER</p>		 <p>The vertical shafts lower the flexibility of the apartments.</p>
			 <p>The apartment is very flexible, due to the wide span. The original floor plan is valued, but does not serve a variety of users.</p> <p>FLEXIBILITY OF THE FLOOR PLAN</p>		 <p>The vertical shafts lower the flexibility of the apartments.</p> <p>LIMITING FLEXIBILITY</p>
			 <p>The stuff remains also a use value, but can be replaced if necessary.</p> <p>RE-USE OF STUFF</p>		

Bibliographical References

Bert Spaan, W. S. (n.d.). Waag Society. Retrieved April 28, 2017, from <http://code.waag.org/buildings/#51.9964,4.3387,16>

Dral, E. (2014). The ERA of sustainable housing transformation. Delft: TU Delft.

era contour (2016). ERAflats. Presentation.

Frey, P., Dunn, L., Cochran, R., Spataro, K., McLennan, J. F., DiNola, R., . . . Humbert, S. (2011). The Greenest Building: Quantifying the Environmental Value of Building Reuse. Preservation Green Lab.

Nottrot, R. (2016). Interview: Living in an ERA-building in Buitenhof-Noord. Delft.

Priemus, H., & van Elk, R. S. (1971). Niet-traditionele woningbouwmethoden in Nederland. Alphen aan den Rijn: Stichting Bouwresearch.

(n.d.). Rotterdam Ommoord: Een wederopbouwgebied van nationaal belang. Rijksdienst voor het Cultureel Erfgoed.

Vakteam Wijkzaken. (2010). Wijkbarometer 2009 Buitenhof. Delft: Gemeente Delft.

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