

## Security concept 2.0 on the basis of risk assessment

Goal	Prevention of accidents, damage and forest fires
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### Preliminary remark

The Förderverein der Verkehrs-Versuchsanlage Horstwalde e.V. (FKVV) uses a historic traffic test facility in Baruth/Mark OT Horstwalde for the factory testing and presentation of off-road vehicles (passenger cars, commercial vehicles, special vehicles). This is mainly used for factory trials under standardised conditions. The testing/presentation of vehicle technology in borderline areas in difficult terrain is associated with objective dangers. The FKVV test modules and tracks extend over an area of around 550 hectares and are embedded in the Technical Safety Test Site (TTS) of the Federal Institute for Materials Research and Testing (BAM).

Due to its proximity to BAM, large parts of the FKVV are located directly in the effective range of the blasting site and fire test stand 2 of BAM, i.e. maximum restricted areas in accordance with Annex 2 are possible during tests with fragmentation and debris flight. The areas around building 501 (FKVV office), for example, are only 650 m away from the centre of the blasting area.

The Förderverein der Verkehrs-Versuchsanlage Horstwalde e. V. also uses additional areas in the region for special trials.

For safe operation, this safety concept is submitted on the basis of a risk assessment using the **TOP principle** (order of priority of protective measures: technical, organisational and personal measures). Additional user-specific risk assessments and corresponding **risk minimisation measures (RMM)** are developed together with the FKVV office **on the basis of the QMH module "Environmental risks"** and recorded in the FKVV customer usage contracts.

## Real estate

The Horstwalde Traffic Test Site (Annex 1) is not open to the public and not available for motorsport, but is part of the BAM site. The area is embedded in the district of Horstwalde 124831 and is spread over approximately 550 ha in the southern part of the BAM TTS. The Horstwalde forest district is managed for the owner (the federal government) by the Havel-Oder-Spree Federal Forestry Operation South. The Teltow-Fläming forestry office is responsible for this sub-area.

The so-called "Schlechtwegstrecke Gottow" (Appendix 3) is a former test track of the development department of IFA Ludwigsfelde, paved with field stones and equipped with special bumps, similar to the "Belgian Block". It is now a private road and was given to the Förderverein der Verkehrs-Versuchsanlage Horstwalde e. V. for vehicle testing in accordance with its original use. The "Schlechtwegstrecke Gottow" follows the historic connecting road between Kummersdorf-Gut and Gottow for 3.7 kilometres. It is located to the east in the district of Kummersdorf-Gut 124841 and to the west in the district of Gottow 123322. Access to the turning loops is via a short forest path with concrete slabs in the east and via a public municipal road in Gottow in the west. Most of the "Schlechtwegstrecke Gottow" is embedded in the Brandenburg state forest. The owner's representative and manager of the state forest is the Brandenburg State Forestry Enterprise (LFB) with the locally responsible state forest ranger station (LObf.) Bad Belzig, in this case the Raubusch district. The Teltow-Fläming forestry office is also sovereignly responsible here.

For further details on the "Schlechtwegstrecke Gottow", see:  
<https://schlechtwegstrecke.fkvv.de/>

## Communication

The FKVV site in Horstwalde and the "Schlechtwegstrecke Gottow" route do not have comprehensive mobile phone reception. Mobile phones are also fundamentally unsuitable for controlling a group of people, which is why the use of company radio is mandatory.

All FKVV customers/staff keep a constant listening watch on company radio. Two local relay radio stations (VHF/UHF) are operated for FKVV radiotelephony.

For physical reasons, the outdoor areas are no longer accessible from the UHF relay in Horstwalde. Long-distance connections to the "Schlechtwegstrecke Gottow" and to the region are covered by the VHF relay.

FKVV customers can use their own radio technology if it fulfils the basic requirements such as area coverage in the dune valleys and/or the long-distance connection between the FKVV base and Gottow. Alternatively, the radio technology of a local service provider is available on request.

Emergency calls to the public telephone network should preferably be made via the landlines of the FKVV or BAM, alternatively via mobile phones. **Emergencies on the TTS and during BAM's working hours are sent to BAM's emergency coordinators via the BAM radio network.** Further notification and the subsequent procedure are coordinated from there. **Outside BAM's working hours and outside the TTS, a direct emergency call is always made via 112.** A contact person from the FKVV must be assigned to the on-site fire brigade incident commander as a specialist advisor. Their tasks are Providing information about the test/event, the site, directing their own forces and acting as an interface between the technical BOS network(s) and the local company radio.

For technical details on the communication concept and Annex 5 of the licence agreement, see: <https://funk.fkvv.de/>

## Part 1: General risk assessment and risk minimisation measures

The Horstwalde traffic test facility is located in the catchment area of a waterworks. Consequently, landscape and environmental protection is of particular importance. The site has never been completely searched for ammunition and weapon remnants. Due to the size of the site and the nature of the ground, it is not possible to use a comprehensive winter road clearance service. The site is also a testing and storage area for hazardous substances for BAM. Parts of the traffic test facility are located in the effective range of the BAM blasting area and BAM fire test stand 2, i.e. sharp-edged metal splinters may lie on the ground. Debris from bursting and blasting tests can also fall in the area of the FKVV, loud bangs and blast effects are possible. Vehicles may tip sideways when travelling off-road. Vehicle adhesion in border areas is also strongly influenced by moisture, slippery snow and ice as well as lichen and algae growth. The driver has no view of the road directly in front of him for a short time when driving down the inclines or at the crests of the dunes. The off-road tracks as part of a military-technical area monument are protected, e.g. there are no crash barriers.

### General risk minimisation measures

- In the off-road area, the modules and connecting forest paths must not be left in order to protect nature and due to the risk of old ammunition
- Driving with leaking fuel and lubricants is prohibited
- The speed limit is generally set at **30 km/h**, right before left applies, when exiting the off-road area, cross traffic always has right of way on paved roads (concrete slab tracks, paving, asphalt)
- Access to the traffic test centre is via the access road in the village of Horstwalde
- The main access roads of BAM are not used, with the exception of 350 m between the lorry access road to the blasting site and the start of the loose sand section; further exceptions must be agreed with BAM in each case.
- During operation, no persons are to remain directly behind the exits of the incline railway and behind dune crests.
- The passability of the incline tracks depends on the weather conditions
- The 55% and 65% incline tracks are only used by trained factory drivers
- In storm conditions of 75 km/h (9 Beaufort) or more, driving in the forest is suspended and the forest is not entered
- The relevant accident prevention measures apply to off-road driving, e.g. appropriate clothing/shoes, closed windows when driving on roads with side vegetation, arms/hands always inside the vehicle, etc.
- BAM's operational instructions on safety measures must be followed.
- The site is located within the ED-R 56 flight restriction zone, i.e. **the use of drones is prohibited.**

## Part 2: Forest fire risk assessment and risk minimisation measures

The region around Horstwalde has a total annual precipitation of < 600 mm and is categorised in forest fire hazard class A1, comparable to the forests in Portugal and southern France. The soil in the region is sandy and often only covered with a humus layer a few centimetres thick. Taken together, this means that the subsoil is barely able to store

precipitation water. As a result, locations with an increased risk of forest fires can occur after winters with little snow and especially in summer (see Appendix 6).

In phases of high forest fire danger (forest fire danger level 4) and very high forest fire danger (forest fire danger level 5), contact between vegetation and hot vehicle parts and/or open fire can trigger a forest fire. In the experience of the forestry administration, forest fires are a particular threat when vehicles with hot components are stationary, and less so when they are moving continuously through the terrain.

There is currently no regulation in Brandenburg that automatically prohibits entering/entering the forest at forest fire danger levels 4 and 5. With regard to preventive forest fire protection, the Forest Act of the State of Brandenburg<sup>11)</sup> (LWaldG) stipulates in § 20 (1) that this is the responsibility of the forest owner. Preventive forest fire protection will have to be different for the FKVV than for other forest owners due to the wide variety of uses. In this respect, the different uses will result in different hazards, which in turn must be incorporated into preventive forest fire protection; in principle, LWaldG § 23 - Dealing with fire applies.

It is not an option to completely suspend work during the snow and ice-free peak period of the year when forest fire danger levels 4 and 5 are in effect. The FKVV's customers have been preparing for the test/date for months and the technology/staff are firmly committed and scheduled. A cancellation or postponement, usually at short notice, would have far-reaching economic consequences for the companies concerned and their customers. For this reason, specific risk mitigation measures (RMM) to prevent forest fires and false alarms as well as behaviour in the event of a fire are agreed with the customer.

### **Specifics on the vehicle, type of use and system**

Contact of grass and ground-covering plants with hot vehicle parts is naturally more likely with SUVs and small commercial vehicles than with large commercial vehicles and special vehicles - examples of the height of the exhaust system above the ground: pickup truck approx. 250 mm, Unimog approx. 800 mm.

Factory trials with individual prototypes, for example, are also less critical than presentations of entire vehicle fleets with the formation of traffic jams in convoy when the off-road modules are travelling continuously. When driving on paved surfaces, e.g. incline and twist tracks, "bad road Gottow" etc., aspects of ground clearance with regard to fire protection do not need to be taken into account, provided the grass verge between the concrete slabs on the approach to the twist track is mowed.

In the off-road area of Horstwalde, parking and planned stops for resting/changing drivers with hot vehicles should only be organised on paved surfaces.

The so-called "Schlechtwegstrecke Gottow" is a 4.25 m wide paved path. The access roads are also paved. In this respect, the potential forest fire risk here is not to be classified as higher than from a normal, narrow public road through forest and agricultural land. From forest fire risk levels 4 and 5, stops on the open road should be the exception; driver changes/breaks should be planned on the two turning loops.

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<sup>1</sup> [https://mlul.brandenburg.de/media\\_fast/4055/Waldgesetz\\_Brandenburg\\_2014.pdf](https://mlul.brandenburg.de/media_fast/4055/Waldgesetz_Brandenburg_2014.pdf)

## Immediate measures for incipient fires

In the event of a fire, the test operation/event will be interrupted immediately; priority will be given to fire detection/fighting and the protection and rescue measures for people, nature and material in accordance with the following points:

The following applies to the Horstwalde site:

- The location of the fire is reported according to the FKVV map, stating the module name (red designation), the number/colour of the nearest signpost and/or the number of the forestry division (green numbers):
  - **during BAM's working hours via the FKVV personnel** via the BAM radio network to the BAM emergency coordinators and thus to all persons on the TTS. The emergency coordinators at BAM initiate all necessary follow-up measures. -
  - Outside BAM's working hours**, a direct emergency call is always made to the Brandenburg regional control centre via emergency number 112 or +49(0)3381 6230. The forestry rescue point **2775** (in front of the BAM TTS administration building, technical zone) is specified as the destination.
- If the FKVV office and other users are not already informed by the radio traffic, they must be informed immediately.
- When the BAM administration is on duty, the emergency coordinator responsible will arrange for both barriers to be opened and manned for the initial briefing of the emergency services.
- If the BAM administration is not available, comparable action is taken with FKVV personnel and with information from the BAM security service. In the worst case scenario, the fire brigade is expected to arrive inside the BAM site on the main road BAM/BAM administration building junction. From there there is visual contact with the arriving forces via the southern and western barriers as well as to the forest rescue point 2775.
- The instructions of the fire brigade/rescue services must be followed.

The following applies to the Gottow bad road section:

- The location of the fire is reported directly to the Brandenburg regional control centre via emergency call 112 or +49(0)3381 6230 according to the map sketch "Schlechtwegstrecke Gottow" (Appendix 3), estimating the location. The forest rescue point **1056** is used to describe the approach to the eastern turning loop. The description of the western turning loop is >near **the eastern end of Gottow**<.
- The test manager or the person in charge on site organises the briefing of the approaching fire brigade/rescue services from the meeting point specified in the emergency call.
- The instructions of the fire brigade/rescue services must be followed.

## Risk reduction measures categorised according to forest fire danger level (WGS)

The following RMMs depend on the respective WGS and build on each other, i.e. the RMMs for the higher WGS must **also be** taken.

### A Forest fire hazard level 1 and 2

- Before starting work each day, the test manager informs the employees about the official forest fire danger level for the district of Teltow-Fläming, see: <https://mlul.brandenburg.de/wgs/text> (1 March to 30 September)

<https://polizei.brandenburg.de/waldbrand> (1 October to 28 February)

- Absolute smoking and fire ban outside, also applies to the inside of the vehicle, smoking area is the entrance to house 501

## B Forest fire hazard level 3

- The Forest Fire Centre (WBZ) of the Brandenburg Forestry Commission is manned annually from WGS 3 from 1 March to 30 September. At least on the >Lockersandstrecke< a clear dust plume is to be expected in dry weather. To avoid false alarms, such foreseeable events should be reported to the crew at the forest fire control centre in Wünsdorf by 10 a.m. at the latest. Communication takes place via e-mail to [waldbrandzentrale.sued@lfb.brandenburg.de](mailto:waldbrandzentrale.sued@lfb.brandenburg.de) and cc to [tts@bam.de](mailto:tts@bam.de). The WBZ can always be reached by telephone from WGS 3 from 09:45.

Contact:      Tel:    +49 (0)33702 2114044  
                  Mobile: +49 (0)173 9976440  
                  Fax:    +49 (0)33702 2114048  
                  E-mail: [waldbrandzentrale.sued@lfb.brandenburg.de](mailto:waldbrandzentrale.sued@lfb.brandenburg.de)

## C Forest fire hazard level 4

- Unless expressly requested by the customer as a test module, the water passage is filled to a maximum depth of 1.5 m and serves as a suction point for extinguishing water in the forest
- The customer is responsible for taking additional fire extinguishers, shovels and fire pans onto the vehicle(s)
- Uses with possible dust formation (major events) in the off-road area will be cancelled, factory tests will be restricted to paved routes and the loose sand track where possible. In exceptional cases (artificial sprinkling of the required off-road areas with tank fire-fighting vehicles (TLF) or driving under dew formation<sup>2</sup> > 75 % r. H. in the night or morning hours) must be agreed with the GS FKVV and the TTS management.
- After the end of off-road use, personnel remain on site for **one hour** to observe the area of the previously used route
- If the customer wishes to deploy additional personnel in preparation for a further increase in the WGS, e.g. for 2-hour fire watch, he must ensure this on his own responsibility and at his own expense

## D Forest fire hazard level 5

- From forest fire danger level 5 (very high danger), driving in the **forest area** is prohibited. Exceptions (paved modules, paths and pure sand tracks) are possible in individual cases after consultation with the GS FKVV and the TTS management in compliance with RMM. Any additional expenses required for this are to be borne by the user.
- After the end of off-road use, personnel remain on site for **two hours** to observe the area of the previously used route

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<sup>2</sup> Dew formation on plants as RRM: According to information from the Agricultural Meteorological Advisory Centre Leipzig of the DWD, plants are considered wet from > 90 % RH; if the air temperature rises, the relative humidity falls. In plant stands, leaf axils are still moist up to 70 % RH. With the help of the DWD portal "ISABEL", the temporal course of the relative humidity can be taken as a forecast value for the area of the DWD station Baruth/Mark, among others. For better readability in the diagram, the value of 75 % RH is taken as the lower limit for safety reasons.

### Part 3: E-mobility risk assessment and risk minimisation measures

The safety concept was developed in 2018 based on a risk analysis of experience with conventional vehicles with combustion engines. The demand for test operations with electric vehicles and corresponding high-performance battery systems is increasing and represents a new challenge for technical safety. Based on initial external experience with burning electric vehicles, areas for the controlled burning of electric vehicles are now being designated for the FKVV's test operations, as fires involving lithium batteries cannot be controlled using conventional extinguishing methods. Such "emergency burn-off areas" are: the top and bottom plate of the incline tracks, the apron of the climbing steps, the first forest path crossing "Lockersandstrecke" about 350 m from the end of the tarmac road and the respective turning loops on the "Schlechtwegstrecke Gottow" (see Appendix 5).

The office will draw the attention of customers with electric drives to these "emergency burn-off areas". Only fully developed battery systems with CE labelling are used in test operations. The Horstwalde traffic test facility and the SWS Gottow are not test areas for battery cells! If the electrical energy content of electric vehicles exceeds the equivalent chemical energy content of fully fuelled conventional test vehicles, additional risk mitigation measures (RMM) must be agreed with the customer. For such special RMM, the **DGUV publications from the "Fire brigades, assistance, fire protection" department<sup>3</sup>** must also be consulted.

#### Attachments:

- Appendix 1: Overview map "Traffic test facility"
- Appendix 2: Overview map "Maximum restricted areas of BAM"
- Appendix 3: Overview map "Bad road section Gottow"
- Appendix 4: Overview map "Rescue points"
- Appendix 5: Overview map "Emergency burn-off areas"
- Appendix 6: Statistics of the forest fire hazard levels in the district of Teltow-Fläming

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<sup>3</sup> See <https://publikationen.dguv.de/regelwerk/publikationen-nach-fachbereich/feuerwehren-hilfeleistungen-brandschutz/feuerwehren-und-hilfeleistungsorganisationen/3907/fbfhb-024-hinweise-fuer-die-brandbehaempfung-von-lithium-ionen-akkus-bei-fahrzeugbraenden?c=155>