Köln.Assekuranz Agentur
Ein Unternehmen der ERGO

07/28/2020

K.A.R.L.-PRO REPORT

NATURAL HAZARD AND RISK ANALYSIS

K.A.R.L. analyzes are used exclusively for loss prevention and early detection of risks. They are based on scientific data, facts and correlations. It also takes account of the potential damage levels that may arise as a function of the specific physical sensitivity of certain goods under external impact.

Loss statistics of the insurance industry are not included in the analyzes. Therefore, risk figures calculated by K.A.R.L. are not suitable as a basis for insurance premiums.

TASK

Task No.: 0
Task-ID: StandortAnalyse
Analysis of location dated: 28.07.2020 16:55:00
by: KA Köln.Assekuranz Agentur GmbH
Version: K.A.R.L.-08-2019.2

LOCATION UNDER SURVEY

Charles Bridge, Prague, Czechia

GEOGRAPHICAL SITUATION

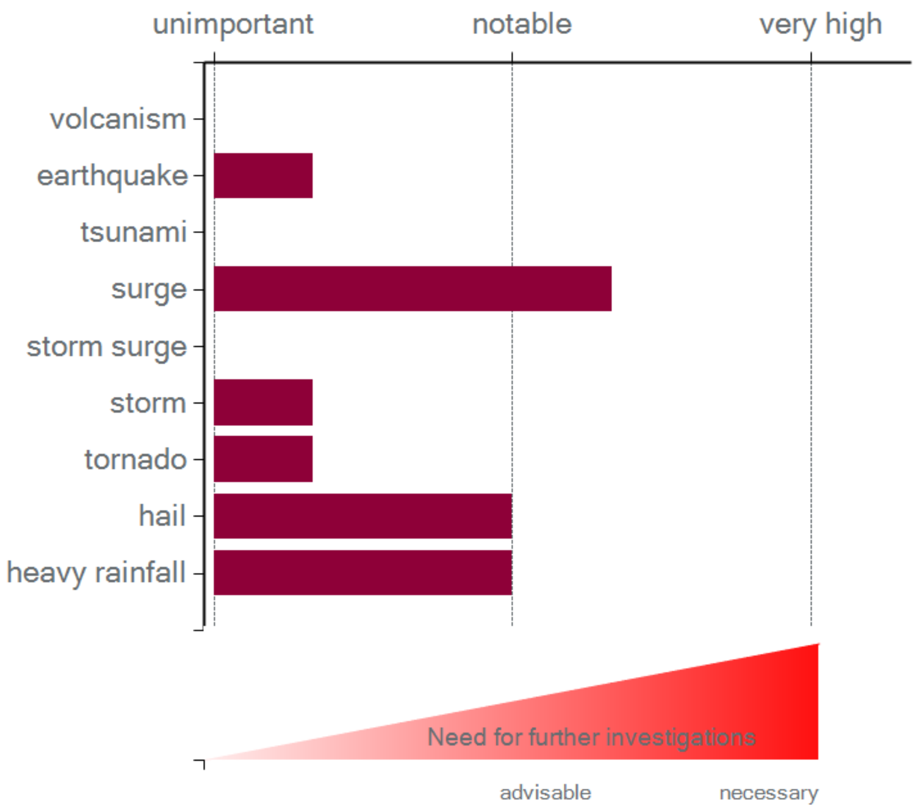
Latitude / Longitude (decimal):	50,086973 14,409330
Estimated Elevation (m above sea level):	195,60
Elevation from Digital Elevation Model (m above sea level):	195,60
Type of Landscape:	slightly hilly terrain
Lowest Elevation within 1 km (m above sea level):	190,00
Highest Elevation within 1 km (m above sea level):	326,00
Approximate Distance to Coast (km):	399

This data was transferred partly automatically from a global digital elevation model, which is based on radar survey. Deviations from the real elevation are possible at places where the radar signal has been reflected by roofs or trees. (Source: NASA, SRTM V4)

NB: The assumed local elevation has been interpolated from the elevation model under worst-case aspects. It may be lower than the real ground elevation.

The specified distance from the coast corresponds to the straight line to the nearest point of the elevation model, which has not been defined as mainland. Therefore, under certain circumstances also estuaries or large river mouths can be interpreted as marine areas.

SUMMARY OF THE RISK ANALYSIS



Location: Charles Bridge, Prague, Czechia

Due to the local landscape highly unfavourable soil conditions were presumed when determining the intensity of the earthquake (e.g. subsoil of fine grained and water saturated sediments with a low degree of compactness and artificially filled in ground). Under these circumstances should there be an earthquake it could lead to heavy subsidence, slides and possibly liquefaction. We strongly recommend examination of the subsoil at the location.

NB: The exact elevation was not given, but is most important for a correct classification of the risk of surge. It is strongly recommended to find out the exact elevation and repeat this analysis.

When calculating the risk we assumed that in the area in question there must be technical installations, which protect the area from flooding up to high water with a statistical return period of 75 years. Since this is only an estimation by K.A.R.L. we urgently recommend verification at the location.

VULNERABILITIES AND VALUES AT RISK

Values at Risk

TOTAL (%):	100

This risk analysis concerns the following goods / facilities / buildings:

NOT SPECIFIED

RISK FIGURES

PERIL	RISK as % p.a.
Volcanism:	0,0000 (-)
Earthquake:	0,0087 (very low)
Tsunami:	0,0000 (-)
Surge / River Flood:	0,6306 (increased)
Storm Surge:	0,0000 (-)
Storm:	0,0092 (very low)
Tornado:	0,0170 (very low)
Hail:	0,1453 (notable)
SUM (without Heavy Rainfall):	0,8107 (high)

Heavy Rainfall:	0,1672 (notable)

The risk analysis has been calculated considering the vulnerabilities (sensivity of the goods / facilities / buildings that could be threatened by the examined natural hazards) defined by the user mentioned below.

The risks detected by K.A.R.L. are calculated by numerical modelling. First of all the potential losses are calculated for statistical return periods of between 1 and max. 10.000 years. From this a mean annual loss is deduced as a significant figure for the Risk at the location.

Example (simplified): Should a total loss of 1 Mio. EUR be expected due to flooding only once a century then the mean annual loss (= RISK) is 10.000 EUR p.a.. The identical risk would result from the occurrence of e.g. 4 single events causing damage of 0,1 Mio., 0,3 Mio., 0,4 Mio. and 0,2 Mio. EUR collectively. The average then is also 10.000 EUR p.a..

Regardless of the object’s value the risk can be expressed as a yearly percentage which would be, in the above example, 1 % of the total value of the object per year (i.e. RELATIVE RISK).

It is possible that singular claims may significantly exceed the calculated risks. Therefore they are separately listed below together with the corresponding statistical return periods. The CALCULATED MAXIMUM LOSS states the highest possible single loss for each model calculated. For this figure no statistical return period will be given.

RECOMMENDATIONS AND FURTHER STEPS

Some risks have been identified as notable or above. Further investigations are necessary. Due to this it’s recommended to clarify the following issues:

LOCAL ELEVATION:

Try to find out the exact elevation of your site (m above sea level) and carry out the risk analysis again. The best references are official maps with a scale of 1:5000 to 1:25000, where elevations are given. Construction or site plans also contain relevant elevation data. If necessary a surveying office must be consulted. ATTENTION: Elevation data from mobile GPS devices or smartphones are not precise enough for this purpose.

SURGE:

Check locally for protection walls or dykes, flood barriers, retaining structures, reservoirs or any other technical protection measures to deflect a flood event of an annual return period of 75 years. This figure was used for this current risk analysis. Possible information sources: Local environmental authorities, sewage works, water and dyke construction authorities, local emergency services etc.

HEAVY RAINFALL:

Check if the local sewer network is designed for extreme heavy rainfall. To clear that question it may be necessary to hire a competent expert. Also check that the drainage systems are clean or that they can not be blocked by leaves or other contaminants. Also, check for risk potentials such as IT systems and valuable archive documents in basements or outdoors stored water-sensitive goods.

HAIL:

Please avoid placing valuable and vulnerable goods unprotected in the open. Should this not be possible we recommend the installation of hail nets or sheds. Please note that drainage systems for melting and rain water can become blocked which could lead to local flooding.

NOTES FOR INTERPRETATION

The calculated results by K.A.R.L. and the statements in this report are to be considered as a guide only. They only INDICATE which perils can cause specific risks and where further action might be necessary. Their purpose is to prioritize further research and installation of protective devices. In no way can they replace a detailed and scientific analysis of the location itself by an expert.

Please note further: Is a risk identified and named, there is always an endangerment which, under certain circumstances, might cause severe damage. The classification of a risk as “VERY LOW” or “LOW” therefore only means, that such an extreme event occurs very seldom and not that it is impossible. Whether further protection is necessary even in a low risk situation depends on the value and the vulnerability of the goods at the location. Are the risks classified as “NOTABLE” to “VERY HIGH”, further investigation of the situation is always advisable in order to define the level of risk more precisely.

Such an investigation can be conducted by a detailed analysis of the location (K.A.R.L.-EXPERT) by our own experts if requested.

This risk analysis was generated automatically. It was not checked for plausibility by an expert. Certain facts only visible in maps, air or satellite reconnaissance pictures, which might have influenced the risk evaluation, could not be taken into account.

In case of any question please contact:

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CLIMATIC CONDITIONS

Mean Annual Temperature:	10,0 °C
Coldest Month:	Jan. with -3,0 °C
Warmest Month:	Jul. with 25,9 °C
Number of days per year >= 20°C: (mean temperature)	51
Mean Elevation of Frost Line above sea level:	1581 m
Annual Precipitation:	489 mm
Quarter with Maximum Precipitation:	J-J-A with 201 mm
Quarter with Minimum Precipitation:	D-J-F with 72 mm

The climate data given here are dynamically adapted to the respective current year on the basis of a climate model (NCAR Community Climate System Model (CCSM), Scenario A1b).

Theoretical Availability of Water:	98 mm p.a.

Explanation: The availability of water is calculated as the difference between the annual precipitation and the evaporation. Theoretically, this amount of water is available as surface water or replenishes the groundwater storage. In the location under survey the amount is below 100 mm p.a.. Considering the global climate change there is a danger of aridity. The situation requires close supervision.

Index of Severe Weather:	average (0,88)

Explanation: Köln.Assekuranz has calculated the index of severe weather using various climatic parameters. With this index the frequency and degree of severe weather can be compared to the conditions in Western Europe. The following Indices of severe weather are characteristic for certain regions: Stockholm:0,6 London:0,7 Cologne:1,0 Munich:1,3 Milan:1,5 Osaka:2,3 Hong-Kong:4,2 Cayenne (French.Guayana):5,1 West-Columbia:11,7 Mumbay:12,7

Flash Frequency (Occurrences per sq. km p.a.):	2,3

Explanation: NASA satellites observe the flash frequency globally. The following flash frequencies (number p.a. and km2) are typical for certain regions: Stockholm:0,4 London:1,0 Cayenne (French Guayana):1,6 Cologne:2,0 Munich:2,0 Osaka:4,7 Mumbay:6,0 Milano:12,0 Hong-Kong:15,0 West-Colombia:25,0

Only about 10 % of all registered flashes actually hit the ground.

Calculated maximum Snow Load (kg/m2):	88

Classification: Low to mean snow loads are to be expected. The local climate conditions are similar to those in Paris (France), London (UK) or Tokyo (Japan).

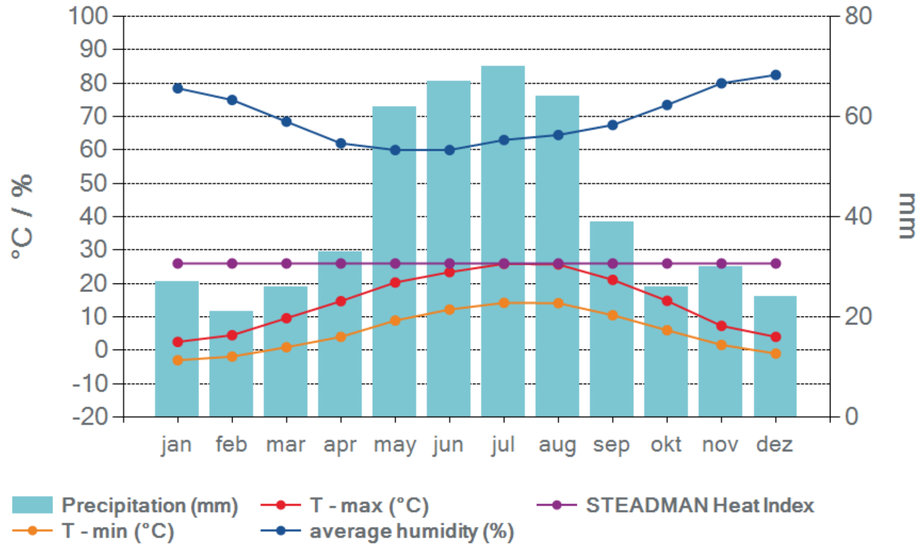
With 95 percent probability a lower limit load of 38 kg/m2 can be exceeded.

With 5 percent probability an upper limit load of 193 kg/m2 can be exceeded.

Explanation: The snow loads given here were calculated on the basis of globally available climate data. The modeling process used for this purpose has been calibrated on the basis of numerous specific local building codes and recommendations that come from different climate zones and topographical altitudes around the world. The calculated figures should therefore be understood only as a guide. They are not suitable as a basis for the structural design of buildings.

FOR THE STRUCTURAL DESIGN OF BUILDINGS ONLY SNOW LOADS ARE ALLOWED WHICH ARE PUBLISHED BY THE LOCAL AUTHORITIES. CONTACT YOUR MUNICIPAL BUILDING DEPARTMENT.

Climate Diagram



Explanation: The STEADMAN heat index reflects the perceived temperature in the higher temperature range. The long-term average values of real temperatures and humidity are included in his calculation. A perceived temperature of up to 26 ° C is defined as not critical to health. At the location under survey, this value is never exceeded in any month. This means that a pleasant climate for Europeans can be expected throughout the seasons.

HAZARD AND RISK ANALYSIS

The following HAZARDS are recalculated by K.A.R.L. for each individual evaluation on the basis of scientific data. Existing hazard maps (see section Data Sources) are only used for control and comparison purposes. The RISKS derived from the hazards also depend on local factors (terrain height, existing protective measures, building quality, etc.) and the vulnerabilities predefined by the user specified below (specific sensitivities of the potentially affected goods / plants / buildings to the natural hazards investigated).

1. Volcanism

No known recent volcanic activity within 200 km radius from the location under survey.

2. Earthquake

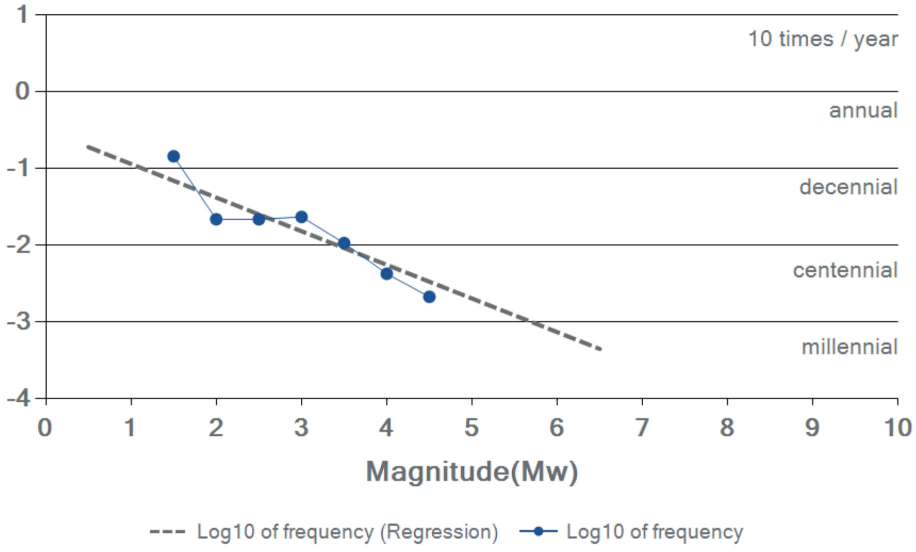
The site is located in an area where no or only a very low earthquake hazard is to be expected.

There have been a total of 28 earthquakes since the year 1934 within a radius of 70 km from the location under survey. Their hypocentres were comparably close to the surface at a depth of less than 100 km. The mean depth of the hypocentres was 9 km.

This data was evaluated statistically leading to the following results:

Frequency of Earthquakes

The sample of earthquakes has been categorized according to their magnitudes and occurrence probabilities. The latter have been normed to a reference area of 7854 km2 (R = 50 km). The Gutenberg-Richter-relation (see diagram below) shows the occurrence probabilities (Y) for different magnitudes (X).



The strongest earthquake registered so far occurred on 6.10.1979 17:31 at a distance of 49 km from the location under survey. Its magnitude was Ms = 3,9.

The classification of the earthquake hazard is usually done with a 475 year event taken from statistical frequency analysis. In this case this would mean a magnitude of Mw = 4,9 and an MM-Intensity of IV (clearly observable) at the location under survey. Due to the local landscape highly unfavourable soil conditions were presumed when determining the intensity of the earthquake (e.g. subsoil of fine grained and water saturated sediments with a low degree of compactness and artificially filled in ground). Under these circumstances should there be an earthquake it could lead to heavy subsidence, slides and possibly liquefaction. We strongly recommend examination of the subsoil at the location.

Expected MM-Intensities at the location

Return Period 10 years:	(-)
Return Period 20 years:	(-)
Return Period 50 years:	(-)
Return Period 100 years:	I
Return Period 200 years:	III
Return Period 475 years:	IV
Return Period 1000 years:	VI-VII
Return Period 2000 years:	VIII-IX

The risk analysis relates to storage of goods in the open.

Vulnerability Earthquake

The vulnerability has been defined as loss percentage depending on the MM-Intensity at the location under investigation and refers to "K.A.R.L., Standard-Annahme". It has been used to calculate the following risk figures.

Risk Figures Earthquake

Probable Maximum Loss, Return Period 50 years (%):	0
Probable Maximum Loss, Return Period 500 years (%):	0,061
Probable Maximum Loss, Return Period 1000 years (%):	1,6
Calculated Max. Loss (%):	12
Relative Risk (%/year):	0,0087

For further explanations see section RISK FIGURES.

According to these conditions the earthquake risk is classified as very low.

3. Tsunami

Considering the long distance to the coast line of more than 30 km there is no need for examination. Tsunamis can be ruled out at the location under survey.

4. Surge (River Flood, Flash Flood, Drainage Failure)

The hazard analysis based upon the digital elevation model came to the following conclusion:

The location under survey is in or near a deep ground depression or a very flat plain. Natural drainage is strongly limited. Therefore, the POSSIBILITY of surge is very high considering the local landscape.

For the calculation of the flood hazard due to high water or extremely high precipitation and the resulting risks we evaluated the digital elevation model together with climatic figures from a wider regional area and scientific analogies in the present case. This means that the following conclusions are not exact but of a qualitative nature only. In reality the figures can differ. A closer examination of the risk situation at the location under survey is recommended, as possible on the basis of concrete hydrographical data from nearby gauging stations.

Hydrographic Figures (Estimation by K.A.R.L.)

HW-10 (m above sea level)	194,98
Local elevation (m above sea level)	195,60
HW-20 (m above sea level)	195,97
HW-50 (m above sea level)	197,14
HW-100 (m above sea level)	197,91
HW-200 (m above sea level)	198,58
HW-500 (m above sea level)	199,33
HW-1000 (m above sea level)	199,78
HW-MAX (m above sea level)	200,60

Should the given or presumed elevation of 195,60 m above sea level be representative for the location, the location is on average elevation compared to the wider surrounding (1 to 2 km).

Due to the local situation it can be assumed that the people in charge are reasonably aware of the flood danger and that there are appropriate protection measures in place (e.g. emergency plans). Hence, the calculated risk of surge has been reduced by 0,5.

When calculating the risk we assumed that in the area in question there must be technical installations, which protect the area from flooding up to high water with a statistical return period of 75 years. Since this is only an estimation by K.A.R.L. we urgently recommend verification at the location.

Vulnerability Surge

The vulnerability has been defined as loss percentage under the impact of fresh water depending on the possible flood height on top of the surface at the location under investigation and refers to "K.A.R.L., Standard-Annahme". It has been used to calculate the following risk figures.

Risk Figures Surge

Probable Maximum Loss, Return Period 50 years (%):	0
Probable Maximum Loss, Return Period 100 years (%):	32
Probable Maximum Loss, Return Period 200 years (%):	51
Probable Maximum Loss, Return Period 500 years (%):	69
Probable Maximum Loss, Return Period 1000 years (%):	80
Calculated Max. Loss (%):	100
Relative Risk (%/year):	0,6306

For further explanations see section RISK FIGURES.

According to these conditions the risk of surge is classified as increased.

NB: The exact elevation was not given, but is most important for a correct classification of the risk of surge. It is strongly recommended to find out the exact elevation and repeat this analysis.

5. Heavy Rainfall

Heavy rainfall is usually a relatively limited phenomenon and can also occur in flood-safe zones. Conversely, floods or flash floods can be caused by heavy rainfall events which occur far away from the investigated location, but do not hit it directly. The hazard locations of a heavy rainfall event and the associated flash flood are therefore not identical. Hence, K.A.R.L. assesses flood and heavy rain risks separately, as these are independent risks.

Heavy rainfall can cause damage, which -unlike flooding- can occur under the influence of unfavorable conditions in the smallest possible space. In the first place, there is water inrush into cellars and underground garages as well as their entrances, inner courtyards closed on all sides, underpasses and small local depressions. All structures mentioned are often constructed and have only a small surface area. K.A.R.L. is therefore unable to recognize them on the basis of the digital elevation models used. In addition, there is possible damage caused by the ingress of rainwater into buildings, vehicles and means of transport (wagons, containers, boxes, packaging foils, etc.) as well as impairments caused by washed out infrastructure systems.

Furthermore, the risk of being affected or damaged by heavy rain depends highly on the absorption capacity of the local sewage systems. Due to economic considerations, these are normally only designed for rainfall that occurs at statistical intervals of 3 to 10 years (design rainfall). A higher degree of protection is rare to find and is therefore not used in this context. If the design rainfall is exceeded, it results in overflow, the leakage of sewer water on the surface and the associated consequential damage.

A model developed by KA based on globally available climate data and calibrated on the basis of measured precipitation data from more than 1,700 weather stations worldwide is used to calculate the heavy rain hazard and the resulting risk. For each point on earth (except Antarctica), this model provides the approximate values of the maximum daily precipitation to be expected for return periods between 1 and 10,000 years.

Maximum Daily Precipitation (calculated by K.A.R.L. model)

5-year (mm per day)	97
10-year (mm per day)	124
20-year (mm per day)	154
50-year (mm per day)	200
100-year (mm per day)	239
200-year (mm per day)	282
500-year (mm per day)	344
1000-year (mm per day)	395
MAX (mm per day)	590

There are no globally valid and comparable definitions of the terms design rain and heavy rain. What is perceived as heavy rain depends mainly on the regional climate. In addition, the local environmental conditions that make a heavy rainfall a damaging event can hardly be specified. Against this background, it is not possible to determine specific vulnerabilities on the one hand and, on the other hand, there is no global comprehensive information on the dimensioning of wastewater systems available. The following generalized assumptions are used in the present analysis:

1. The design rainfall is based on the local 5-yearly daily precipitation, to be stated as precipitation height in mm (from K.A.R.L. rounded up or down to the nearest full 50 mm/day). The maximum design rainfall is assumed to be 250 mm/day. Furthermore, it is assumed that the design rainfall calculated by K.A.R.L. is only included in the dimensioning of sewage systems with a probability of 25%. On the other hand, it is assumed with a probability of 75% that the design rainfall will hardly be higher than 100 mm/day.

2. Precipitation events below or at the level of the assumed design rainfall do not cause any damage.

3. Precipitation events exceeding the assumed design basis rainfall are regarded as heavy rainfall.

4. The factor by which a heavy rainfall of a given return period exceeds the assumed design rainfall is decisive for the potential degree of damage.

5. The highest possible damage is assumed by K.A.R.L. if a heavy rainfall event produces 5 times the amount of precipitation of the assumed design rainfall. It is equated with the maximum damage which, according to the vulnerability used, applies to floods. Between the first exceedance of the design rainfall and the potential maximum value, an exponential increase in the loss potential is assumed.

On this basis, it is assumed in the present case that the local drainage systems at the investigated site are (or should be) designed for a design rainfall of 100 mm per day and that no damage from heavy rainfall is to be expected up to this precipitation level. Under the regional meteorological conditions, precipitation can only be classified as heavy rain if it exceeds this value.

This results in the following risk figures.

Risk Figures Heavy Rainfall

Probable Maximum Loss, Return Period 50 years (%):	1,7
Probable Maximum Loss, Return Period 100 years (%):	2,9
Probable Maximum Loss, Return Period 200 years (%):	5,2
Probable Maximum Loss, Return Period 500 years (%):	12
Probable Maximum Loss, Return Period 1000 years (%):	24
Calculated Max. Loss (%):	100
Relative Risk (%/year):	0,1672

According to these conditions the risk of heavy rainfall is classified as notable.

6. Storm Surge

Due to the large distance to the coast of more than 30 km there is no need for examination. Storm surge can be excluded as far as humanly possible.

7. Storm

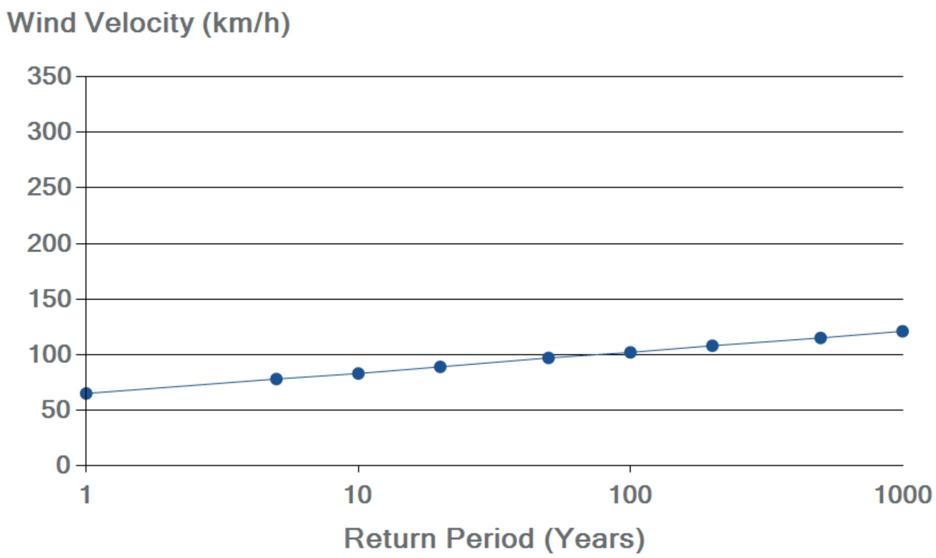
The site under investigation is located in a region where a low storm hazard can be assumed.

The calculation of the storm hazard with K.A.R.L. is based on KA's own analyzes of approximately 5000 weather stations worldwide. These stations provide relevant long term measurements of local wind speeds. In this context, no distinction is made between tropical cyclones and extratropical storms. Furthermore, we used the digital elevation model to examine whether the landscape morphology around the location might influence the maximum wind speed to be expected there.

Wind forces of >= 8 Bft (>=72 km/h) might occur about every 2 years according to the statistical analysis of the data. A 100 year storm event would mean a local maximum wind speed of 102 km/h.

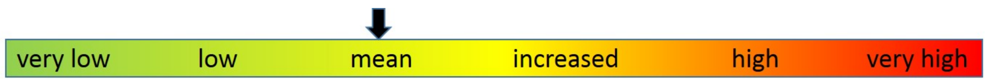
Frequency of Storms

The following diagram shows the wind speed of the maximum expected strong gusts depending on their individual return periods. Wind speeds are classified as follows : storms 89-102 km/h, severe storms 103-117 km/h, gales and tropical storms 118-177 km/h; severe tropical storms > 178 km/h



Vulnerability Storm

The vulnerability has been defined as loss percentage depending on the possible wind speed at the location under investigation and refers to "K.A.R.L., Standard-Annahme". It has been used to calculate the following risk figures.



Risk Figures Storm

Probable Maximum Loss, Return Period 50 years (%):	0,076
Probable Maximum Loss, Return Period 100 years (%):	0,11
Probable Maximum Loss, Return Period 200 years (%):	0,17
Probable Maximum Loss, Return Period 500 years (%):	0,28
Probable Maximum Loss, Return Period 1000 years (%):	0,40
Relative Risk (%/year):	0,0092

For further explanations see section RISK FIGURES.

According to these conditions the risk of storm is classified as very low.

8. Tornado

The site under investigation is located in a region where a low tornado hazard can be assumed.

The calculation of the hazard of tornados by K.A.R.L. is based upon regional climatic parameters and geographical factors. Furthermore, within the model it was considered that large plains or slightly hilly landscapes would favour the occurrence of tornados. On the other hand, a strongly varied landscape prevents the formation of tornados or only permits tornados of a short duration. The model was calibrated using meteorological and climatic data from the USA. (Source: NOAA).

Therefore, in the region of the location under survey the statistical probability of 1,8 severe tornados p.a. is to be reckoned with on a reference area of 10.000 square km as a worst case.

Furthermore, it was presumed that significant damage only occurs when the location is directly hit by a tornado. In this case total loss is to be expected. A tornado normally only has a width of 500 m and hence, even in an area with a high hazard of tornados a direct hit occurs seldom. Therefore, in comparison to other natural risks the calculated tornado risks are generally relatively low.

The definition of vulnerability regarding tornados is based on a maximum loss potential of 100 %.

Risk Figures Tornado

Calculated Max. Loss (%):	100
Relative Risk (%/year):	0,0170

For further explanations see section RISK FIGURES.

According to these conditions the risk of tornados is classified as very low.

9. Hail

The site under investigation is located in a region where a mean hazard of hail can be assumed.

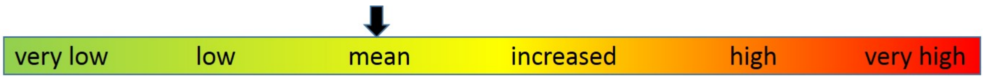
The calculation of the hazard of hail by K.A.R.L is based upon a model developed by KA. Regional climatic parameters were analysed whether they favour or hinder the formation of hail or how their effects might be mutually cancelled out. Furthermore, since hail is mostly coupled with thunderstorm, the frequency of flashes has been included in the model. The model was calibrated using meteorological and climatic data from the USA. (Source: NOAA).

Therefore, hailstones with an average diameter of < 1 cm have to be reckoned nearly every year, 1,3 ±0,7 cm with about every 10 years and hailstones with an average diameter of 2,8 ±0,8 cm have to be reckoned with about every 100 years.

No hail protection measures have been given. This information has been taken into consideration in the following risk analysis.

Vulnerability Hail

The vulnerability has been defined as loss percentage depending on the mean diameter of the hailstones and refers to "K.A.R.L., Standard-Annahme". It has been used to calculate the following risk figures.



Risk Figures Hail

Probable Maximum Loss, Return Period 50 years (%):	2,4
Probable Maximum Loss, Return Period 100 years (%):	2,8
Probable Maximum Loss, Return Period 200 years (%):	4,2
Probable Maximum Loss, Return Period 500 years (%):	13
Probable Maximum Loss, Return Period 1000 years (%):	19
Calculated Max. Loss (%):	49
Relative Risk (%/year):	0,1453

For further explanations see section RISK FIGURES.

According to these conditions the risk of hail is classified as notable.

METHODOLOGY

The risk and hazard classifications determined by K.A.R.L. are based on globally available geological, geographic and meteorological data sets that are stored, continuously maintained, extended and specified at KA. The methods of calculation are constantly being improved and adapted to the state of knowledge. Hence, the results refer solely to the state of knowledge at the time of this report.

The calculation methods are not based upon past claim events, they are only verified by them. This guarantees that the modelling of risks follows scientific principles and is not influenced by a random and sometimes incomplete collection of claim data.

Any missing or incomplete data is supplemented in the best plausible way by special estimation procedures developed by KA. These procedures follow generally the WORST CASE PRINCIPLE. Therefore, risk evaluations with a large amount of estimated parameters may lead to higher risk results.

IMPORTANT NOTICE:

This risk analysis was generated automatically. It was not checked for plausibility by an expert. Certain facts only visible in maps, air or satellite reconnaissance pictures which might have influenced the risk evaluation, could not be taken into account.

SOURCES OF DATA

A.Jarvis, H.I.Reuter, A.Nelson, E.Guevara, 2008, Hole-filled seamless SRTM data V4, International Centre for Tropical Agriculture (CIAT)

Giardini, D., Grünthal, G., Shedlock, K. M. and Zhang, P.: The GSHAP Global Seismic Hazard Map. In: Lee, W., Kanamori, H., Jennings, P. and Kisslinger, C. (eds.): International Handbook of Earthquake & Engineering Seismology, International Geophysics Series 81 B, Academic Press, Amsterdam, 1233-1239, 2003

Google Maps, Google Earth Pro (Geocoding, Background Maps)

KA Köln.Assekuranz Agentur GmbH, our own data source and investigations

Munich RE, "topics" (various editions)

NASA - Global Hydrology Resource Center (GHRC)

NCAR GIS Program. 2012. Climate Change Scenarios, version 2.0. Community Climate System Model, June 2004 version 3.0. http://www.cesm.ucar.edu/models/ccsm3.0/ was used to derive data products. NCAR/UCAR. URL: http://www.gisclimatechange.org. Data Access Date june 2017

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Stive, Marcel J.F. et al, How the Dutch plan to stay dry over the next Century, published in ICE-Civil Engineering (164) 2011, CE3, pp 114-212, ISSN0965 089X

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Data from the given sources are only evaluated and interpreted by KA. No data is passed on to third parties.

The analysis of risks made in this document is based upon data resources cited in the document and empirical values integrated in the IT-system “K.A.R.L.”. The summaries are carefully made and to the best of one’s current knowledge. Please note that risk analysis is not a forecast. Therefore, it cannot be excluded that perils which show by forecast no risk or only a minor risk may suddenly and unexpectedly cause damage on a large scale.

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