



**St Helena Fire and Rescue Service**  
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**Premises Inspection Report**

Purpose of Inspection	FIRE SAFETY STUDY
Premises:	NEW BFI & AMD ENGINEERING
Owner/Operator	SHG & ANDRIAN DUNCAN RESPECTIVELY
Name of Assessor	ALAN THOMAS INTERNATIONAL FIRE SAFETY INSPECTOR
Date Assessment Carried Out	7 <sup>th</sup> JANUARY 2022

**Preamble**

Following a Governor in Council (GiC) meeting, to discuss a retrospective development application for the construction of a Workshop, Office, Carpentry Shop and Storeroom in Upper Rupert's Valley, Ministers requested additional information in relation to Health & Safety aspects of the work processors and 'hot works' being carried out at AMD's and the impact it would have by being in close proximity to the New BFI as and when it becomes operational.

A site survey was conducted to ascertain what the potential risks would be, should both sites become operational.

A balanced view has to be maintained of the potential and actual risks in order that vital resources, both financial and in terms of manpower and equipment are not diverted unnecessarily to deal with a high-profile but low probability risk at the expense of risk that are perceived as 'ordinary' but which have a higher probability of occurring with serious consequences.

**Summary**

An application to build an industrial workshop unit for metal fabrication and

carpentry workshop, offices and storage with an element of open storage and car parking, were discussed by GiC.

It must be noted that there had been no preliminary meetings with interested parties to discuss any operational issues arising from any plans for the proposed construction of the workshop etc. Nor was the fire service given the opportunity to comment and influence any operational changes as part of the process which would have been effective in agreeing and developing suitable facilities.

Work already undertaken on the site was unauthorised.

Concerns were raised from a Health and Safety perspective, in particular *that the workshop is likely to include 'hot works' involving the use of highly flammable materials would be in close proximity of the new Bulk Fuel Installation (BFI) facility. Ministers wanted some assurance that activities/work intended by the developer would be carried out safely and to gain a better understanding of whether a workshop using highly flammable materials just outside the 150m BFI safety buffer zone is acceptable.*

In order to establish if the proposed application is within the exclusion zone of the New BFI for the amount of petroleum that will be stored, and owing to lack in local legislation, I took reference to other applicable UK legislation and regulations, i.e. DSEAR, HSG 176, The Control of Major Accidents and Hazards Regulations (COMAH Regs 2015) which was made under the Health & Safety at Work Act 1974.

## **Main Findings**

From my understanding there is currently a 150m safety buffer zone surrounding the New BFI, whereby no other construction is permitted within this zone. I must admit that I am uncertain as to who imposed this and under what legislation.

I will assume that this distance is considered to be a conservative approximation of the hazard zones for a potential explosion and, in the absence of other information, are recommended as a method by which operators can determine relevant hazard zones.

Site topography and wind direction can also determine the distance of hazardous zones, therefore due to the site not being level, a shorter distance may be appropriate for the 'uphill' direction (towards AMD construction). Similarly, due to the significant slope, it may be appropriate to consider a longer distance in the 'downhill' direction towards the Incinerator.

The concerns are for the proposed location of the workshops immediately outside the 150m safety buffer zone, which is aggravated by the proposed systems of works that will be undertaken immediately next to the New BFI. Additionally, close-by is a proposed car parking area introducing the risk of car fire added to the equation. All of

these buildings and sites are worryingly served with a single access and egress road running directly adjacent the boundary fence of the BFI complex, potentially preventing any emergency vehicle access in the event of a major incident on either site.

### Location of proposed building in relation to the fuel tank(s)

The aims of separation distances are to protect people and property from the effects of fire at the tanks, but also to protect the tanks from fires which may occur elsewhere. The nearest side of AMD Office to the ISO Laydown Area is 103m, and 170m to the Boundary fence of the New BFI. There is a distance of 198m to the nearest fuel tank. The workshops that will potentially house hot-works have distances of 111m, 185m and 206m respectively.

The nearest UK guidance applicable to this is the HSG 176 '*Storage of Flammable Liquids in Tanks*' which gives separation distances for various tank capacities. However, for tanks in excess of 750m<sup>3</sup>, the recommended separation distance is just 15m from site boundaries, buildings, process areas and fixed sources of ignition to any point of the tank.

There is however an American *Flammable Liquids Bulk Storage Regulations*, which gives a greater distance of 60m from a storage tank shell to buildings containing combustible materials and other dangerous commodities.

Based upon the above AMD construction is considered to be outside of the recommended minimum safety zones.

It has to be noted that situated downwind from the nearest tank at 150m is the Government Incinerator. Under normal circumstances incinerators should not be situated within 100m and fitted with safety devices such as spark arrestors.

### Lack of Fire Fighting Water

There is much concern that Upper Rupert's Valley is being allowed to develop without thought or consideration given to any fire precautionary measures. There is currently no firefighting water supplies serving this area, which could potentially have serious consequences. Firefighting water shortage can have a negative impact on the effectiveness of fighting fires and increase the risk of substantial fire losses. If there is no water to appropriately protect the risk and suppress a fire, the burning question is - Where will the firefighting water supply be available from?

We must ensure that the risk has the right amount of water, distributed to all areas, readily accessible and consistently available as and when required.

It is recommended that before further construction be permitted within this area, that

authorities take all reasonable measures to secure an adequate water supply and hydrants to be use in the event of a fire.

### Fire Water Run-off

With the New BFI situated directly below AMD Construction, it could be affected as a result of any fire on this property, as there will be contaminated fire water run-off which may potentially cause an environmental pollution. A strategy to manage this risk may need to be included in an Emergency Response Plan.

### Passive and Active Fire Protection

In order to protect all interested parties it is recommended that AMD install both Active and Passive Fire Protection. It's important that both systems are properly working in the event of a fire.

Active and passive fire protection systems, although different, are important to a building's overall fire safety. AFP uses systems that take action in putting out the fire, while PFP uses systems that help prevent the spread of fire and smoke.

Any new fire prevention equipment need to be a standalone dedicated equipment, with no integration with any fire safety equipment installed in the New BFI.

It is recommended that plans be sent to the fire service so advice and recommendations can be given.

### Fire wall

Human error or some other unforeseen and unfortunate chain of events has the potential to occur at any time during operations, and can escalate to involve other areas potentially resulting in catastrophic consequences. Should any unfortunate scenario or criminal act happen that involve fuel tanks, acetylene cylinders etc. the current minimum separation distances *will not* safeguard people and property in the surrounding area in the event of an explosion and/or air blast or ignition on build-up of explosive atmospheres. Because of the close proximity to the main road, this undoubtedly will impede the access and egress (as there is only one road in and out) for emergency response teams and hamper their capabilities to aid with any rescue operations and deal with the core of the incident.

In order to safeguard the BFI it may be prudent to consider the erection of a Fire Wall between AMD's (preferable along his boundary fence line) and the fuel storage tanks which would control and cater for any fire risks. To be effective the wall must be reinforced concrete, have no holes in it, have at least half-hour fire resistance and be sufficiently robust to withstand foreseeable accidental damage.

## DSEAR/ COMAH Regulations

Where flammable liquids are present in the workplace, there is a specific requirement under The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) to identify the potential risks any activities may pose to your employees and others whose health and safety may be affected. The risk assessment required under DSEAR may be carried out as part of the risk assessment requirements of the Management Regulations and general fire safety legislation, which follows the same approach as that used in health and safety legislation. The outcome of this risk assessment will determine the measures to be taken to eliminate or reduce these risks so far as reasonably practicable. Staff must comply with the Health and Safety measures that apply to the use and storage of flammable liquids within their work area and report any defects in equipment, personal protective equipment and flammable storage facilities including the reporting of any accidents, incidents or near misses.

The Control of Major Accidents and Hazards Regulations (COMAH Regs 2015) are designed to prevent major industrial accidents caused by hazardous substances, and to limit their impact on people and the environment. The Regs provide for industries and establishments storing dangerous substances as defined under Reg. 2 (*to include raw material, product, by-product, residue or intermediate of Petroleum products i.e. gasolines and naphtha's, kerosene's (including jet fuels), gas oils*) to provide active risk management and regular notification to the Health and Safety Executive.

Having said that, these regulations are not adopted as St Helena law, and therefore local business cannot be compelled to comply with such requirements but maybe use them as best practice guidance. The Petroleum Ordinance and the Health and Safety Ordinance are the only local laws that provide for safe handling, storage and risk mitigation of petroleum and hazardous substances.

## Single Access and Egress Route

There is just a single access and egress road which creates its own unique problems, with a distance of approximately just 10-14 meters from the Bund Wall, running adjacent to the boundary fence line of the New BFI. There are pipelines and cables routed adjacent to the road, with no protection from traffic potentially colliding with it.

This is poor practice in Emergency Planning terms and is significantly higher risk when it is in such close proximity to the island's only Bulk Fuel Facility.

Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations are flammable. Precautions must be taken to prevent their ignition and, in the event of fire, to prevent further spread. One aspect of fire protection is to reduce

the likelihood of a fire by siting facilities at what is considered to be a safe distance from one another. In this particular case the road use for public access is not considered to be a safe distance away and raises the risk of fire through various means from outside sources.

Safety distances do not guarantee protection from fire hazard, but they help to prevent the start of a fire by ensuring that any flammable vapour generated by one facility will diffuse to a concentration well below the lower explosive level (LEL) before it reaches any other facility or area where a source of ignition might exist.

It is recommend that an additional access and egress road in the immediate environs of the site be created for the purpose of serving this site and any future sites, and alleviate any potential Health & Safety concerns with just a single access route. This will undoubtedly safeguard the existing New BFI and the entire area in general.

### Conclusion

I would advise that before the proposed Plan is given the 'greenlight', *all* safety aspects be carefully considered that would significantly lower the risk and be in the best interest of all involved and the island as a whole.

We need to improve the areas of weakness and build on the positives to ensure protection from fire for all concerned.



Alan Thomas (IFSI)  
Brigade Manager