



THE IMPORTANCE OF A MONUMENTENWACHT SYSTEM

THE SITUATION
IN NORTH-BRABANT

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01

INTRODUCTION



Introduction

The question 'What is the importance of a Monumentenwacht system (monument watch)' is a very current issue. Do the activities of Monumentenwacht (often abbreviated MW in this report) contribute to better and more cost-effective preservation of our built cultural heritage? In order to answer this question, research has been conducted whereby the focus lay on identifying the consequences for monument preservation of the failure and damage mechanisms that can influence the state of conservation of a monument. Then, the activities of MW were examined in terms of their influence on these consequences. Might the processes have a lesser impact thanks to MW? Besides an analysis of the so-called failure mechanisms, direct consideration was given to the manner of operation of a team of inspectors, and interviews were conducted with representatives of several relevant parties in this field: an owner of a historical monument, an architect, a representative of a quality assurance foundation, a representative of the government, a restoration contractor and an insurance company.

The research into the importance of MW is carried out by TNO and TU Delft at the assignment of Monumentenwacht Noord-Brabant (MW North-Brabant).

This research does not strive to express the importance of Monumentenwacht in exact financial numbers. This would entail looking at the cost of MW consultation, followed by maintenance or intervention based on the advice on the one hand, compared to different degrees of intervention, varying from doing nothing to complete restoration on the other.

Besides the obvious fact that regular (preventive) maintenance is certainly cheaper than facing the consequences of doing nothing (a rolling stone gathers no moss), see [1], such a calculation would exhibit an extremely large margin. It does not seem farfetched to suggest that the costs over 20 to 30 years during which no activity has been done could very well be 10 times higher than those for systematic inspection followed by maintenance at the right moment.

It is to be expected that some defects, if not tended to, can easily lead to an exponential growth of the reparation cost due to consequential damage of other parts of the construction, with a corresponding loss of heritage value.

Therefore, based on the practical problems that MW faces, a so-called Failure Mode and Effect Analysis (FMEA) was carried out.

Several historic monuments that are regularly inspected by MW were visited. An interesting aspect was that the inspected historic monuments included two comparable buildings, whereby in one case the advice of MW was followed, and in the other it was not.

This report includes the following aspects in succession:

- » *Monumentenwacht North-Brabant and a questionnaire amongst inspectors (chapter 2);*
- » *The Failure Mode and Effect Analysis (chapter 3);*
- » *Student research (chapter 4);*
- » *Accompanying the MW inspectors (chapter 5);*
- » *Interviews with the 'field' (chapter 6);*
- » *Conclusions (chapter 7).*

02

MONUMENTENWACHT
NORTH-BRABANT



Figure 2.1 Tower of the Oude Kerk, Delft: tilt, example of a situation that already arose during the time of construction

Monumentenwacht North-Brabant

MW North-Brabant is a so-called ANBI (Algemeen Nut Beogende Instelling, a public benefit organisation), that also has the status of DAEB (Dienst van Algemeen Economisch Belang, services of general economic interest).

MW North-Brabant was founded in 1975 and has since been increasingly active in the field of inspection of the state of preservation of Brabant monuments and of giving advice to monument owners concerning the need for maintenance. Thus, MW offers an important contribution to preventive conservation of monuments and historic buildings. MW North-Brabant also plays a pioneering role in transferring meanwhile proven working methods to other countries.¹ This leads to participation in international research projects such as the EU 6th framework programme project Sprecomah [2] and the JPI project CHANGES [3], from which in turn MW North-Brabant can profit from the newest insights and strategies in the field of Planned Preventive Conservation [1].

2.1 Questionnaire amongst inspectors

At the beginning of the research a group of inspectors from MW North-Brabant were presented with a number of questions. The questions were directed at building-technical problems that they face during their day-to-day inspection work:

- » *Which problems occur the most frequently;*
- » *In your opinion, which problems are the most:*
 - » *important;*
 - » *dangerous;*
 - » *difficult to solve.*

Appendix 1 provides a summarised overview of the result of this round of questions. The table orders the problems as follows:

1. *Most frequently*
2. *Most dangerous*
3. *Most important*
4. *Most difficult to solve*

Of course the question is what the exact meaning of terms such as 'important', 'dangerous' or 'difficult' is. The answers given showed that the interpretations of comparable situations vary. But they did show a tendency pointing at problems the inspectors consider the most relevant in their daily practice. These are divided into four categories, based on urgency. It is obvious that a loose keystone in a vault or an almost loose ledge that could fall down at the slightest disturbance or vibration are problems that can have immediate consequences on the safety of the users of the monument in question, and thus are of utmost urgency (see chapter 3), while a long-existing foundation problem in a century-old building, shown by deformation and being out of plumb, should perhaps be monitored continuously but does not require immediate action (see fig. 2.1).

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1 In the meantime, a Monumentwacht-like organisation is active or being set up in other EU countries. In many cases, MW North-Brabant was involved in the setup.

The four different categories of problems are:

- » *Safety-related problems such as loose pieces or elements of natural stone, loose masonry (immediate intervention necessary);*
- » *Leakage problems, moisture (intervention necessary in the medium-long term);*
- » *Problems with masonry joints (intervention necessary in the medium-long term);*
- » *(Long existing) foundation problems (intervention necessary in the long term).*

2.2 Brabant Monuments Monitor - 2014

MW North-Brabant, together with the other provincial MW agencies in the Netherlands, has monitored the condition of the national monuments since 2009. This heritage monitor includes the general maintenance condition as well as the shells of the buildings.

In 2014 MW North-Brabant went even further by setting up a separate monitoring for Brabant, which included not only the 1708 national, listed monuments, but also 886 municipal and 372 iconic monuments [4]. 19 different building parts were investigated for each monument (29 in case of windmills). Of all these monuments, 36% proved to be in good to very good condition, 46% in reasonable condition; thus 82% can be judged as in reasonable to very good condition, and 18% as poor or (very) bad.

The (Brabant) Monument Monitor can be seen as an important instrument for policy support, which will gain in importance due to the possibility of future statistical analyses.

03

FAILURE MODE & EFFECT ANALYSIS



Figure 3.1.1 Cracked capital, which might lead to a dangerous situation



Figure 3.1.2 Loose parts of masonry, posing potential danger for passers-by

Failure Mode & Effect Analysis (FMEA)

In order to offer better insight into various factors, a so-called Failure Mode and Effect Analysis (FMEA) was carried out for a number of examples within the previously mentioned categories, based on the defects identified by MW. This chapter deals with the basic ideas of the analysis by means of examples; further elaboration can be found in appendix 2.

‘Failure Mode and Effect Analysis’ stands for ‘analysis of failure modes and consequences thereof’. The method is derived from analysing the consequences of possible shortcomings (‘failures’) of a product or a process: which (significant) consequences result from failure. Such analysis makes it possible to take targeted measures to prevent failure or to reduce the effect of damage mechanisms. The analysis is conducted on the basis of so-called ‘expert opinions’. We have applied this method here to defects of monumental buildings and striven to map out the possible consequences of initially small defects.

With help of this method the potential consequential damage of an initially small problem becomes clear, as well as the effort needed to fix the consequential damage at a later date.

This is illustrated with photographic material, clearly demonstrating the problems and possible effects and consequences.

3.1 Safety (category: acute problem)

In this context we need to think of loose natural stone elements (fig. 3.1.1, 3.1.2, 3.1.3), loose roof tiles, but also loose parts of masonry, concrete and the like, that in case of falling might endanger the occupants of the building or the public. And finally, structural problems such as related to the anchoring of rafters to walls belong to this category.

Problems of the load-bearing structure can also belong to this category. At the same time, there does not always have to be a structural problem: there are damage types that result from a material-related problem and that manifest themselves in the same way as a struc-



Figure 3.1.3 Loose part of a tuff stone cornice, in case the façade faces a public path there is acute danger for passers-by



Figure 3.1.4 Comparable crack patterns. In the left case (detail of a tower in Italy) it was a structural problem that led to the tower collapsing. In the right case, laboratory investigations showed that the cracks resulted from a swelling reaction in the bedding mortar, used for the masonry behind the visible brick layers: a nasty problem, how-ever without the risk of collapse



Figure 3.2.1 Moisture led to wood rot and loss of material of the console

tural problem: see fig. 3.1.4. In such cases better be safe than sorry, meaning we have to consider acute danger. Another area where the role of MW is of great importance.

3.2 Leakage and other moisture related problems (category: medium to long-term problem)

In general, most leakage and moisture related problems can be counted to the category of medium to long-term problems. They include problems with the paintwork (fig. 3.2.1), problems with joints of roofs and gutter, problems with joints at roof apertures, leaking roof gutters and roof covering, structurally weak roof construction caused by leakage and wood rot, wrong detailing at the connection of roof and gutter, wood moisture, and moisture and salt problems (fig. 3.2.3).

The large number of problems in this category mentioned by the inspectors shows that leakage and other moisture related problems are extremely relevant, certainly in the opinions of the inspectors themselves.

Figures 3.2.1 through 3.2.4 illustrate examples of this type of problem related to timber and brickwork. Sometimes a quickly executed intervention prevents a lot of damage.

Too late pointing out the problem or intervening can in some cases of timber constructions result in a total loss after only one or two years.



Figure 3.2.2 Infestation of the wooden wall baluster through dry rot fungus, as a result of long-term exposure of the wood to water penetration. The consequence is that in this case the entire wood construction had to be removed ('worst case')



Figure 3.2.3 Moisture and salt problem, resulting in damage to pointing mortar and bricks



Figure 3.2.4 Dry rot fungus, spread between the plasterwork and the underlying masonry



Figure 3.3.1 Alveolisation

In case of dry rot fungus, by the way, the necessary intervention must usually be much more comprehensive than dealing with the affected part alone.

It is obvious that the consequences are significant, often resulting in high cost, but also that they can be limited to a great extent by early signalling and intervention.

3.3 Problems with brickwork joints and pointing (category: medium to long-term problem)

Examples of these types of problems are sanding and push out of pointing, incorrect repair of brickwork joints, defects of the brickwork joints. Considering the fact that the inspectors have listed these problems as most frequent, most dangerous, most important, and most difficult to solve, we are dealing with an extremely relevant problem of heritage preservation practice.

Figures 3.3.1 – 3.3.4. The problems with brickwork joints (and bedding mortar), with various underlying causes and different consequences, c. q. different need for intervention.

Wrong choices concerning the composition and execution of joint repair (re-pointing) can also have significant consequences such as:

- » *Delayed drying of the historic masonry and eventual frost damage of the bedding mortar. Hereby the repaired joints are pushed out, the bedding mortar crumbles, and the brickwork can bulge. Or:*
- » *Too quick degradation of the stone whereby the joint itself remains intact; this is a case of incompatible pointing (composition), see fig. 3.3.5.*

3.4 Foundations problems (category: long-term problem)

Here, we are talking about structural problems of the foundations and

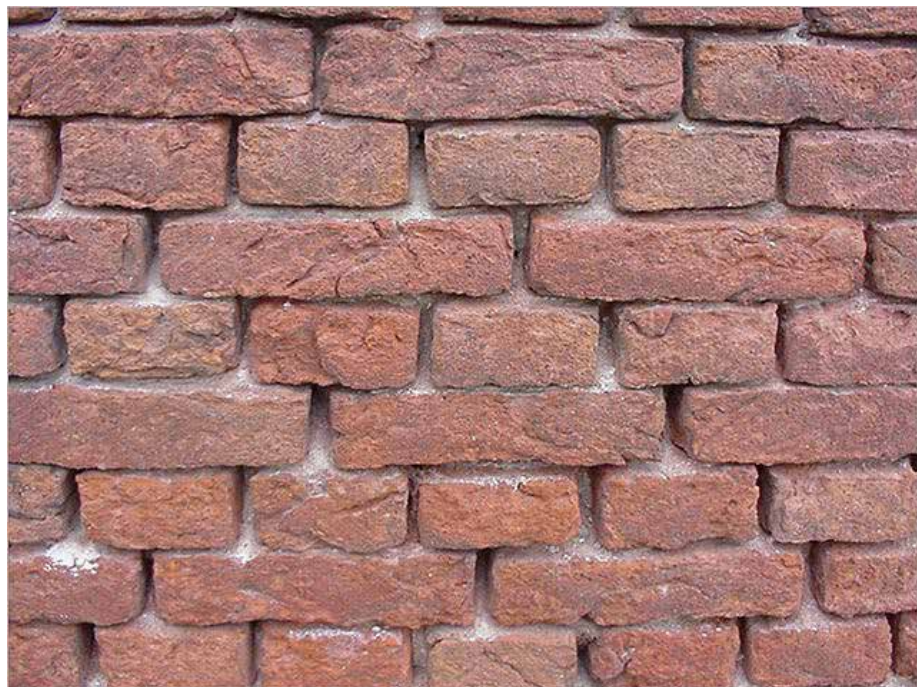


Figure 3.3.2 Sanding



Figure 3.3.3 Pointing being pushed out



Figure 3.3.4 Crumbling and complete disintegration of the bedding mortar



Figure 3.3.5 Incompatible re-pointing, resulting in accelerated damage to the brick

defects of the foundations, c. q. occurrence of subsidence.

With these types of problems, it is usually a question of cracks and deformation. The value of MW hereby lies in the early pointing out and then monitoring of the problem. But it can also be about pointing out potentially dangerous situations (fig. 3.4.2), that require closer inspection since they might well lead to the situations described under 3.1.

On closer examination



Figure 3.4.1 Crack formation in masonry and monitoring of masonry. It is important to determine whether it is a foundation related or other structural problem and also whether settlement still occurs



Figure 3.4.2 Crack forming in a church column: is this a long-term problem or a problem that requires immediate intervention. The inscription in the nearest column is food for thought: "Anno 1552 den 24 may storte deese pijler met het wulffsel der needer des morgens ter negen uren" (On 24 May 1552, at nine o'clock in the morning this column collapsed).

04

ON CLOSER
EXAMINATION



Figure 4.1.1 a/b Overdue maintenance of the chapel identified by the inspection of MW: paintwork in bad condition, wood rot, missing slate tiles



Figure 4.1.2 a The sculpture clearly shows a crack

In order to gain better insight into the effect of the inspections by MW, the status of preservation of several more or less comparable buildings was evaluated. It was of particular interest to us that situations were compared for which the advice of MW had been used respectively had not been followed.

This part of the research was carried out together with MSc students² at TU Delft, Faculty of Architecture, section Heritage and Architecture, who evaluated the state of conservation of these monuments, and also compared their reports with those of MW.

4.1 Former chapel, Tilburg

This chapel is from 1925. MW has found many (serious) damage types; the most important being:

Moisture related problems. These are defects that can lead to further moisture related problems such as missing parts of the slate roof covering, overdue paintwork on the roof gutter construction and possibly wood rot.

Possible foundation related problems: cracking in different facades.

Cracking as a possible consequence of rusting iron in masonry walls.

The owner has indeed made a start by tackling the woodwork of the crossing tower but many more damages are awaiting intervention, posing the risk of further degradation.

Hereafter (see fig. 4.1.2), parts of the issues of this chapel are further elaborated.

Since there is a school right beneath the façade shown in fig. 4.1.2 a/c, a dangerous situation exists that justifies immediate intervention.

Also the woodwork of the roof gutter is in bad condition (fig. 4.1.2.a), requiring maintenance and possible partial replacement.

4.2 Former school, Tilburg

This building (fig. 4.4.1) dates from the same time as the above men-

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2 MSc stands for Master of Science



Figure 4.1.2b The photo shows a buttress with a piece of masonry that came loose, making visible a rusting anchor. Figure 4.1.2c The photo shows that here as well a piece of masonry is getting loose and being pushed out. Both cases show a potentially dangerous situation

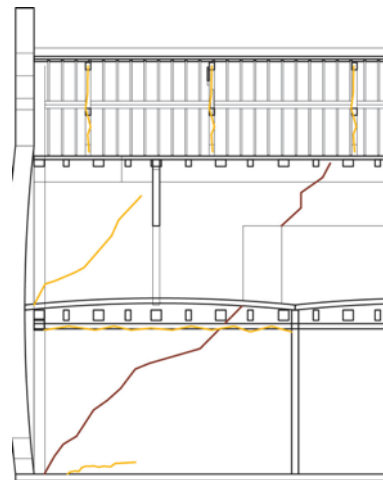
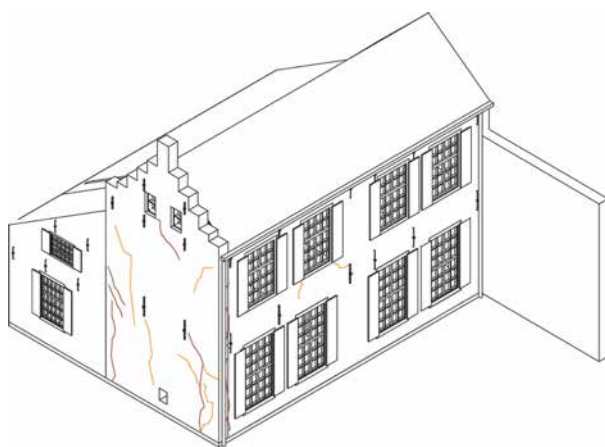


Figure 4.3.1 Old and new crack patterns in an end façade (l) and cracks in a load-bearing inner wall (r); (drawings from a student report, June 2015 [5])

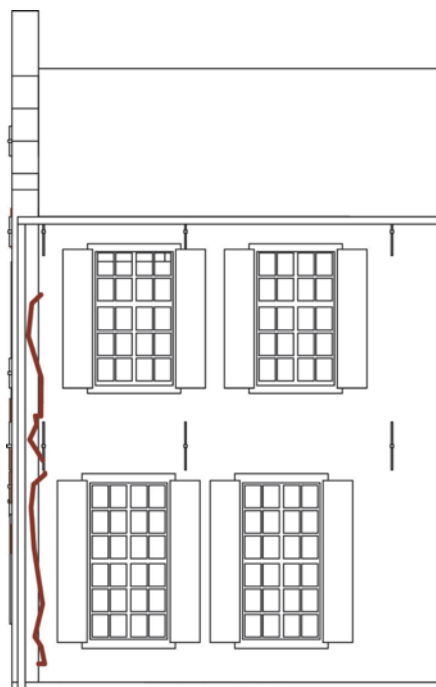


Figure 4.3.2 Long crack at the connection of a side and an end facade (drawing from a student report, June 2015) [5]

tioned chapel (beginning of the 20th century).

Here as well, various, particularly moisture related defects have been identified. In this case measures have been taken such as replacing the slate roof cover, re-pointing the façade and executing paintwork. Therefore, this building currently is in an excellent state of conservation, shown by a follow-up inspection by MW and the student research as well.

4.3 Country house in Waalwijk

This country house is a heritage monument built in several phases starting in the 15th century. The different building phases and the used materials and the additions to the construction contribute to the complexity of the problem and of the maintenance.

The main problems relate to the construction: crack patterns and walls being out of plumb as well as moisture (mainly leakages). See fig. 4.3.1 through 4.3.3.

Particularly remarkable are the following aspects:

The fact that MW gains access to places that are usually difficult to get to. It is thus possible to determine the cause of certain problems.

MW investigates the entire building and makes a general evaluation of the state of conservation.

MW does not only pay attention to the construction but also to important aspects such as electrical system and safety.

4.4 Discussion

Six different groups of MSc students compared the reports by MW and their own reports. The latter were made, using the expert system MDDS (Monument-Damage-Diagnostic-System) within the framework



Figure 4.3.3 Moisture-related problem on the inside of the façade, reflected by algae growth. The problem lies at the location of the previously mentioned situation (continuous crack and problem with rainwater drainage) shown in Figure 4.3.2 (l). The sometimes high air humidity leads to condensation on the glazing (r)



Figure 4.4.1 School in Tilburg. Maintenance and intervention carried out, based on the inspection and advice by MW; only the old name boards with inscriptions are missing (see arrows)

of the TU exercise 'AR0015 - Building Conservation Assessment'. The findings are quoted here and then commented. Hereby it is important to note that the students only investigated some of the problems. Thus, their findings cannot be used for general conclusions.

There are similarities in and differences between the inspections of the MSc students and those of the MW inspectors. However, the structure of the reports, the categorisation into different building parts and the identification of problem areas are done in a similar manner.

MW describes different materials in different chapters.

Similarities

Just like with MDDS, the state of conservation of the building parts or rather the severity of the damage to building parts and materials is described: MW uses a 4-point scale (good, reasonable, poor and bad) whereas MDDS uses a 5-point scale (minor - minor to moderate - moderate - moderate to severe - severe), which is mainly directed at the severity of the damage.

Differences

In their reports, students use more photos and drawings than is customary in the MW reports. The MW reports usually only include a roof plan and no floor plan. In this regard the limitation is a conscious decision, which has to do with keeping the cost for the monument owner to a minimum.

It is noticeable that problems with roofs, roof tiles, rain gutters and similar take up a significant portion of the MW reports.

Crack patterns and possible structural problems are often paid less attention to.

The MW reports could gain in value with a more integral approach whereby different damage types are put in relation with each other. This would help owners to be better informed of the problems and could even increase their involvement with the monument.

Terminology: MW uses damage descriptions that are not really standard terminology. By the way, this statement is particularly true for the MW reports used in this chapter; the new system COMEET³, currently introduced by MW North-Brabant, meets this statement.

MW only deals with the technical state of conservation and technical defects, and does not reflect on building historical aspects, value and possibly connected subjects: an example is the restored school in Tilburg, where the original board indicating the destination of the building on the façade, being an important reminder of the historic value of the building (fig. 4.4.1), was removed.

Accompanying the MW

On March 9, 2015 two of the authors of this report accompanied two inspectors to investigate a church in Etten Leur.

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3 Condition Measurement Monuments, developed by MW North -Brabant and Limburg

05

ACCOMPANYING
THE MW



Figure 5.1 Pushed out pointing. Annoying, but it is a problem that can be tackled in the medium-long term



Figure 5.2a/b A more urgent problem: several tiles show frost damage, causing leakage, with consequential danger for the underlying timber construction

The investigation identified several defects that, in part, could be solved immediately. In addition, the locations were examined where severe damages had been signalled in the past as they had caused great damage: they were found in order. A global visual inspection still indicated a number of damage types. Figures 5.1 through 5.3 show some of them and the manner in which they were found, and also how the most urgent defects were solved.

That this sort of observation does not stand by itself and furthermore comprises a broad scale of problems is illustrated by fig. 5.4 a/b/c. MW found a moisture related problem at the joint between a roof and a façade. During the inspection, lead was bent just a little so that rainwater running from the roof was fed into the roof gutter and no longer ran across the façade. A follow-up inspection two years later (fig. 5.4c) showed that the solution worked and that even the plant growth on the façade had disappeared.

Interviews

The goal of the interviews was to gain better insight into how the historic monument world perceives MW. Interviews were conducted with the foundation ERM (Erkende Restauratiekwaliteit Monumentenzorg,



*Figure 5.3a/b The consequential damage: the timber construction (see arrows) has become wet. Fortunately, the problem was approached immediately: tiles were replaced
Figure 5.4 a/b/c Problem as encountered and improved situation at the connection be-*



tween roof and façade (a. As encountered; b. Improved; c. Condition two years later)

06

INTERVIEWS



foundation for acknowledged restoration quality in monument care), a restoration architect, an insurance company, a restoration contractor, a representative of the Cultural Heritage Agency and a monument owner.

The interviews are not restricted to people coming from Brabant or working there. A conscious decision was made to generate a broader perspective, to be used to link back to the situation in North-Brabant.

The following 10 questions were formulated as the basis for the interviews:

1. *How do you know of MW?*
2. *In your opinion, which activities does MW engage in?*
3. *Which of the activities do you consider: necessary-useful-un-necessary*
4. *Do MW's activities overlap with those of other organisations you know of?*
5. *What is the relationship architects – MW*
6. *In your opinion, what should / could the relationship of MW and quality monument care systems be?*
7. *In your opinion, what is the added value that MW offers?*
8. *Do the repeated inspections by MW (monitoring) offer added value?*
9. *How could MW's quality be improved?*
10. *Which other tasks could / should MW carry out?*

The complete interview text with answers is added in appendix 3. This chapter only deals with the central question: "In your opinion, what is the added value that MW offers?"

- » *The added value lies in the current profile of MW (support for the owner, independent, non-commercial, maybe even idealistic), which is no threat to architects and consultants, and shows a clear trust relationship with the monument owner. Therefore it is about a niche with added value (ERM).*
- » *It is exactly the signalling function and the possibility of quick intervention. The experience of persons who know the building well or rather understand it. Thus, the visual perception based on adequate insight is central. The step toward interpretation, more in-depth investigation and advice, however, should not be made by MW (restoration architect).*
- » *Added value consists, amongst other things, of the regularity (repeated visits), low costs and the fact that MW is an accepted institution that is also independent (insurance company).*
- » *It is mostly the monitoring, repeated assessment of the state of maintenance, which can point out potential problems early. In addition, the fact that inspections are also carried out in difficult to access areas. The current level of thoroughness of the reports suffices. The added value is great but it is also mandatory to keep the role of MW clear in order to maintain this added value (restoration contractor).*
- » *The added value is mainly the early signalling of (small) problems and defects that can lead to serious consequences (representative Cultural Heritage Agency).*
- » *In my opinion it is mostly the prevention of unnecessary expenses and maintenance (monument owner).*

These answers indicate that MW is highly appreciated; it fulfils an essential role in a niche within the monument world. The interviewees predominantly see early signalling of initially maybe small defects, the regularly repeated inspections, the independence and the low cost as the most important added value.

But the answers also express warnings; e.g. that MW's role needs to remain transparent, and that it should not carry out activities that are already done by others (monument consultants, architects).

Some of the further answers received are highlighted hereafter because we deem them interesting, e.g. within the context of quality improvement and increasing the usefulness of MW:

- » *The portfolio of tasks could be expanded by finding a similar niche in other areas, for example in the field of interiors or green monuments (ERM).*
- » *Tasks in the field of interiors, particularly the technical condition of interior finishing such as wall and ceiling paintings and floors are deemed of great interest (representative Cultural Heritage Agency).*
- » *The effect, i.e. the usefulness of MW could be increased by making available a database of damage patterns, which MW should have at their disposal (restoration architect).*
- » *In the context within which we use the MW reports we find unambiguous terminology very important (insurance company).*
- » *The MW reports are alerting, competent and principally clear for restoration contractors and restoration architects, and sufficiently fulfil quality requirements. It seems that more concrete inspection and reporting of the performance of individual building parts, for example based on NEN 2767, would go too far. The question is whether such a standard does the special status of monuments justice. There is the risk that the condition in its entirety is judged as adequate while at the same time with regard to cultural historic values, certain substantial parts of bad condition could end up between a rock and a hard place (restoration contractor).*
- » *There is room for improvement by better recognising acutely dangerous situations and according warning: e.g. not only pointing out that there are rust spots in a plaster ceiling but also that the metal mounting is practically rusted through and the ceiling could fall down (Cultural Heritage Agency).*
- » *The database generated by all individual records by MW should be made available to not only get better insight into the state of maintenance of Dutch monuments (this is done on provincial level; e.g. by Monuments Monitor) but also that it can be used to get an impression of the performance of executing companies, for example. If this is done with the correct perspective, i.e. under consideration of limitations and starting points determined by the monument owner, it would offer a good impression of the quality of the executing parties (restoration contractor).*
- » *Actually MW should work more on publicity so that more people would realise what positive things the MW activities deliver. A marketing film, for example by Omroep Brabant (local news, television and radio station) could make more people and certainly monument owners consider supporting the work of MW (monument owner).*

Conclusions and recommendations: the importance of MW

The goal of the research was to gain insight into the importance of the activities of MW, particularly those of MW North-Brabant.

07

CONCLUSIONS & RECOMMENDATIONS



It was mainly focused on technical defects of historic buildings and the possible consequences of not intervening.

The most relevant problems seen in the daily work of MW are divided into four categories:

- » *problems with an immediate safety risk, such as loose pieces or elements of natural stone, loose parts of brickwork (acute significance);*
- » *problems with leakages, moisture (medium-term significance);*
- » *problems with brickwork joints (medium-term significance);*
- » *problems with foundations (long-term significance).*

An analysis was carried out that clearly proved potentially severe consequences of initially relatively small defects. Therefore, one important factor of the added value that MW can provide is in fact the early assessment of such defects, saving maintenance and restoration cost and, at the same time, keeping our heritage in better condition.

In some cases, the lack of early identification and intervention can lead to total loss of the part in question in only one or two years.

Monitoring such as MW carries out by means of regular visual inspections fulfils an important role within the context of preventive conservation of the built heritage.

Inspections, student projects and interviews with involved parties from the monument world, supplemented by data from the Brabant Monuments Monitor, created a clear picture:

- » *Apart from the fact that MW plays an important role with respect to preventing unnecessary maintenance and unnecessary intervention by early signalling of potential problems, there is another role, perhaps even more important, that does not always receive enough attention: MW works in the field of historic buildings, which by nature do not or do no longer meet today's building regulations or structural requirements. MW fulfils an extraordinarily important role in terms of timely indication of dangerous defects; defects that due to their seriousness combined with the location of occurrence pose great safety risks for users and the public.*

Other aspects defining the added value:

- » *Verifying the quality of carried out interventions;*
- » *the fact that MW accesses locations (without scaffolding) that others do not, and thus is able to see issues that are invisible from the ground.*

Members of the monument world recognise the importance and added value of MW; mostly thanks to the assessment of initially perhaps small problems that can, however, provoke high consequential cost and to repeated inspections, which can detect badly carried out interventions or keep an eye on the progress of a damage process. And due to the independence and the low cost of its work, making it more accessible for private owners as well.

MW North-Brabant also fulfils a pioneering role with respect to carrying the cultural heritage preservation attitude into other countries. Having helped to set up MW organisations in foreign countries has brought international contacts and reputation. This also leads to a participation in international research projects, from which MW North-Brabant in turn can profit in the form of newest insights and strategies in the field of preventive conservation [1].

7.1 In summary

For the monument owner and manager as well as for insurance companies and policy makers the importance of Monumentenwacht lies in the area of preventive conservation, with which the entire stock of historic buildings can be kept in a better condition and the ultimate cost of monument care can be kept low.

Furthermore, owners and managers see usefulness and importance in i) controlling cost by periodic monitoring and (preventive) maintenance to prevent or control the cost for radical intervention, and explicitly in ii) the field of safety, for the owner as well as the public.

The Brabant Monuments Monitor, published annually since 2014 to present the condition of historical monuments on a provincial level, shows that a growing number of monuments is in good condition (well maintained) [4].

Thus, Monumentenwacht is of great importance for monument owners and managers as well as policy makers.

Finally, the advice of MW leads to regular maintenance work, thus it generates jobs.

7.2 Dilemmas and possibilities around MW

There are dilemmas around the work of MW and around a potential expansion of its work portfolio. Most interviewees, based on experiences in other provinces warn against an expansion of the tasks if it should consist of consultancy, more profound research, cost budgeting, execution accompaniment and the like: independence might be compromised and the cost for services might increase

However, the portfolio could, according to various interviewees, be expanded by identifying a similar niche in other areas; for example, in the field of interiors (technical condition of wall and ceiling paintings, for example) or in the field of green monuments, the cultural landscape or archaeology.

In this context it should be noted that MW North-Brabant avoids carrying out activities such as those named under the dilemmas and already performs the suggested new activities.

7.3 Recommendations

MW often points out many isolated defects. The recommendation is to strive for a more integral approach, to improve an understanding of the relationship between individual damage patterns.

Offering several clear hypotheses with regards to the possible causes of damages might make the owner more aware of the fact that, in some cases, simple repair without further investigation (by an independent party) can lead to a new problem; it is to be expected that this would enable the owner to better anticipate possible problems.

Terminology: MW describes the damage found; it is recommended to strive for a standard terminology. This issue is already addressed by the new COMEET systematic, developed by MW North-Brabant and MW Limburg.

The impact MW makes, could be increased by making accessible the database of damage patterns that MW has available.

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Appendix 1 – Questionnaire inspectors

The group of inspectors of MW North-Brabant was presented with a number of questions. The questions were directed at building technical problems that they face during the day-to-day inspection work.

Questions to WM ‘in your opinion, what is’:

09

APPENDICES



- » *the most frequent problem / damage*
- » *the most dangerous problem / damage*
- » *the most important problem / damage*
- » *and, added (by MW itself): the most difficult to solve problem*

A maximum of 3 answers per question was allowed for each individual respondent.

The answers are ordered in the following table.

TYPE OF DEFECT (PRIMARY)
1. Most frequent
1.1 Paintwork (window frames, glass frames)
1.2 Connections roof & roof gutter
1.3 Connection roof apertures
1.4 Clogged gutter, rainwater drainage
1.5 Joints
2. Most dangerous
2.1 Leakage gutter, roof covering
2.2 Structural, foundations
2.3 Structural, anchoring rafter – wall
2.4 Incorrect repair joint grout (silting)
2.5 Loose natural stone elements
2.6 Broken roof tile
3. Most important
3.1 Structural, weakened roof construction (leakage, wood rot)
3.2 Incorrect connection roof, gutter
3.3 Defective joints in brickwork
3.4 Ignorance of parties
4. Most difficult, most complex
4.1 Wood moisture
4.2 Moisture and salt related problems
4.3 2-sided finished gutter or roof
4.4 Defective foundations / subsidence
4.5 Defective joints in brickwork
4.6 Defective installations

Appendix 2 – FMEA analyses

The method Failure Mode and Effect Analysis is derived from the analysis of the consequences of possible failure of a product or a process: which (significant) effects does the failure have. This analysis makes it possible to take measures to prevent such failures in the future or to reduce the effect of such failures. The analysis is carried out on the basis of so-called 'expert opinions'. The method is applied to defects in historic buildings, and the objective is to map the poten-

tial consequences of initially small problems.

This method offers insight into the consequential damage that a problem might cause, which has initially been considered minor, and what efforts it will take to remedy the consequential damage at a later date. This is illustrated with photo material, clearly showing the problems and the possible effects and consequences.

The following table is ordered in this way:

- » *problems related to safety (acute)*
- » *problems related to moisture / leakage (medium-term)*
- » *problems with defects of brickwork joints (medium-term)*
- » *problems with foundations (long-term)*

Accompanying text and photos illustrate how an initially small problem can further develop, if no adequate measures are taken.

FMEA – Safety

Loose stone parts and structural problems

Effect

- » *First of all, this comprises:*
 - » *certain types of cracks in architectural elements such as cornices, ornaments, sculptures*
 - » *layering (spalling) in masonry*










- » *certain crack patterns in mainly high, slender masonry constructions made of brickwork or natural stone*
- » *the consequence can be loose or falling parts of masonry or natural stone*
- » *and in serious cases personal injury to passers-by*
- » *in the worst case it results in entire constructions collapsing, such as has happened during the past decades in other countries (church tower in Pavia (It), church in Noto (It), church tower in Meldert / Lummen (Be)).*

'Overall' related effects can be:

- » *safety risk for persons*
- » *loss of material*
- » *loss of heritage value*
- » *loss of the entire construction or even of (part of) the heritage monument*
- » *high cost for repair, replacement*

Loose / falling stone parts

SAFETY

			
Cornices and similar	Natural stone sculptures and ornaments	layering and spalling of masonry	Loose elements at great height
Rusting iron			
			
Cracks	Pushed out parts of masonry	Loss of adhesion/falling parts of masonry	In all cases danger of personal injury to passers-by
Forming of cracks (swelling compounds)			
			
Old factory chimney	Forming of cracks possibly due to formation of swelling compounds in the mortar		Danger to surrounding buildings and passers-by

FMEA – leakage and other moisture related problems

Effect in the case of timber:










- » *wood rot (local repair, replacement necessary): can occur as a result of high wood moisture content; wood rot will occur if the wood moisture content exceeds approximately 21% for a longer period of time; it is a form of fungus infestation that might lead to a complete loss of integrity after one to two years, and which might require replacing the wooden part in question. This is true for most fungi causing white rot and brown rot.*
- » *in the worst case, dry rot fungus (serpula lacrymans) can be the cause of the infestation. This type of rot can infest an entire floor construction within approximately two years, whereby the fungus gets its moisture from elsewhere (for example a leaking roof gutter), without the moisture problem originating from the floor construction itself. Thus, in such cases it is necessary to carry out further investigation into the source(s) of the moisture, (chemical) fungus control measures, followed by large-scale replacement of infested wood and replacement of plasterwork.*

'Overall' related effects of all of the defects mentioned (related to leakage / moisture) are:

- » *loss of material*
- » *loss of heritage value*
- » *loss of comfort / health risk*
- » *inconvenience*
- » *increased cost for control, repair, replacement*

MOISTURE AND LEAKAGE

Effect on timber

Specification	Effect	Effect	Effect
			
Leakage roof gutter followed by wood rot in wood panelling			
			
Cracked roof tiles	Underlying purlin showing considerable rot		
			
Overlap of slate tiles was too small (here slate tiles were removed)	Consequences of moist roof deck and wall plate in the inside		
			
Overdue maintenance in terms of paintwork, roof covering, roof gutters and rain water drainage	Wood rot	Wood rot affecting structural parts	Wood rot, paired with dry rot infestation. Effect: (partial) removal even of non- infested wood, often (chemical) fungus control measures, removal and replacement of plaster-work. Moisture controlling measures are necessary

FMEA – leakages and other moisture related problems

Effect on interior, i.e. finishing

- » *moist zones (leading to inconvenience, control mandatory)*
- » *fungus growth (leading to inconvenience, possibly health issues, control mandatory)*
- » *salt crystallisation*
 - » *salt efflorescence*
 - » *hygroscopic moisture zones (control, possibly desalination and/or measures to improve indoor climate necessary)*
 - » *crumbling, powdering, loss of material (control, desalination, replacement)*

Effect on exterior masonry

- » *Moist zones*
- » *Salt efflorescence (cleaning possibly necessary)*
- » *Biological growth (algae, mosses: removal, cleaning necessary)*

‘Overall’ related effects of the mentioned defects (related to leakage / moisture problems) are:

- » *loss of material*
- » *loss of heritage value*
- » *loss of comfort / health risks*
- » *inconvenience*
- » *increased cost for control, repair, replacement*






Specification	Effect	Effect	Effect
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MOISTURE AND LEAKAGE
Effect on interior, i.e. finishing

			
Defects in masonry / joints	Moist zones	Fungi	Salts

Specification	Effect	Effect	Effect
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MOISTURE AND LEAKAGE
Effect on exterior masonry

Moisture – algae growth			
			
			
High moisture load on facade	Defect rainwater drainage: Algae growth visual damage	Visual damage	Necessity to remove source of moisture, cleaning, treatment with algicide

FMEA – defects of pointing

Effect on pointing and masonry

- » *pointing sanding*
- » *higher moisture load in masonry*
 - » *greater chance of biological growth*
 - » *greater chance of moisture penetration (control, replacement necessary)*
 - » *risk of frost damage of masonry bedding mortar (replacing part of the mortar or even of masonry might ultimately be necessary)*
- » *push out pointing*
 - » *higher moisture load*
 - » *if at great height, there is even a safety risk*
 - » *possible frost damage in bedding mortar (replacing the mortar or even masonry might ultimately be necessary)*
- » *damage to mortar and sometimes stone (repair and sometimes replacement might be necessary; in all cases, an investigation into the underlying cause is necessary before taking action).*
Possible forms of damage:
 - » *pointing pushed out or fallen out (replacing pointing necessary)*
 - » *crumbling bedding mortar (in depth repair and replacing mortar necessary)*
 - » *bulging of masonry (replacing masonry necessary)*
 - » *biological growth: algae, mosses (removal / cleaning and possible treatment with algicide) and higher plants*
 - » *salt crystallisation*
 - » *powdering (eliminating source of moisture, desalination and repair necessary)*
 - » *loose layers of masonry (repair masonry necessary)*










'Overall' related effects are:

- » *loss of material*
- » *loss of heritage value*
- » *disturbance*
- » *cost for scaffolding and construction site*
- » *increased cost for elimination, repair, replacement*

Specification	Effect	Effect	Effect
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DEFECTS OF POINTING

Effect on pointing and masonry

			
Sanding pointing			
			
Biological growth in masonry			
			
Push out of pointing combined with problems to bedding mortar	Frost damage to bedding mortar	Frost damage to bedding mortar	In depth replacement of bedding mortar to total replacement of damaged parts of masonry
			
Incompatibility causing problems to brick			
			
Effect of salt damage on masonry			Necessity to re-point, desalination

FMEA – foundations problems



Effect

- » *cracks, and in the long run deformations and, for example, inconvenience due to slanting floors in buildings*
- » *leakages (moisture problems) through continuous cracks in solid masonry*
- » *eventual necessity to foundations repair*

Overall effects are:

- » *inconvenience*
- » *loss of heritage value*
- » *disturbance*
- » *increased cost for repair, replacement*

FOUNDATIONS PROBLEMS

Specification	Effect	Effect	Effect
			
Differential settlement of two parts of a building, visible by a kink in the edge joints under the right-most window			In cases like this the problem has been present for some time or has grown slowly: immediate intervention is not necessary; however, monitoring the progress is recommended
			
Differential settlement, mainly visible by the slanted position of the natural stone window sill(s)			In cases like this the problem has been present for some time or has grown slowly: immediate intervention is not necessary; however, monitoring the progress is recommended

Appendix 3 – Interviews

The goal of the interviews was to gain better insight into how the monument world perceives Monumentenwacht.

10 questions were formulated to serve as a basis for the conversations, namely:

1. *How do you know of MW?*
2. *In your opinion, which activities does MW engage in?*
3. *Which of the activities do you consider: necessary-useful-un-necessary*
4. *Do MW's activities overlap with those of other organisations you might know of?*
5. *What is the relationship architects – MW?*
6. *In your opinion, what should / could the relationship of MW and quality systems be?*
7. *In your opinion, what is the added value that MW offers?*
8. *Do the repeated inspections by MW(monitoring) offer added value?*
9. *How could MW's quality be improved?*
10. *Which other tasks could / should MW carry out?*

Interviews were conducted with the foundation ERM (Erkende Restauratiekwaliteit Monumentenzorg, acknowledged restoration quality monument care), a restoration architect, an insurance company, a restoration contractor, a representative of the Cultural Heritage Agency and a monument owner.

The interviews are not restricted to people coming from Brabant or working there. A conscious decision was made to generate a broader perspective, to be used to link back to the situation in North-Brabant.

The answers to the questions are given in their entirety in the following.

Interview with [Walter de Koning](#), director of the foundation ERM, Erkende

Restauratiekwaliteit Monumentenzorg (acknowledged restoration quality monument care).

1. How do you know of MW?

Mainly indirectly. In a direct sense through a contribution of MW representatives to the URL (Uitvoeringsrichtlijnen, Execution Guidelines) accompaniment commissions.

2. In your opinion, which activities does MW engage in?

Visual inspections of the state of conservation

3. Which of the activities do you consider: necessary-useful-unnecessary

Useful is the current core activity (see following)

4. Do MW's activities overlap with those of other organisations you might know of?

No, MW clearly fills a niche market and that is very important.

5. What is the relationship architects – MW?

No opinion.

6. In your opinion, what should / could the relationship of MW and quality systems be?

It should actually fit well into the work and the image of MW if knowledge and quality are guaranteed with a quality system. This can be achieved by means of a quality management system (quality of the management) or a quality system based on guaranteeing the quality of the inspections themselves (the output) and the inspectors.

Here, a quality system based on output and knowledge should be preferred. Another possibility could be that MW would work according to an inspection guideline (TIS: Technical Inspection Service) such as for example RWS (Rijkswaterstaat) also does; however, this goes much further and, in principle, relates to diagnostics and the like. This goes far beyond the regular MW activities, requires more knowledge, and entails potential responsibility in case of wrong diagnoses.

7. In your opinion, what is the added value that MW offers?

Added value lies in the current profile of MW (support for the owner, independent of the market, non-commercial, maybe even idealistic), and in the fact that at the same time it does not pose a threat to architects and consultants, while having a clear trust relationship with the monument owner. Thus, we are talking about a niche with clear added value.

8. Do the repeated inspections by MW (monitoring) offer added value?

Yes, see above.

9. How could MW's quality be improved?

.....

10. Which other tasks could / should MW carry out?

A clear profile in a small area is better than a 'pale' profile spread widely. Today's niche space of MW is a good space, be careful when trying to expand. Preferably no more in-depth or more advanced tasks that must be paid for. This would eliminate the difference from a regular commercial office. It could provoke criticism, and unfair competition could arise with consultants if MW carries out its tasks based on subsidies. Furthermore, a consultant role could destroy MW's independent position while this is exactly its core value. In addition, government subsidisation is only possible in the niche currently filled in. But, extending the portfolio might be done by finding a similar niche in other areas, for example in the field of interiors or green monuments.

Interview with [Job Roos](#), architect at Braaksma – Roos Architecten and chairman VWAR (association of architects working in restoration).

1. How do you know of MW?

From my practical work. MW reports for monument owners form a good starting point for the work of an architect working in the field of restoration.

2. In your opinion, which activities does MW engage in?

Inspection and pointing out problems; particularly in difficult to access locations; determining the condition or state of conservation (good, sufficient, reasonable, poor). And finally: executing emergency repair.

3. Which of the activities do you consider: necessary-useful-unnecessary

Unnecessary or even wrong is consulting and creating maintenance and restoration plans.

4. Do MW's activities overlap with those of other organisations you might know of?

The original core activity does not.

The consultancy seen in some provinces (Zeeland, a. o.) overlaps with the activities of monument consultants (whether or not linked to an architects' office).

5. What is the relationship architects – MW

In principle, MW is the signalling organisation, the architect is the consulting and 'executing' party. If MW's work area is expanded this might create an area of tension.

6. In your opinion, what should / could the relationship of MW and quality systems be?

The manner of recording and monitoring by MW follows a specified standard (possibly following a checklist). This could principally be translated into a guideline for carrying out inspections. However, (the importance of) the experience of the individual inspector may not be underestimated.

7. In your opinion, what is the added value that MW offers?

It is exactly the signalling function and the possibility of quick intervention. The experience of persons who know the building well or rather understand it well. Thus, a central aspect is the visual observation based on adequate insight.

MW should not take the step toward interpretation, deeper going research and consultancy.

8. Do the repeated inspections by MW (monitoring) offer added value?

Certainly, a progressively developing problem can thus be identified so that adequate intervention is possible.

9. How could MW's quality be improved?

By educating young people, for example with 'training on the job'.

The effect, i.e. the usefulness of MW could be enhanced by making available a database of damage patterns that the MW should have at its disposal, and also evaluating the state of conservation of the Dutch heritage based on the inspection data. (NB – heritage monitor in North-Brabant).

10. Which other tasks could / should MW carry out?

None; stay with the core activity.

Interview with the [insurance company Donatus](#), which insures the largest part of the Dutch church buildings. The conversation took place in Rosmalen, with Alphons van der Voorn (chairman of the board) and Simon Kadijk (director).

1. How do you know of MW?

From clients of the insurance company. Sometimes when clients ask for an insurance policy, they already have a MW report describing the state of preservation of the building: a welcomed starting point for Donatus; in addition, Donatus has its own inspectors who determine the state of preservation as well as the reconstruction value of a building.

More than 99% of all catholic churches in the Netherlands and approximately 80% of religious buildings in general are insured by Donatus.

In case it was not done yet, Donatus always advises monument owners to involve MW to conduct regular inspections. Donatus particularly benefits from monuments in a good state of conservation.

2. In your opinion, which activities does MW engage in?

As far as we know, annual or biennial inspections, which might include repairing small damages such as loose roof tiles.

3. Which of the activities do you consider: necessary-useful-unnecessary

The above mentioned activity is certainly useful. Donatus cannot judge whether there might be unnecessary activities.

4. Do MW's activities overlap with those of other organisations you might know of?

Certainly, the activities of MW overlap with those of Donatus' own inspectors, even though 'complement' might be the better word, since the inspectors of Donatus carry out their work on the ground, whereas MW also conducts inspections on roofs and gutters.

The MW activities possible overlapped with those of the former Episcopal Building Offices and those of SBKG (Stichting Behoud Kerkelijke Gebouwen, association maintenance of church buildings).

5. What is the relationship architects – MW

Donatus has no insight in this matter.

6. In your opinion, what should / could the relationship of MW and quality systems be?

Did not apply. (No opinion ...).

7. In your opinion, what is the added value that MW offers?

Amongst other things, the added value lies in the regularity (repeated investigations), low costs, and the fact that MW is an accepted, independent institute.

8. Do the repeated inspections by MW (monitoring) offer added value?

Absolutely, see pt. 7

9. How could MW's quality be improved?

An important item emerged, talking about the research that TU Delft was carrying out the relevance of homogenous terminology. Different reports use in fact different damage terminology. Also in the context of the use that Donatus makes of the MW reports an unequivocal terminology was considered important.

10. Which other tasks could / should MW carry out?

Providing cost estimates for the work that MW deems necessary to be carried out would be a useful addition.

Besides this, MW must remain independent and thus trustworthy.

Interview with [Boudewijn de Bont](#), director Nico de Bont bv, former chairman of the Vakgroep Restauratie (association of contractors working in restoration). Prior to the interview he states: 'In the Dutch situation, MW is extraordinarily important for the process of maintaining our monuments and historic buildings, an organisation that is independent and separated from the market'.

1. How do you know of MW?

From work in the field, namely via monuments that Nico De Bont worked on. My experience is that a MW report was created for about 80% of the monuments that Nico De Bont has worked on.

2. In your opinion, which activities does MW engage in?

Inspecting monuments to document the state of maintenance. Furthermore, giving advice related to necessary maintenance and possibly referring to other parties for further investigation.

3. Which of the activities do you consider: necessary-useful-unnecessary

Carrying out visual inspections and creating according reports is, as mentioned under pt. 2, useful and necessary. Creating restoration plans and accompanying execution, such as is done by some provincial MW's is unnecessary, or would indeed even undermines the independent position of Monumentenwacht. By the way, MW North-Brabant seems to be aware of this; it only carries out the mentioned (core) activities.

4. Do MW's activities overlap with those of other organisations you might know of?

Nico de Bont's own organisation carries out its own inspection in the case of a concrete restoration task. Thus, there certainly is an overlap. But the MW report serves as a very useful basis. Our own inspection deals with determining the exact scope of work to be done and excluding possible risks, and lies at the base of our own maintenance and restoration vision when approaching a historic building.

5. What is the relationship architects – MW

For (in this case) the contractor, the MW report offers a solid basis.

6. In your opinion, what should / could the relationship of MW and quality systems be?

The database established with all of the individual records of MW could be used to achieve better insight into not only the state of maintenance of the Dutch monuments (this is already done on provincial level by Monuments Monitor) but could additionally be used, for example, to get an impression of the performance of executing companies. If viewed from the proper perspective, i.e. in consideration of limitations and starting points possibly defined by the monument owner, this could offer a good impression of the quality of the executing parties. Which in turn could influence the content of the procedures in the ERM guidelines, for example.

7. In your opinion, what is the added value that MW offers?

It mainly lies in the monitoring, in repeated determination of the state of conservation, which helps to identify possible problems early. Besides, in the fact that inspections are also conducted in difficult to access places. Here, the current depth reached in the reports is sufficient.

The added value is large but prerequisite to keep it so is to keep the role of MW clear.

8. Do the repeated inspections by MW (monitoring) offer added value?

Yes, certainly, see above. Furthermore, based hereupon important issues concerning restoration and maintenance needs can be clarified for the policies of provinces and the central government.

9. How could MW's quality be improved?

The MW reports are signalling, competent and principally clear and of sufficient quality for restoration contractors and architects. In my opinion, even more concrete inspection and reports of the performance of individual building parts, for example based on NEN 2767, would go too far. The question is whether such a standard does sufficient justice to the special status of monuments. There is certainly the risk that the state of conservation in its entirety is judged as satisfactory while at the same time certain parts that are very important for the cultural historic value, but are in bad condition end up between a rock and a hard place.

For the monument owner the objective and relevance of the report must be made clear: it is about pointing out potential problems, it does not serve as the basis for an offer by the contractor.

10. Which other tasks could / should MW carry out?

The type of tasks and the role of MW do not have to be extended further. Be particularly careful with establishing intervention plans and accompanying execution: then MWs 'own' work would have to be evaluated by a follow-up inspection.

Extending the activities toward, for example, interiors and landscape, based on the same starting points (visual inspection) could well be a useful addition.

Interview with [Marion Koelstra](#), architectural advisor at the Cultural Heritage Agency, working in the regions North-West, Provinces South and North-Holland.

1. How do you know of MW?

MW is known from practice, as part of the RCE activities. This means, on one hand via their inspections/building technical reports, and on the other hand via meetings onsite.

The MW reports are often an important part to evaluate the building technical condition of the monument, for a request for subsidy and to determine the final responsibility for a restoration,

2. In your opinion, which activities does MW engage in?

The main task of MW is to conduct inspections and small maintenance tasks (from replacing a few broken roof tiles, removing leafage that block a rain drainage to mending a leak). And it provides information about the building technical state of conservation and activities that need to be carried out (in a multi-year plan), to maintain the monument.

3. Which of the activities do you consider: necessary-useful-unnecessary

The visual inspection on location is very useful. However, in case of difficult to access places the use of binoculars offers of good indication of the building technical condition. It is not always necessary to walk across roof areas and through gutters, as there is the risk to create damage by walking for example on slate tiles and zinc or lead solder seams.

In addition, the wish for close inspection of, for example, roofs, towers and cupolas often leads to an abundance of often unnecessary and ugly roof hooks and eyes: for example, in the case of small tower tips and round cupolas, they are extremely visible and often unnecessary because the inspection can also easily be done with binoculars.

4. Do MW's activities overlap with those of other organisations you might know of?

Architects and monument consultancy offices sometimes do carry out partly overlapping tasks in the area of inspection of properties (here one could also assume that they work in the field of the MW).

In other cases, MW seems to work in the domain of other organisations: when submitting subsidy requests (e.g. BRIM, multi-year maintenance plans) some MW organisations do work that overlaps with that of for example architects' offices (...). An example of such an organisation is 'Groot-Holland', an organisation that is officially split off of MW North-Holland, but there is a lot of vagueness in the relationship with MW.

5. What is the relationship architects – MW

When a MW report has been generated, most architects make use of it, and also mention this fact (...) and add it to the request for subsidy. Sometimes the reports are used without this being mentioned, and sometimes an architectural firm does the entire inspection work over. Or in case that a MW report was not done (e.g. no MW abonnement).

6. In your opinion, what should / could the relationship of MW and quality systems be?

On one hand, MW must keep learning what is formulated in URL's (Uitvoeringsrichtlijnen, execution guidelines) and BRL's (Beoordelingsrichtlijnen, 'assessment' guidelines), such as is done under the responsibility of organisations such as ERM (Erkende Restauratiekwaliteit Monumentenzorg, acknowledged restoration quality monument care), and in brochures/information leaflets by RCE (Cultural Heritage Agency).

On the other hand, it would be good if the inspection methodology of MW and the requirements of a report would be specified in a quality system.

7. In your opinion, what is the added value that MW offers?

The added value mostly lies in early pointing out of (small) problems and damages that might lead to severe damage.

8. Do the repeated inspections by MW (monitoring) offer added value?

Certainly. The inspections provide important information about the building technical condition and the repeated inspections (annual or biennial) are necessary to monitor the condition of the monument and to be able to take early measures to guarantee its maintenance/preservation.

And the inspections form the basis for a request for subsidy and for the subsequent control of the execution of carried out measures, which is very valuable.

9. How could MW's quality be improved?

By understanding acutely dangerous situations better and warning accordingly for external as well as internal situations: e.g. not only indicating that there are

rust spots in a plaster ceiling but also that the metal suspension system might be rusted through and that the ceiling might fall down.

(PS. the report is commissioned by and is the property of the owner. Stimulating the execution of the necessary inspection is sensible (e.g. with a MW abonnement).

10. Which other tasks could / should MW carry out?

Activities in the field of interiors and in particular the technical condition of interiors finishing such as wall and ceiling paintings and floors are considered of great importance. Besides, (moveable) objects in the interior deserve attention.

Interview with [Jan-Hein Sloesen](#), owner of a historic house in Geertuidenberg, located in immediate vicinity of the Geertruidskerk. The property dates from the years 1532-1560.

In the 20th century, the property served as a location for different stores, amongn other things. Mr. Sloesen lives in the property since 2008, after the previous owner had thoroughly restored it and brought it back to its original condition.

The property is inspected by MW every year.

1. How do you know of MW?

When the property was purchased in 2008 we wanted to receive a purchase inspection. However, there did not seem to be any organisations that could do this for a heritage monument. Then we got in contact with Monumentenwacht North-Brabant, which, however, stated that they could not execute a purchase inspection either. But MW had done inspection reports for the previous owner and readily made them available, which formed the first positive acquaintance with MW. This positive acquaintance in turn resulted in a continuation of the abonnement.

2. In your opinion, which activities does MW engage in?

MW carries out inspections, directed at the state of conservation of the property. In addition, they carry out small maintenance and repair tasks when encountering small damages during an inspection, such as broken roof tiles and the like.

Finally, they also provide information, directly to the monument owner and, for example, also during the biennial restoration trade fair. By the way, in my opinion MW North-Brabant also has an exemplary function both within the Netherlands and for foreign MW organisations.

3. Which of the activities do you consider: necessary-useful-unnecessary

Necessary and useful activities are stating relatively small problems that can lead to great problems. I am convinced that the annual inspections that MW carries out and the consequential advice have saved me a lot of money.

Actually I can't think of any activities that seem to be unnecessary.

4. Do MW's activities overlap with those of other organisations you might know of?

As far as I know they do not.

5. What is the relationship architects – MW

I can't say much about this.

6. In your opinion, what should / could the relationship of MW and quality systems be?

In a formal sense there is not a lot that I can say about this. But I would like to note that in my opinion and in addition to the professional quality of the inspectors, they need to have the additional 'quality' of personal integrity and good communication skills. As far as my experience goes, this certainly has been the case with the inspectors of MW North-Brabant that have been here over the past 7 years.

7. In your opinion, what is the added value that MW offers?

In my opinion this is mainly preventing unnecessary cost and maintenance.

8. Do the repeated inspections by MW (monitoring) offer added value?

Due to the annual controls, the inspectors also see the quality of the executed maintenance work and the materials hereby applied; this is extremely useful for me as an owner.

The fact that problems continuing to be present are pointed out repeatedly is an important and useful reminder for me as an owner.

9. How could MW's quality be improved?

Actually, MW could work more on publicity so that more people would know the positive effects of the MW activities. A marketing movie, for example by Omroep Brabant (local broadcasting) could perhaps convince more people and certainly monument owners to support the work of MW.

10. Which other tasks could / should MW carry out?

Activities around interiors and finishing in historic buildings, but as far as I know MW North-Brabant already works in these areas.

Furthermore, an independent organisation such as MW could advise on what monumental buildings could actually offer when considering new functions and re-use and on what is possible without risking the heritage value.

As a monument owner I regularly need to physically see (historic) materials or materials that can be used for restoration. Currently this is not possible anywhere, not even at RCE. MW could play a role here, and could give non-commercial and independent advice on suitable applications.

R.P.J. van Hees, S. Naldini & T.G. Nijland, The importance of a Monumentenwacht system - the situation in North-Brabant, Delft 2015

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