

Risk Engineering Report



Prepared for:

STICHTING NHTV INTERNATIONALE HOGESCHOOL BREDA

Site Name: Breda University of Applied Sciences

Date of Survey: October 26, 2021

Report Date: February 17, 2022

Survey Type: Property All Risk - Resurvey

TIV (EUR): 66,100,000

Site Address: Mgr Hopmansstraat 3, BREDA, 4817 JT, Netherlands

Latitude: 51.5906

Longitude: 4.79591

RFS ID: RFS-90918

SIC Code: 8221-01-Colleges and Universities, NEC, State owned

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Support Services

Client Resources:

We maintain a library of over 300 documents, forms and other resources created specifically for client use:

- Hot work permits
- Impairment tags
- “Insights”, a collection of risk related topics
- Tip Sheets, lists to use in preparing for extreme weather events

Ask your local risk engineer for access or email requests to

globalproperty.impairment@aig.com.

Impairment Hotline:

To report sprinkler system, fire pump, water supply or other fire protection outages at insured facilities:

Call us at +1 877-705-7287 or +1 817-490-3255 or

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Purpose of Visit

This facility was visited to undertake a risk assessment of the fire and associated perils for insurance purposes. The purpose of the assessment was to assist in the identification and mitigation of hazards and exposures that could lead to the loss or damage to assets or business interruption.

Site Overview

This facility was visited to undertake a risk assessment of the fire and associated perils for insurance purposes. The purpose of the assessment was to assist in the identification and mitigation of hazards and exposures that could lead to the loss or damage to assets or business interruption.

NHTV Breda University of Applied Sciences (NHTV) was founded in 1987 and is a medium-sized educational institution for Bachelor and Masters education based in Breda. Some 7,800 Dutch and foreign expats students (15%) study at this institution. NHTV has three locations in use, all located close to each other (25-40m physical distance between buildings). This is a (expanding) campus with 41,800 m² build-up area in total. The former monastery building has been transition into the main loacation of NHTV. Part of this building are sprinklered protected (installation design based on NFPA 13).

A pretty strait forward risk, with limited high value equipment and besides commercial cooking no hazardous activities. Risks and protection are in fair balance but ideally all buildings should be sprinkler protected (total sprinkler coverage is 12% over all buildings).

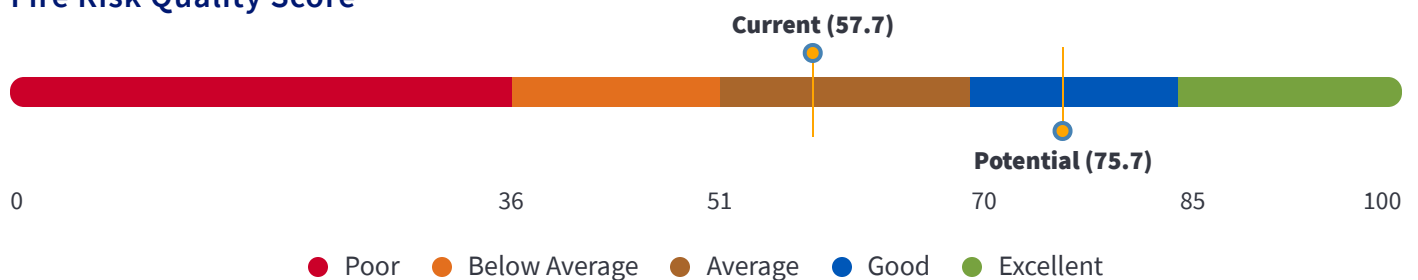
New Projects, Significant Changes and Observations

It is important to involve your insurer in new projects, such as refitting, refurbishment, extension work, new builds or relocating to a new site. Failure to do so could result in using non-approved construction materials (even though they meet local Building Codes and Fire Regulations) or inadequately protected facilities which could lead to expensive retrospective additions or rework. The Loss Prevention Engineering team at AIG can assist you with this by providing you with engineering support both before and during your project. Please contact us before you commence your project to ensure that we can arrange a consultation with one of our engineers.

Risk Summary

Open RI by Classification	5	Open RI by Age	5	Open RI by Type	5
Critical	0	New	3	Management Programs	4
Important	5	Outstanding	2	Physical Protection	1
Advisory	0	Completed RI	1		

Fire Risk Quality Score



Ratings

	Current rating	Potential rating
Hazards	Low	No Deficiencies
Water Supply	Adequate	Adequate
Protection	Inadequate	Adequate
Management Programs	Nearly Adequate	Adequate
Supervision	Adequate	Adequate
Exposures	Negligible	Negligible

Risk Improvements

Risk Improvements - Open

Number	Name	Classification	LE Before (EUR)	LE After (EUR)
18-02-07	INSTALL AND EXTEND AUTOMATIC SPRINKLER PROTECTION IN ALL BUILDINGS	Important	37,000,000	3,700,000
18-02-02	HOUSEKEEPING - REMOVE COMBUSTIBLES IN ELECTRICAL SWITCH ROOM	Important	--	--
18-02-04	HOT WORK PERMIT	Important	--	--
18-02-05	WATER DAMAGE PREVENTION	Important	--	--
21-10-01	Server room- Room integrity test	Important	--	--

Note: Risk Improvements associated with management programs will not have an associated Loss Estimate before or after implementation

Risk Improvements – Completed

Number	Name	Classification
18-02-01	CONDUCT INFRARED (IR) INSPECTIONS OF CRITICAL ELECTRICAL EQUIPMENT.	Important

Open Risk Improvements : Important

Number/Type	Name	LE Before (EUR)	LE After (EUR)
18-02-02 Management Programs	HOUSEKEEPING - REMOVE COMBUSTIBLES IN ELECTRICAL SWITCH ROOM		

Summary

Remove combustible materials in the electrical switch room and develop and implement a housekeeping program that establishes regularly scheduled inspections of all (technical) facility areas to indicate issues.

Details

A fire involving the combustible materials may contribute to a rapid fire and smoke spread and eventually could lead to an uncontrollable fire. Implement an effective recorded housekeeping program to reduce the potential for fire or conditions that can lead to increased loss due to fire.

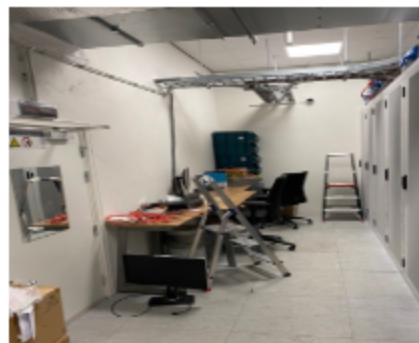
Client Exit Conference Comments

Note 2021: During the visit there were still some combustible storage in the server rooms and technical rooms.

Images



Server room storage



Server room storage



Technical room storage



Storage over electrical cabinet

Number/Type	Name	LE Before (EUR)	LE After (EUR)
18-02-04 Management Programs	HOT WORK PERMIT		

Summary

Develop and implement a hot work program based on the AIG cutting and welding permit system to monitor hot work operations. The program should including logging and tracking of hot work and pre and post work approvals. The program should also require a continuous fire watch while hot work is being conducted, a 1 hour continuous fire watch after hot work has been completed and a 3 hour intermittent fire watch thereafter.

Details

Improper cutting and welding is a leading cause of fire. Loss history shows that some hot work fires can start some distance away from where the work is taking place, sometimes well after the work has been completed. A hot work permit system ensures that proper precautions are in place prior, during and after this work is completed. All hot work operations taking place outside designated workshop areas should be performed under this program, including work by contractors.

Client Exit Conference Comments

The Hotwork permit will be updated based on AIGs template.

Number/Type	Name	LE Before (EUR)	LE After (EUR)
18-02-05 Management Programs	WATER DAMAGE PREVENTION		

Summary

Provide protection to prevent water leakage from HVAC systems located on the top floor of the building and provide flow-rate based water leak detectors/water stops on household water carrying equipment.

Details

During the survey it was noticed that water leak detection in the HVAC room are lacking. Detection of water in an early stage could prevent damage to (electronic) equipment and buildings. In order to ensure an early detection, alarm and follow-up in case of water leakage, we recommend installing water leak detection in strategic areas, connected to a building management system, or the fire alarm system. The same applies to elevated technical rooms with water carrying equipment on higher floors. Small appliances in store and staff areas, such as coffee machines, washing machines etc. can easily be protected by a flow-rate based water leak detector with automatic waterflow stop.

Client Exit Conference Comments

Will Study

Number/Type	Name	LE Before (EUR)	LE After (EUR)
18-02-07 Physical Protection	INSTALL AND EXTEND AUTOMATIC SPRINKLER PROTECTION IN ALL BUILDINGS	37,000,000	3,700,000

Summary

In the former monastery building a retrofit partial automatic sprinkler system is installed based on NFPA 13 (sprinkler coverage is about 25%, 4.900 m2). This is a positive step towards a full property loss prevention concept. We therefore recommend to Install and extend automatic sprinkler protection throughout the complete campus. An adequate automatic sprinkler system will considerably limit property damage and business interruption in the event of fire. The installation should be installed in accordance with NFPA13. Plans should be sent to AIG for review and acceptance prior to installation.

Details

Under the current NLE loss scenario a severe loss is to be expected due to the lack of adequate (active) fire protection measures. The current (passive) fire protection measures are solely based on very limited effective fire separations and a (delayed) manual intervention by the fire brigade. As a best practice advice all buildings should be protected with an automatic sprinkler system with adequate water supply. The sprinkler system should be designed based on the latest NFPA13 edition. The proposed sprinkler system will have a significant impact on expected loss estimates. In general, the design for non sprinklered buildings should be based on NFPA 13, 5.3.2: OH2, 8.1 mm/min over 139 m2, K80 or K115, Spray Standard and Quick Response.

Client Exit Conference Comments

Management reported that is not an option for NHTV

Number/Type	Name	LE Before (EUR)	LE After (EUR)
21-10-01 Management Programs	Server room- Room integrity test		

Summary

The server room protected by gaseous suppression system needs to have a room integrity test conducted.

Details

An Integrity test predicts how long fire suppressant agents take to descend to a given level in the room without having to release the agent itself. When you have a gaseous suppression system installed, your protected area will need testing to ensure that the suppressant is maintained within the area and will work in case of fire.

An Integrity retest is also required if any modifications are made to the area. So moving a partition, fitting a new door, installing new cables or pipes or in any way modifying the structural perimeter of an enclosure will almost certainly affect gaseous fire suppression retention. Any changes to the room (no matter how small or inconsequential they may seem) will require a retest carried out.

During the surveys it was noticed that the server room had a new back door connecting to a small closet with lot of openings. This could compromise the effectiveness of the suppression system. It is recommended to conduct a room integrity testing to the required NFPA 2001, BS ISO 14520 and BS EN15004 methodologies.

Client Exit Conference Comments

Will study.

Images



Server room

Occupancy & Process Overview

NHTV Breda University of Applied Sciences (NHTV) was founded in 1987 and is a medium-sized educational institution for Bachelor and Masters education based in Breda.

Some 7,800 Dutch and foreign expats students (15%) study at this institution. Opening hours are from 08:00 – 21:00 and staff is about 800. The organization is managed by the Executive Board with support from the Service Department. NHTV offers a total of eleven Bachelor and/or Masters programs and consists of five academies:

- Academy of Tourism (AT);
- Academy for Leisure (AfL);
- Academy for Digital Entertainment (ADE);
- Academy for Urban Development, Logistics and Mobility (SLM);
- Academy of Hotel / Facility Management (AHFM).

Majority of the programs are theoretical based with use of computers and ICT equipment. For the Hospitality study a commercial cooking arrangement will be installed in the former monastery building. No practicum with use of chemicals, mechanical works etc.

The supporting services from the Service Department includes various operational tasks in:

- Management secretariat
- Strategy, Education and Research (SER)
- Control, Finance and Administration (CFA)
- HRM service
- Marketing and communication department (M & C)
- ICT service
- Housing department, facility management and planning (HFP)
- Media library

NHTV has three locations in use, all located close to each other (25-40m physical distance between buildings). The recently purchased historical monastery building at the Mgr. Hopmansstraat 2-4 (18,200 m2) is the new main location.

The intention is to create a campus and to house all five academies, all staff, Executive Board and Service Department in this former monastery building.

SIC Code : 8211, Universities, Hazard Grade 3.

Construction : 19% ISO 1 (Class C) and 81% ISO 5 (Class A).

Construction Scheme : RMS 3A6, Steel & Reinforced Concrete Composite Frame.

Occupancy Details

Building	SIC Code	Description	Operating Days/yr	Operating Hrs/Day	Other Tenants
Breda University of Applied Sciences	822101	Colleges and Universities, NEC, State owned	365	24	No

Hazards

Hazard Category	Type	Current Rating	Potential Rating	RI's
Electrical	Common	Slight	No Deficiencies	0
Storage	Common	Severe	No Deficiencies	0
Heating, Ventilation, Air Cond & Refrigeration	Common	No Deficiencies	No Deficiencies	0
Flammable Liquids - Storage, Transfer, Use	Common	No Deficiencies	No Deficiencies	0

Non-Process HVAC Equipment

The N-building and the former monastery are mainly heated by district heating. Air treatment and cooling with water based chiller systems are placed in the technical rooms on roof top (N-building) and in the basement (monastery building). The H-building is heated by low pressure gas fired boilers and warm water radiators. Equipment is maintained annually and jurisdictional inspections are performed according to the Dutch regulations (SCIOS). Technical rooms are 30 minutes fire separated compartments with adequate sealing of cable penetrations. The rooms are not provided with smoke detection.

Electrical

Main electrical power is supplied at 10 KV from the public grid to. This voltage is stepped down to 400 V with a 1,000 KVA oil filled transformer situated in a dedicated concrete compartment, accessible from the outside. The transformer is owned and maintained by the utility company.

The electrical distribution panels and installations are inspected and maintained in accordance with the local standard NEN 3140 in a 5 year interval. Last inspection was done in 2015 and showed no deficiencies. Thermographic imaging is not done yet (advisory risk improvement). Visually, the installations are found in good state of repair.

The main electrical switch panel is situated in a dedicated masonry compartment with adequate fire stopping of shafts and electrical cable penetrations. The area is not provided with smoke detection. It is unclear if the electrical equipment and appliances in use are periodically checked according to the NEN 3140. Excessive use of electric extension cords deserves extra attention (see risk improvement).

An emergency diesel driven generator is present in a separate building at 5m physical distance from the main building. This is needed for the emergency rainwater pumps (only needed during heavy rains, the building was not visited).

Images



Waste storage close to outlets



Storage in Electrical room



Storage close over electrical cabinets

Incidental Storage

The Wooden attic of monastery building is currently used to store office supplies and storage of equipment for events. The area has a very high combustible load with no adequate protection. In combination with the combustible roof, a small fire in this area could lead to a complete loss of the building.

Images



Storage Wooden attic



Storage Wooden attic



Wooden attic of monastery building



Storage Wooden attic



Storage Wooden attic



Storage Wooden attic

Incidental Flammable / Combustible Liquids & Gases

For small maintenance tasks a few cans of paint are kept in stock as well as thinner. These are adequately stored in a closed metal cabinet. No significant hazard.

In the former monastery building, gas will be used for the cooking setup in hospitality studies with reportedly adequate controls and interlocks.

Construction

Category	Current Rating		Potential Rating		RI's			
Construction	ISO 5 / Class A - Modified Fire Resistive		ISO 5 / Class A - Modified Fire Resistive		0			

Building	Year Built	# Stories	Height (m.)	Total Area (sq. m.)				
Breda University of Applied Sciences	1993	4	21	41,800				

Area (1,000 sq. m.)

Building	ISO1/D	ISO2/C	ISO3/C	ISO3/B	ISO4/C	ISO4/B	ISO5/A	ISO6/AA
Breda University of Applied Sciences	8.0 (19.14%)	--	--	--	--	--	33.8 (80.86%)	--
Total	8.0 (19.14%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	33.8 (80.86%)	0.0 (0.00%)

Definitions: ISO1=wood frame walls roof, ISO2=masonry walls wood roof, ISO3=light non-combustible walls roof, ISO3 (CMD)=ISO3 with combustible metal deck, ISO4=non-combustible metal deck and masonry walls, ISO4 (CMD)=ISO4 with combustible metal deck, ISO5=modified fire resistive walls roof, ISO6=fire resistive walls roof.

Comments

The campus and has three buildings in use all located in close proximity (see sketch). The overall construction is classified as 19% ISO 1 (Class C) and 81% ISO 5 (Class C).

Mgr. Hopmansstraat 1-3

The N-Building with an area of 18.350 m2 consist of three interconnected buildings (A, B and C) erected in 1993.

A and C

Main buildings A and C are connected through the main entrance and reception (building B).

Both buildings have four floors and a concrete load bearing structure with floors, walls and roofs made of concrete insulated with Polyurethane. Large part of the roof of building A is a mixture of concrete and steel with Polystyrene insulation used on the steel deck roof. The roofs are bituminous covered and ballasted in a few places with gravel. The

four zinc curved roofs of building C have esthetical purposes. The first floor is mainly used for offices, kitchen and library. The other floors are used as classrooms, lecture halls and workspaces.

B

Building B has a steel load bearing structure with steel clad facades and glass in steel/aluminum frames. Reportedly, the roof and walls are made of steel and is insulated with Polystyrene. The construction is classified as 2.800 m² ISO 1 (Class C) and 15.600 m² ISO 5 (Class A).

Mgr. Hopmansstraat 15

The H-building with an area of 5.000 m² was built in the sixties and has a concrete main load bearing structure with concrete floors and concrete roof. Polyurethane insulation is used on the roofs with a bituminous top cover. The two single storey wings of the main building have a wooden roof with an unknown type insulation (presumably Polystyrene or Polyurethane). Outer walls are masonry and insulated with Polyurethane. The building has mainly three floors with offices and canteen on the first floor and other floors used as classrooms. The construction is classified as 750 m² ISO 2 (Class C) and 4.250 m² ISO 5 (Class A).

Mgr. Hopmansstraat 2-4

The former monastery is a monumental building and has four floors and several cellars. Total floor area is 18.200 m². It consists of two connected buildings, each with a courtyard, a chapel and a bishop's house. The monastery has been renovation for educational purposes. The two courtyards will be provided with a steel structure and steel deck roof insulated with reportedly Polystyrene. Part of the building is protected by automatic sprinklers (4.900 m²) per NFPA 13.

The buildings consist of a concrete load bearing structure with concrete floors and a wooden roof. Walls are all masonry and insulated with a mineral type insulation (Knauf, Heraklith). The attic with non-insulated wooden roof runs over all buildings and will house the (future) server room. Basically, the attic is one large fire compartment. The construction is classified as 4.350 m² ISO 2 (Class C) and 13.850 ISO 5 (Class A).

Fire Separations

There are no MFL loss limiting fire separations present in all three buildings. The separations present have ratings of 30 minutes based on the Dutch regulations.

Physical Fire Separations

The three buildings are physically separated from each other by clear distance (ranging from 25m to 40m) .

Water Supply & Fire Pumps

Water Supplies

Category	Current Rating	Potential Rating	RI's
Water Supply	Adequate	Adequate	0

Name	Type	Pump Associated	Adequacy
Sprinkler tank	Tank or reservoir	1 or more Electric Pumps with no Generator	Adequate

Comments

Water for firefighting is available from hydrants located in public streets surrounding the building complex. Hydrants are connected to the public grid with a diameter of 110mm, normally good for at least 30 m³/hr. Capacity, flow and pressure details of the grid are unknown (notice that this info is very rarely available or shared with clients in the Netherlands).

Buildings are located near the central area of Breda and not on the outskirts, thus we presume the capacity and flow to be acceptable. There is nearby open water available some 0.5 km South of the H-building that is suitable for firefighting purposes if needed (small canal).

The sprinkler system will be fed from one electrical driven fire pump taking suction from a concrete water basement of 90 m³.

Fire Pumps

Name	Suction source	Driver	Shaft	Start Method
Fire Pump 1	Tank or reservoir	Electrical Motor	Horizontal Shaft	Auto

Driver approval	Approval listing	Controller approval	Pressure Churn (bar)	Pressure Rated (bar)	Flow Rated (Lpm)	Flow Max (Lpm)	Pressure @ max flow (bar)	Rated speed (rpm)	Pressure tank
FM	FM	FM		6.00	1,133.00			2,930.00	No

Protection

Category	Current Rating	Potential Rating	RI's
Sprinklers	Inadequate	Adequate	1
Special Extinguishing Systems	Excellent	Excellent	0
Fire Extinguishing Equipment	Adequate	Adequate	0
Public Fire Department	Excellent	Excellent	0

Sprinklers

Building	AS (%)	ASA (%)	ASN (%)	Fire Detection (%)
Breda University of Applied Sciences	12.00	12.00	88.00	100.00
Total	12.00	12.00	88.00	100.00

Definitions: AS (%) =sprinklers provided, ASA (%) =adequate sprinklers provided, ASN (%) =sprinklers improvements needed, Detection=Smoke or other Fire Detection excluding sprinkler waterflow

Area protected	System	Existing Design	Required Design	Adjusted BOR (bar)	Existing Flow (Lpm)	Hose (Lpm)	Adequacy
Library	Wet	8.1 mm/min over 139 m2	8.1 mm/min over 139 m2				Adequate
Aisles around the Atrium	Wet	4.1 mm/min over 139 m2	4.1 mm/min over 139 m2				Adequate
sprinkler pump room	Wet	6.1 mm/min over 30 m2	6.1 mm/min over 30 m2				Adequate

Definitions: Adequate = 100% of required sprinkler design hose. Nearly Adequate = 90% of required sprinkler design and no hose. Inadequate = less than 90% of required sprinkler design and no hose. Duration requirements must be met or rating is inadequate. For ESFR nearly adequate is defined as full sprinkler design with NO HOSE.

Comments

The former monastery buildings will be provided with (partial) automatic sprinkler protection. Approximately 4,900 m2 will be sprinkler protected (25% of total floor area in the former monastery). Design and installation is based on NFPA

13, 2016, Educational Occupancy (storage per NPFA 13 does not take place).

Main purpose and reason for the sprinkler system was life safety. The fire compartment size limit of 1,000 m2 as described in the Dutch Building Codes was exceeded in some areas. AIG was not involved in the preliminary phase of the project. The following area's will be sprinkler protected:

First Floor : Aisles, Library, Offices, Classrooms, Atrium

Second Floor : Offices, Classrooms, Atrium

Third Floor : Atrium roof

The design for these areas is based on NFPA 13, 5.3.2: OH2, 8.1 mm/min over 139 m2, K80 or K115, Spray Standard and Quick Response.

Aisles around the Atrium are based on NFPA 13, 5.2: LH, 4.1 mm/min over 139 m2, K80 or K115, Spray Quick Response.

The sprinkler pump room is based on NFPA 13, 4.13.1.4: OH1, 6.1 mm/min over 30 m2, K80 or K115, Spray Quick Response.

Risk Improvements

Name	LE Before (EUR)	LE After (EUR)
INSTALL AND EXTEND AUTOMATIC SPRINKLER PROTECTION IN ALL BUILDINGS 18-02-07	37,000,000	3,700,000

Fire Extinguishing Equipment

Water Supply & Inspection

Frequency

- Meets NFPA requirements

FEA/Hose Reel Details

- Equipment is properly maintained
- Inspections are properly documented with records maintained and readily available
- Plant personnel properly trained

Recommendations

None

Comments

Portable fire extinguishers and fire hoses are distributed throughout all buildings. The hose reels are connected to the public water grid. All portable fire extinguishers and hoses are annually inspected and maintained by a listed subcontractor.

Public Fire Department

Fire Department Type

- Full Time

Fire Department Features

- Fully trained and funded (adequate for the risk if special hazards exist)
- Fully equipped with required modern pumping appliances, ladders, aerial equipment, BA equipment
- Equipment regularly tested and maintained
- Full time emergency communications center to dispatch FD
- Response time is less than 20 minutes

Comments

The municipal of Breda has multiple fire stations. On the first call a truck of the full time occupied station Breda Centrum will anticipate. This station is located at 1,6 km / 4 minute driving distance. Reportedly this fire department is familiar with the site and a firefighting plan is at their disposal. Back-up is available by multiple fire stations in close vicinity (<16km), also adequate equipped and occupied by adequate trained firefighters.

Supervision

Category	Current Rating	Potential Rating	RI's
Automatic Fire Detection	Good	Good	0
Security	Adequate	Adequate	0

Automatic Fire Detection

Signaling Systems Remote Station	Monitored Line Yes	Valve Locked Yes	Fire Detection Coverage (Including Sprinklers) at least 90%
Smoke Detection Monitored Yes	Other Alarms Yes		

Comments

The building is (very limited) equipped with a fire detection system, installed per Dutch NEN 2535 and NEN 2575 code signaling to a Private Security Organization who calls the Fire Department. Smoke detectors are only installed near fire-and/or smoke separations and are used to activate the fire doors. With lack of adequate fire separations, no loss limiting effect is expected from the existing system.

Security

Security & Watch Service (24/7) Other	Round Frequency Other	Security Rounds Recorded	Coverage 100%
Security Alarms - Breaking Glass Detection - CCTV	Intrusion Alarm Monitoring Constantly attended location	Site Fencing and Barriers None	Burglar and Theft Exposure No
Vandalism / Malicious Mischief Exposure No	Sabotage and Terrorism Exposure No		

Comments

The ground floor levels of the buildings are equipped with an electronic burglary alarm system (passive infrared detectors and door/window magnets of anti-mask type), signaling to a private security organization through a secured

connection. Follow-up is done by guards from the security company within 30 minutes and employees of NHTV on duty are informed.

Computer equipment is secured with metal chains and locks on furniture. The opening and closing rounds are carried out by a private security company. Surveillance rounds are carried out twice per day.

Limited fencing is provided North of the N-building only and the campus has an open character. The front main entrance and reception is accessible from the public street with cameras positioned at the main entrance and access ways (images recorded for 48 hours).

Management Programs

Category	Current Rating	Potential Rating	RI's
Emergency Organization & Planning	Adequate	Adequate	0
Self-Inspection Program	Adequate	Adequate	1
Impairment Procedures	Inadequate	Adequate	0
Contractor Management	Adequate	Adequate	0
Hot Work Permit	Inadequate	Adequate	1
Smoking	Adequate	Adequate	0
Housekeeping	Adequate	Adequate	2
Planned Preventative Maintenance	Good	Good	0
Management Interest	Good	Good	0
Site Level Business Continuity Planning	Nearly Adequate	Adequate	0

Emergency Organization & Planning

Comments

The NHTV has a large Emergency Response Team (ERT) in place. Members are yearly trained with use of small firefighting equipment and first aid exercises. There is an evacuation plan in place with annual drills being performed.

Self-Inspection Program

Comments

Self inspections are frequently carried out. The main subject of the self inspections is life safety and hygiene. With exception of specific issues noted in the risk improvement section, housekeeping and general safety aspects were at an acceptable level. No deficiencies were encountered that indicated the need for additional measures.

Risk Improvements

Name	Classification
Server room- Room integrity test 21-10-01	Important

Impairment Procedures

Comments

There is no formal impairment procedure (see risk improvement).

Contractor Management

Comments

Maintenance is performed by contractors on behalf of NHTV. Contractors have to adhere to safety standards. In case of maintenance tasks, contractors are supervised by the concierge or employees of the Service Department.

Hot Work Permit

Comments

A hot work permit procedure is in not in place (see risk improvement).

Risk Improvements

Name	Classification
HOT WORK PERMIT 18-02-04	Important

Smoking

Comments

Smoking is only allowed outside in dedicated places with adequate ashtrays and provisions. This is well arranged.

Housekeeping

Comments

Overall good housekeeping procedures in public accessible areas. There are some deficiencies observed during the tour in non-public technical areas like the electrical low tension rooms (storage of combustible materials, see risk improvement).

Risk Improvements

Name	Classification
HOUSEKEEPING - REMOVE COMBUSTIBLES IN ELECTRICAL SWITCH ROOM 18-02-02	Important
WATER DAMAGE PREVENTION 18-02-05	Important

Planned Preventative Maintenance

Comments

An external agency has set up an maintenance plan for the buildings. Building related maintenance is all performed by well-known contractors. The Service Department keeps overview and supervision of the planning according to a fixed schedule. The existing buildings are visually noticed in good state of maintenance and repairs.

Management Interest

Comments

Management shows sincere interest in safety and risk management and are actively involved in the survey process (e.g. attend opening/closing meeting, discuss recommendations, and provide information necessary to evaluate the risk). Procedures are somewhat susceptible for improvement (see risk improvement).

Exposures

Category	Current Rating	Potential Rating	RI's
Exposure	Negligible	Negligible	0

Internal Exposure

None

External Exposure

To the north of the campus , The former monastery building directly borders trees and Greenfields. Next buildings are located at 50m and comprises residential apartments of concrete/masonry construction.

Yard Storage

None

Water Intrusion Exposure

No

Aircraft Exposure

No

Structural Collapse Exposure

No

BI Exposures

General BI

Delay in legal permits and procedures could influence rebuild periods if there is a large loss. There is some leeway capacity with the 3 buildings in use located close to each other. BI is not insured under the policy.

Key EDP Equipment Exposure

All locations are physically connected with a glass fiber ring network. Daily made backups of data are done on tapes and additionally in the cloud at a third party data warehouse. Reportedly, backups are tested weekly.

A new server room will be established at the attic of the former monastery building. Visually noted, this room will be installed with a total flooding gas extinguishing system activated by an aspiration system but details are not known yet. There are no water pipes projected and installed in this room.

Electricity Interruption Exposure

The electrical power supply is considered reliable. Emergency power supply is not available except from waste water pumps. These pumps are connected to diesel driven emergency generator located outside in a separate building.

NATCAT Exposure Summary

	Flood	Wind	Earthquake	Hail	Collapse	Other
Zone/Exposure	>500-year Flood Zone	35 m/s	MR Zone 0: <MMV	MRe Zone 2	No	No

Flood

Site Property Flood Zone

>500-year Flood Zone

Building	Flood Zone	Flood Source	FFE (m)	100 Yr Flood Elv. (m)	500 Yr Flood Elv. (m)
Breda University of Applied Sciences	>500-year Flood Zone	--	--	--	--

Comments

The buildings are located at about 1.9 m above NAP (mean sea-level), in flood zone nr. 34, exposed to flooding from sea and river. The area is protected by dikes and the level is well regulated by the Dutch water authorities. A small canal is located 0.5 km distance. According to the website with national government information 'www.risicokaart.nl', the facility is located in an area with a flood risk of 1 in 2000 years. A small river is located at 500 meters to the South. The site has no flood history and the risk is considered as slight.

Wind

Wind Speed (m/s)

35

Building	Distance to Coast
Breda University of Applied Sciences	10 and greater miles

Comments

There is no Tropical Cyclone hazard per the Munich Re NATHAN maps. The Extratropical Storm Zone is zone 3 per Munich Re NATHAN maps. Perimeter Flashing Securement, Roof Top Equipment Securement, Roof Covering Condition and Windows & Building Cladding are all found to be adequate. Large zinc roof covers for esthetical reasons are placed on the N-building. These are somewhat susceptible for the windstorm hazard. Slight risk.

Earthquake

EQ Zone

MR Zone 0:<MMV

Peak Ground Acceleration (%g)

2.00

Comments

This site is located in a Zone 0 according to the Munich-Re earthquake maps with exposures ranging from 0 up to 4 for a maximum grade risk.

Other NATCAT Perils

Other CAT Perils

The building maintenance seems visually to be in a good state of repair and the average snow load in the Netherlands is low. No risk.

Fire Loss Estimates

All loss estimates developed as a result of our property surveys are for the sole use of AIG underwriters. Engineering loss estimates are based on the professional judgement of our engineer / consultants. There is detailed guidance and methodologies that are reference and used in the calculate of our Loss Estimates. Using our Loss Estimates without an understanding of the underlying guidance and methodologies is not recommended. AIG assumes no responsibility for use or reliance upon the loss estimates presented below.

	PD (M EUR)	PD%	BI (M EUR)	BI%	IBI (M EUR)	TOTAL (M EUR)
MAS	25.91	39.2		0.0		25.91
MFL	20.38	30.8		0.0		20.38
NLE	20.38	30.8		0.0		20.38

Reported Values

Property Damage

Building (EUR)	Contents (EUR)	M&E (EUR)	Stock/Inventory (EUR)	Other PD (EUR)
46,270,000	19,830,000	0	0	0

Business Interruption

Indemnity Period	BI/Gross Revenues (EUR)	Rental Income (EUR)	Payroll (EUR)
12 Months	0	0	0

Totals	EUR
Total Property Damage Value	66,100,000
Total BI Value	0
Total Insured Value	66,100,000

Maximum Amount Subject (MAS)

Total LE (EUR): 25,913,183

PD Loss Estimate

Building	Bldg (EUR)	M&E (EUR)	Content (EUR)	Stock (EUR)	Other (EUR)
Breda University of Applied Sciences	14,861,924 (32.12%)	0 (55.73%)	11,051,259 (55.73%)	0 (50.00%)	0 (55.73%)
Total	14,861,924 (32.12%)	-- (--%)	11,051,259 (55.73%)	-- (--%)	-- (--%)

Total Property Damage Loss Estimate (EUR): **25,913,183 (39.20%)**

TE Loss Estimate

Building	BI (EUR)	Payroll (EUR)	Rent (EUR)	Downtime (Months)
Breda University of Applied Sciences	-- (100%)	-- (--%)	-- (--%)	12
Total	0 (--%)	0 (--%)	0 (--%)	--

Total TE Loss Estimate (EUR): **0 (--%)**

Loss Estimate Comments

The PD MAS at this facility is estimated at 100% loss of buildings N and H. The facility is a building complex without any adequate space separations between these buildings under MAS conditions (25m). However, the former monastery building meets the equivalent clear space separation criteria under MAS and will be spared (40m). BI is not insured.

Construction : 19% ISO 2 (Class C) and 81% ISO 5 (Class A).

Total Area : 41.750 m2 total build-up floor area over all buildings.

Values split : Evenly split per building based on m2.

Calculations Total area N-Bldng : 18,350 m2 of which 2,750 m2 ISO 1 (Class C) and 15,600 m2 ISO 5 (Class A) Total area H-Bldg : 5,000 m2 of which 750 m2 ISO 1 (Class C) and 4,250 m2 ISO 5 (Class A) Bldng value/m2 : EUR 1107/m2 Content value/m2 : EUR 474/m2

Fire area

ISO 5/A Construction part

Building fire damage: $19,850 \text{ m}^2 * 50 \% * \text{EUR } 1107 = \text{EUR } 10,986,975$

Content fire damage: $19,850 \text{ m}^2 * 100\% * \text{EUR } 474 = \text{EUR } 9,408,900$

ISO 1/C Construction part

Building fire damage: $3,500 \text{ m}^2 * 100 \% * \text{EUR } 1107 = \text{EUR } 3,874,500$

Content fire damage: $3,500 \text{ m}^2 * 100\% * \text{EUR } 474 = \text{EUR } 1,659,000$

Total Loss:

Total Building PD fire damage = EUR 14,861,475 (32% of total Building Sum insured).

Total Contents PD fire damage = EUR 11,067,900 (56% of total Contents Sum Insured).

Total PD damage: EUR 25,929,375 (39 % of total PD sum insured).

BI NHTV benefits from 3 buildings, separated from each other by physical distance. Rebuilding of the N and H building could take up to 15 months including legal permit procedures, demolition time, debris removal and rebuilding. Ramp-up period can (partly) continue at the former monastery building after 6 months for 50%.

Maximum Foreseeable Loss (MFL)

Total LE (EUR): 20,376,750

PD Loss Estimate

Building	Bldg (EUR)	M&E (EUR)	Content (EUR)	Stock (EUR)	Other (EUR)
Breda University of Applied Sciences	11,678,850 (25.24%)	0 (43.80%)	8,697,900 (43.86%)	0 (43.80%)	0 (43.89%)
Total	11,678,850 (25.24%)	-- (--%)	8,697,900 (43.86%)	-- (--%)	-- (--%)

Total Property Damage Loss Estimate (EUR): **20,376,750 (30.83%)**

TE Loss Estimate

Building	BI (EUR)	Payroll (EUR)	Rent (EUR)	Downtime (Months)
Breda University of Applied Sciences	-- (100.00%)	-- (--%)	-- (--%)	9

Building	BI (EUR)	Payroll (EUR)	Rent (EUR)	Downtime (Months)
Total	0 (--%)	0 (--%)	0 (--%)	--

Total TE Loss Estimate (EUR): **0 (--%)**

Loss Estimate Comments

The PD MFL is estimated at 100% loss of building N. There are no loss limiting MFL separations within the buildings and there is continuity of combustibles. Under MFL the H building and former monastery building will be spared (physical clear distance between N>H is +25m and N>Former monastery is +40m). BI is not

Calculations:

Total area N-Bldng : 18,350 m2 of which 2,750 m2 ISO 1 (Class C) and 15,600 ISO 5 (Class A)

Bldng value/m2 : EUR 1,107/m2

Content value/m2 : EUR 474/m2

Fire area

ISO 5/A Construction part

Building fire damage: 15,600 m2 * 50 % X EUR 1,107 = EUR 8,634,600

Content fire damage: 15,600 m2 * 100% * EUR 474 = EUR 7,394,400

ISO 1/C Construction part

Building fire damage: 2,750 m2 * 100 % X EUR 1,107= EUR 3,044,250

Content fire damage: 2,750 m2 * 100% * EUR 474 = EUR 1,303,500

Total Building PD fire damage = EUR 11,678,850 (25% of total Building Sum insured).

Total Contents PD fire damage = EUR 8,697,900 (44% of total Contents Sum Insured).

Total PD damage: EUR 20,990,250 (31 % of total PD sum insured).

BI NHTV benefits from 3 separate buildings, separated from each other by physical distance. Rebuilding of the N building could take up to 15 months including legal permit procedures, demolition time, debris removal and rebuilding. Ramp-up period can continue at the other 2 buildings within an expected 12 months period (100% first 3 months and 50% remaining 9 months).

Normal Loss Expectancy (NLE)

Total LE (EUR): 20,376,750

PD Loss Estimate

Building	Bldg (EUR)	M&E (EUR)	Content (EUR)	Stock (EUR)	Other (EUR)
Breda University of Applied Sciences	11,678,850 (25.24%)	0 (43.89%)	8,697,900 (43.86%)	0 (43.89%)	0 (43.89%)
Total	11,678,850 (25.24%)	-- (--%)	8,697,900 (43.86%)	-- (--%)	-- (--%)

Total Property Damage Loss Estimate (EUR): **20,376,750 (30.83%)**

TE Loss Estimate

Building	BI (EUR)	Payroll (EUR)	Rent (EUR)	Downtime (Months)
Breda University of Applied Sciences	-- (100%)	-- (--%)	-- (--%)	9
Total	0 (--%)	0 (--%)	0 (--%)	--

Total TE Loss Estimate (EUR): **0 (--%)**

Loss Estimate Comments

PD Under NLE conditions, all fire protection systems are expected to function as designed. This concerns a hazard grade 3 occupancy in a 18.350 m2 building consisting of 85% ISO 5 (Class A) and 15% ISO 1 (Class C) construction. BI is not insured. The NLE fire scenario is based on a fire starting in building N (building part A) after closing hours due electrical malfunction of equipment. There is continuity of combustibles and with lack of automatic sprinkler protection, fire detection and loss limiting separations all building parts A, B and C will be lost including contents. There is continuity of combustibles and with late response from the professional fire department of Breda and no people involved/present in the building, an intervention is not expected. The fire department will control the fire and will focus on prevention of surroundings.

A 100% loss of the N building including contents is expected. The H-building and former monastery will be spared. The NLE scenario equals the MFL scenario. BI is not insured.

Fire area

ISO 5/A Construction part

Building fire damage: $15,600 \text{ m}^2 * 50 \% * \text{EUR } 1,107 = \text{EUR } 8,634,600$; Content fire damage: $15,600 \text{ m}^2 * 100\% * \text{EUR } 474 = \text{EUR } 7,394,400$;

ISO 1/C Construction part

Building fire damage: $2,750 \text{ m}^2 * 100 \% * \text{EUR } 1,107 = \text{EUR } 3,044,250$;Content fire damage: $2,750 \text{ m}^2 * 100\% * \text{EUR } 474 = \text{EUR } 1,303,500$;

Total Building PD fire damage = EUR 11,678,850 (25% of total Building Sum insured).

Total Contents PD fire damage = EUR 8,697,900 (44% of total Contents Sum Insured).

Total PD damage: EUR 20,376,750 (31 % of total PD sum insured).

BI NHTV benefits from 3 separate buildings, separated from each other by physical distance. Rebuilding of the N building could take up to 15 months including legal permit procedures, demolition time, debris removal and rebuilding. Ramp-up period can continue at the other 2 buildings within an expected 12 months period (100% first 3 months and 50% remaining 9 months).

Images and Site Sketches



Breda University of Applied Sciences

Risk Improvement Classification

Critical

Critical recommendations represent conditions or work practices that create an imminent or severe loss-producing situation. This means that there must be a readily available ignition source or the potential for a severe loss event.

Important

Important recommendations represent conditions or work practices that could result in a loss-producing situation, but for which immediate action is not necessary. These are recommendations to correct uncontrolled exposures or to achieve and maintain a reasonable level of property protection. These recommendations require commitment on the part of the insured to change or modify conditions or work practices in order to reduce the potential for serious loss, resulting from either frequency or severity events.

Advisory

Advisory recommendations represent conditions or work practices that do not directly pose a risk for severe loss or injury, but could contribute to a loss situation. These are recommendations that are considered best practices to enhance the level of property protection. Compliance with these recommendations improves the risk and reduces the likelihood of a loss occurring from the recognized hazard or situation.

Risk Improvement Types

Physical Protection:

A Physical Protection Risk Improvement is associated with provision of physical plant and equipment; typically there could be a capital expenditure associated with these improvements.

Management Programs

A Management Programs Risk Improvement typically relates to procedures and management programs and will not normally involve, or will have limited, capital expenditure.

NATCAT:

NATCAT Risk Improvement is either a physical improvement or the addition/enhancement of management procedures to reduce the risk associated with natural catastrophe events.

B&M Management Programs

A B&M Management Programs Risk Improvement relates to procedures and management programs, such as inspection, testing and maintenance, which will not normally involve, or have limited capital expenditure. Such a risk improvement is directed at reducing the probability of the identified risk exposure.

Loss Estimate Definitions

Maximum Amount Subject (MAS)

The Maximum Amount Subject (MAS) is defined as the area of the largest insured value (PD and BI) that is subject to a single fire or explosion. The amount Subject area will only be limited by clear space separation that is sufficient to restrict the spread of fire, as defined in the Space Separation Table which is found in the AIG Commercial Property Field Engineering Manual, MFL section. MAS considers complete failure of all active protection including automatic sprinkler systems, all water supplies, automatic extinguishing systems, alarm supervision, public and private water supplies, no firefighting effort and offers no credit for MFL or fire walls, fire proofing or other passive barriers. In circumstances where the location consists of only one building, the Amount Subject will normally be equal to the full TSI for that building. Calculate of MAS will include PD, BI, BI interdependencies, contingent BI and any other time element values such as Extra Expense, Extended Period of indemnity, Rents, etc.

Maximum Foreseeable Loss (MFL)

MFL is defined as the largest amount of loss that can be anticipated (including PD, BI, BI interdependencies, contingent BI and any other time element values such as extra expense, extended period of indemnity, rents, etc. due to a fire and/or explosion event with all fire protection systems and equipment out of service and with no fire-fighting effort, either public or private. The loss would be that which occurs if the fire were allowed to “burn freely” until it burns itself out. The MFL area is the maximum plant area that could be affected by a single fire or explosion, occurring in the more vulnerable area of the facility (i.e. that with the largest total PD and BI potential). The only acceptable ways to reduce the MFL estimate are:

- Adequate clear space separation between buildings
- Lack of continuity of combustibles
- Effective horizontal cut-offs with MFL walls
- Effective vertical cut-offs
- Expectable salvage values
- Reliable make-up capacity

Airports, High Rise Buildings, Hospitals and Universities are treated as unique and may have a MFL calculation that differs from the above providing certain favorable factors exist.

Normal Loss Estimate (NLE)

The Normal Loss Estimate (NLE) is defined as the largest loss anticipated for a location under existing conditions. The NLE for a protected (sprinklered) facility assumes that the existing automatic and manual protection functions as designed and for intended and in its existing condition, whether it is adequate for the occupancy or not. This can include both public and private protection, including fixed automatic protection (such as sprinkler systems with reliable water supplies), other fixed automatic protection (such as special extinguishing systems or fire alarms with off-site signaling), and proximity of the public fire department and availability of public and private water supplies for firefighting purposes. In addition, construction characteristics are considered that include firewalls, draft curtains, roof parapets, fire doors, etc., as these factors relate to the hazard and combustibility of the occupancy. Fire department

response is anticipated.

Factors that could influence the NLE include:

- Construction classification and characteristics including fire walls, fire doors, etc.
- Occupancy and contents susceptibility to damage (smoke or water damage)
- Continuity of combustibles and combustible loading (light, moderate, heavy)
- Sprinkler protection/water supply adequacy
- Special hazard conditions, protection and controls
- Public Fire Department
- Fire alarms and Central Station monitoring

Deficiencies, minor in nature that are not expected to contribute significantly to a loss but do represent or could contribute to unsafe conditions or unsafe acts. These are recommendations that are considered best practices to enhance the level of property protection. Although compliance with these recommendations improves the risk and reduces the likelihood of a loss occurring from the recognized hazard or situation, they are considered desirable and not mandatory in nature.