FIRE SAFETY STUDY - ADDENDUM 1

SMITHFIELD BATTERY ENERGY STORAGE SYSTEM

SSD-59325460

SMITHFIELD BESS

PREPARED FOR: **Smithfield BESS Pty Ltd**

DOCUMENT NO: **21895-RP-002**
REVISION: **A**
DATE: **16-Oct-2024**

Sherpa Consulting Pty Ltd (ABN 40 110 961 898)
Phone: 61 2 9412 4555
Web: www.sherpaconsulting.com.au

DOCUMENT REVISION RECORD

Rev	Date	Description	Prepared	Checked	Approved	Method of issue
A	20-Sep-2024	Issued to Client for comments	M. Amouzegar S. Chia	G. Peach	S. Chia	Email PDF
0	16-Oct-2024	Final issue	M. Amouzegar S. Chia	G. Peach	S. Chia	Email PDF

Title: **Fire Safety Study - Addendum 1** **Smithfield Battery Energy Storage System** **SSD-59325460**	**QA verified:** S. Chan **Date: 16-Oct-2024**

CONTENTS

ABBREVIATIONS & GLOSSARY

AC	Alternating Current
AEGLs	Acute Exposure Guideline Levels
BESS	Battery Energy Storage System
BMS	Battery Management System
CCTV	Closed Circuit TV
DC	Direct Current
DG	Dangerous Good(s)
DPHI	Department of Planning, Housing and Infrastructure
EIS	Environmental Impact Statement
ERP	Emergency Response Plan
FRNSW	Fire and Rescue NSW
FSS	Fire Safety Study
HAZID	Hazard Identification
HF	Hydrogen Fluoride
HIPAP	Hazardous Industry Planning Advisory Paper
IDLH	Immediate Danger to Life and Health
kV	Kilovolt
LFL	Lower Flammability Level
LFP	Lithium Iron Phosphate
LGA	Local Government Area
MW	Megawatt
MWh	Megawatts Per Hour
NEM	National Electricity Market
NMC	Nickel Manganese Cobalt
NSW	New South Wales
OEM	Original Equipment Manufacturer
OH&S	Occupational Health & Safety
PHA	Preliminary Hazard Analysis
PPE	Personal Protective Equipment
SEF	Smithfield Energy Facility
SEPP	State Environmental Planning Policy
SRMP	Smithfield Recycling & Manufacturing Precinct

SSD	State Significant Development
TMS	Thermal Management System
UL	Underwriters' Laboratories
VBB	Victorian Big Battery

Glossary

Existing SEF	This refers to the power station and infrastructure
BESS development	This refers to the proposed BESS facility (as per SSD 59325460)
Smithfield facility	The existing SEF and proposed BESS

1. PURPOSE

1.1. Background

Smithfield BESS Pty Ltd (Smithfield BESS), a wholly owned company of Iberdrola Australia Limited (Iberdrola) received development consent (SSD 59325460) for the operation of a Battery Energy Storage System (BESS). The BESS will be co-located at the existing Smithfield Energy Facility (SEF) at 6 Herbert Place, Smithfield, NSW. The BESS will utilize the Tesla Megapack 2XL (Tesla Megapack MP2 unit) lithium-ion batteries with a capacity up to 72 Megawatt (MW) delivering 230 Megawatts per hour (MWh).

As per conditions of consent, a Fire Safety Study (FSS) was prepared with reference to the NSW Department of Planning Housing Infrastructure (DPHI) Hazardous Industry Planning Advisory Paper (HIPAP) No. 2 '*Fire Safety Study*' guideline, Ref [1]; and Fire Rescue NSW (FRNSW) Fire Safety Guideline *Technical Information – Large scale external lithium ion battery energy storage systems – Fire safety study,* Ref [2].

Iberdrola (29 August 2024) submitted the FSS to DPHI and FRNSW. FRNSW (13 September 2024) reviewed the FSS and provided a written response requiring

1.2. Purpose

This '*Fire Safety Study – Addendum 1*' responds to FRNSW request to provide additional information in support of the FSS.

1.3. Structure of Iberdrola response

A summary of FRNSW comments are provided in Table 1.1 together with Iberdrola responses and references to additional support documentation attached to the appendices.

Table 1.1: FRNSW FSS Comments - Iberdrola Response

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
1 – Summary	–	FRNSW recommends the implementation program agreed to by the proponent company or the owner or operator be provided, as required by Section 3.3 of HIPAP2.	Iberdrola confirms acceptance of the FSS recommendations and implementation as indicated in the covering letter. The proposed implementation program is outlined in the Appendix A.
1.7 – Fire safety strategy	The strategy was developed in consultation with Tesla and the SEF operations personnel based upon the MP2XL fire safety design features and Tesla fire testing, to inform unit separation distances to minimize the potential fire propagation. The proposed design and operational fire prevention, detection and protection safeguards for the BESS facility will minimize the potential for a BESS unit fire and limit the propagation potential.	All reference test reports must be provided as part of the FSS submission as per Section 5.3.3 of FRNSW Fire Safety Guideline Technical Information – Large scale external lithium- ion battery energy storage systems – Fire safety study considerations (referred to as FRNSW BESS Guideline herein)	Tesla has granted permission to Iberdrola to share with FRNSW the following test reports related to the batteries: • ANSI/CAN/UL 9540A:2019 for Megapack 2 XL- 1848844-XX-Y • Fire Protection Engineering and UL9540A Interpretation report for Tesla Megapack2 XL. Please see Appendix B for copies.
2,5 – Study exclusions and assumptions	Under confidentiality, Sherpa was provided access to Tesla fire testing results and associated fire engineering specialist reviews. As such these documents cannot be attached to the FSS. Smithfield BESS can discuss and share the results with FRNSW.		See response above and copies of the Tesla test reports are provided in Appendix B.

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
1.8 – Recommendations	To support the non-intervention strategy for the BESS facility, the following recommendations were developed with the SEF operations team to improve fire prevention, detection and emergency response controls.	FRNSW recommends detailing the separation distances within the Recommendations, as the physical separation forms a key part of mitigating fire spread.	In support of the non-intervention fire strategy, Iberdrola commits to adhering to the separation distances for the BESS facility. The FSS (Table 3.1, Section 3.5.4) outlines the separation distances specified by Tesla. These separation distances are summarized is in Appendix B.
3.2.7 Site Security	There will be no change to site security arrangements with the BESS in operation. From a security viewpoint, the Smithfield site is enclosed by fencing, building walls and high concrete noise barriers. A Closed Circuit TV (CCTV) system is also installed. The plant has lighting throughout the night to aid observation and camera surveillance, and non-operating gates / doors are locked (e.g. the gate at the southern corner of the site).	Site is understood to be secured, in addition, doctrine will dictate that FRNSW personnel will standby awaiting a site representative. FRNSW recommend including the service agreement timeframes for site representatives to attend to site.	The following are the arrangements for the Smithfield site: • Normal operations: SEF site personnel; response time would be <15 minutes. • After hours: SEF operator on call would typically be <1.5 hours. • On-site security would typically be <30 minutes to provide access to FRNSW.

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
Section 5.3.2	The PHA (Ref [4]) found that a gas leak and ignited fire event was not a credible incident capable of reaching the BESS units. This was due to the fire-rated building located between the BESS area and the pipeline inlet yard, which provides a physical barrier.	It is noted that the fire-rating of the building provides mitigating measures in preventing fire spread. FRNSW seeks to confirm as to whether the fire-rating of the building is designed to withstand the maximum duration of the fire resulting from gas leak in the existing SEF?	This incident relates the Jemena pipeline inlet yard. It is an existing hazard since SEF was commissioned. In an emergency, Jemena would isolate the line. Alternatively, the SEF team (as noted in the FSS) has keys to this yard and can initiate isolation. The emergency response plan strategy for a release from the Jemena gas line will be: 1. Detection by SEF personnel (or neighboring site, Kingspan and Visy) 2. Isolation of gas line by Jemena or SEF (30-90 minutes) The fire rating of the fire water pump house western wall is 4 hours. See details in Appendix G. The fire rating of the building is expected to be longer than the event duration. Hence escalation to the BESS facility should be low. The existing hydrants located near Turbine # 1 and water treatment plant would be used to provide cooling water to the firewater building if required.

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
Section 5.3.2	However, ignition of larger (20mm leak size and above) unmitigated leaks result in a jet fire that exposes BESS units to radiation levels (23 kW/m^2), would result in fire propagation (e.g. thermal runaway) to battery units.	It is noted that 23kW/m^2 has been used as the threshold for determining fire spread to the BESS units throughout the report. The radiation threshold should consider the radiant level that can initiate a thermal runaway in a battery cell/module.	Separation distances to prevent fire propagation between battery units is based on vendor and battery specific fire tests conducted to standards. One objective of the tests is to set the separation distance between batteries. This is shown in Appendix B. Fire modelling is used to inform the following consequences and scenarios not covered by the tests: 1. Offsite impact from a BESS on fire (the heat radiation was not measured during the large-scale test). 2. External fires not associated with a battery escalating to a battery.
Section 6.2.3	The PHA modelling is useful in terms of estimating the 'stand back' distance for emergency response and public. Of note: The distance to a heat flux level of 23 kW/m2 (escalation) was 8 metres (module long side) and 3 metres (module end side). Based upon the BESS layout, the predicted heat radiation impact to the neighbouring sites from a BESS unit on fire is not expected.		The heat radiation modelling for a **battery on fire** is conservative: 1. The model assumes a full face of a unit on fire rather than limited to the portion of the unit that contains the cells 2. The model assumes a lithium metal fire of 1000°C rather than battery fires that have been measured as temperatures in the range 600-700°C. The conservatism is appropriate given the results are used to inform **offsite impact** and emergency response stand off distances. For SEF natural gas releases (un-isolated),the use of 23kW/m^2 as the criteria for escalation to a battery thermal runaway is considered appropriate. This will lead to failure of the battery cabinet and expose the cells to heat radiation sufficient to cause thermal runaway. Recommendations have been provided for Iberdrola in the FSS to address SEF natural gas releases (ie flange guards, flame mesh).

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
Section 5.3.3	The SEF is bounded to the south, west and east by the Visy Smithfield Recycling Facility (Visy site), and to the north by Kingspan. The BESS Development faces the Kingspan site.	It is noted that the BESS transformer is located 1.5 m from the allotment boundary facing north. The National Construction Code (NCC) considers the allotment boundary as a fire-source feature, regardless of fire load being present near the allotment boundary. FRNSW recommend impact of a fire on adjacent property onto the BESS transformer be considered.	It is difficult to determine what activities Kingspan facility will undertake in the future and whether it will present a fire source and impact to the SEF BESS Facility. Should Kingspan expand their activities and a fire source/ hazard be imposed upon the SEF BESS site, Iberdrola will determine an appropriate fire mitigation response (eg installation of a firewall (ie solid brick block) to protect the transformers. The site Emergency Response Plan (ERP) will include the SEF BESS would be shut in in the event of a Kingspan fire incident. The response would be: *The transformer will be de-energised in the event of a fire in the neighbouring property (following detection and communication to SEF for operational response).*
Section 6	General Comment	FRNSW recommends diagrams showing worst-case scenario heat flux distances, explosion overpressures and toxicity effects be included for all consequence analysis conducted within the FSS. The diagrams should also indicate the location of fire hydrants and other firefighting infrastructure and demonstrate that a credible fire scenario will not impact safe operation of the firefighters.	Diagrams showing the worst case scenario heat flux distances (with no mitigation controls) is shown in Appendix D covering: • Fully developed BESS fire • BESS transformer fire • SEF Gas Yard fire directed towards the BESS facility.

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
Section 6.1	For incidents involving the existing SEF, consequences are based on the findings in the original FSS (Ref [6]) and supplemented by modelling conducted in the BESS PHA.	FRNSW recommends submitting a copy of the referenced PHA study and the original FSS, as it appears that the studies should be read in conjunction with the FSS.	The PHA and FSS documents are attached in Appendix E.
Section 6.2.1	The UL 9540A unit-level test was conducted on the Tesla MP2XL unit at the Northern Nevada Research Center and certified by TÜV. The key test outcomes are as follows: • Thermal runaway did not escalate to a fully developed unit fire and only a few cells were involved in the fire. • Thermal runaway and resulting fire did not propagate to target MP2 units installed 6 inches behind and 6 inches to the side of initiating unit.	It appears that the model names 'MP2XL' and 'MP2' are used interchangeable, despite the two models being different. FRNSW recommends the testing and modelling used in the study reflects the models being supplied to the facility.	The Tesla fire test documents are attached in Appendix B and are applicable for the selected model (Tesla MP2XL).
Section 7.3	**Fire prevention and detection** • By design, the transformers have over-temperature protection that trips the unit. • The transformers are separated from the BESS unit as per installation requirements.	FRNSW recommends the minimum separation distance between the transformer and the BESS unit as determined by the FSS be detailed in this section.	The required separation distances have been provided in FSS (Appendix C). A summary of the separation distances for the SEF BESS facility are given in Appendix A.

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
Section 7.3 (continued)	• Thermal detection covering the transformers interfaced to the (existing) Fire Indicator Panel.	See above	See above
Section 7.4.2	The site fire hydrant network is presented in Figure 7.1. The fire hydrant water is supplied from a Sydney water main. There is an interconnecting pipe system and shut-off valve between the hydrant system and the fire booster pump system, which allows water to be manually regulated into the hydrant system to boost the hydrant water supply. There are three (3) dual valve fire water hydrants and associated hose stations located in protective cabinets. These are located next to the base of each power train stack.	FRNSW recommends providing existing hydrant system plans for review within the FSS. Further, FRNSW recommend confirmation of reticulated mains pressure and flow be provided.	Appendix F contains documents relating to the: • Existing SEF hydrant system, and • Reticulated mains pressure and water flow existing
7.4.4. Emergency response	A site Emergency Response Plan (ERP) exists for the facility with copies held by various staff, e.g. the Security Office (VISY), Operations Manager's office, Control Room.	FRNSW recommend that further to condition of consent B25, any recommendations made by FRNSW regarding the content or effectiveness of the ERP upon our review are to be implemented.	Iberdrola agrees to implement recommendations from FRNSW that are reasonable.

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
Appendix C1.4	The distances to the specified heat radiation levels are presented in Table C.2. Distance to the injury level (4.7 kW/m^2) was used to determine potential for off-site impact.	It is noted that the heat radiation impact of 23 kW/m^2 is 6 m from front door, whereas the manufacturer's recommendation is to have a minimum separation distance of 2.4 m. If the worst-case scenario is as per Appendix C1.4, then a hydrant system would be required to provide exposure protection to adjacent BESS units. FRNSW recommends clarifying heat radiation impacts and required separation distance to support the non-intervention strategy.	See commentary in Section 5.3.2 above. The FSS relied upon the Tesla test reports and modelling results provided for escalation events between battery units. The fire propagation is not expected as the SEF BESS layout meets and exceeds the required clearances specified by Tesla. A summary of the separation distances for the SEF BESS facility are given in Appendix A. Tesla battery tests are the most appropriate for assessing thermal runaway and fire propagation. The Tesla fire test results and the fire modelling (more conservative) are not interchangeable. The calculations were conducted to inform the **offsite** impacts as part of the PHA study.
Appendix C2.2	Hydrogen fluoride is considered the most toxic decomposition products from the batteries fire, Ref [19].	Although hydrogen fluoride may be one of the most toxic gases, its generation could be lesser in mass compared to other by- products. FRNSW recommends consulting UL9540A and large-scale test results to assess the release of major toxic gases from a full battery fire, in addition to HF gas release.	**Unit Level testing** Tesla in the UL9540A unit level test for the Tesla MP2/2XL has advised the gas samples were analysed for Mercury and Hydrogen Fluoride (HF): • No traces of Mercury were detected over the entire 2½ hour test period. • HF was detected at values of 0.10 and 0.12 ppm in the two sampling locations. These levels are below the AEGL levels (injury/ fatality). **Module level testing** For the UL9540A module level test, toxic gases such as HF, HCl, and HCN, were not detected.

FSS Section	Fire Safety Study Comment (provided by FRNSW)	FRNSW Comment	Iberdrola Response
Appendix C2.2	A lithium-ion battery cell experiment, Ref [19], indicates that the HF quantity released from a 1 Wh battery varies between 20 mg and 200 mg, depending on the battery type and state of charge. As a conservative approach, generation rate of 200 kg per 1 MWh was adopted for the analysis. The HF generation rate was calculated based on the capacity a single BESS unit and fire duration of 1 hour. The resulting HF generation rate used for analysis is conservative as typically the fire duration is longer than 1 hour.	FRNSW recommends clarifying whether the HF generation rate used, based on the referenced research paper, is more conservative than the rates observed in the UL9540A test, or the large-scale test conducted by Tesla.	As indicated in the previous response, the UL9540A tests for the Tesla MP2XL generated small amount of HF, . *HF was detected at values of 0.10 and 0.12 ppm in the two sampling locations.* These levels are below the AEGL levels (injury/ fatality). The HF generation rate reported in the PHA study is more conservative.
Appendix C4.2	The key inputs and assumptions are as follows: • Surface area: equivalent to the transformer footprint (3.7m x 3.3m), with 25% assumed to be occupied by the transformer structure.	FRNSW recommends confirming the provision of bunding for the BESS transformers to validate the assumption.	Iberdrola has confirmed with the Transformer manufacturer that the bunding to be provided will hold the total volume of the transform oil (7,500 litres). The design bund volume is approximately 10,000 litres.

APPENDIX A. FSS RECOMMENDATION - IMPLEMENTATION PLAN

Smithfield BESS Pty Limited commits to implementing the recommendations outlined in the Fire Safety Study. Our implementation timeline is outlined in Table A.1.

Table A.1: FSS Recommendation Implementation Timeline

No.	Description	Implementation Plan (as at 15 October 2024)
BESS Facility		
1	Confirm that thermal fire detection provided to cover the BESS facility and transformers will be interfaced to the (existing) Fire Indicator Panel and tested regularly. This will assist in providing early warning for intervention, reducing the potential for battery fire escalation. This will satisfy FRNSW consultation feedback for provision of automated fire prevention and detection.	**Agreed** Fire detection included in the detailed design specification.
2	The Smithfield Emergency Response Plan (ERP) be updated to cover Tesla MP2XL battery fire. The Emergency Response Plan should cover the required operational responses to make the power station, including incoming gas lines, safe and outline communication protocols between Smithfield BESS, Tesla and FRNSW.	**Agreed** To be done post FSS approval and during the construction phase.
3	The Smithfield Emergency Response Plan be updated to cover incident notification to Kingspan and possible shelter-in-place or evacuation of the site to avoid smoke and potential nuisance effects from a BESS fire.	**Agreed** To be done post FSS approval and during the construction phase.
4	The Smithfield Emergency Response Plan be updated to cover BESS transformer fire. The Emergency Response Plan should indicate the key decision points to isolate a BESS battery string, associated transformers and/or the BESS facility.	**Agreed** To be done post FSS approval and during the construction phase.
Existing SEF – Gas yard		
5	As per PHA study, confirm implementation of proposed measures (e.g. guarding, flame mesh) to prevent flame impingement from the gas yard to the nearest BESS.	**Agreed** Fire mitigation measures included in detailed design specification.
6	Confirm that thermal fire detection will be extended to cover the gas yard and interfaced to the (existing) Fire Indicator Panel. This will assist in reducing the fire propagation risk from the existing SEF to the BESS facility. It will also satisfy FRNSW consultation feedback for provision of automated fire detection.	**Agreed** Fire detection included in detailed design specification. Included with Recommendation 1.

<table>
<tr><td>7</td><td>Update the Smithfield Emergency Response Plan to cover the response for a leak and fire event at the gas area. The Emergency Response Plan should indicate gas isolation points and decision points for shutdown of the powerplant operations as well as the BESS facility.</td><td>Agreed
To be done post FSS approval and during the construction phase.</td></tr>
<tr><td colspan="3">Overall (added at request of FRNSW (13 September)</td></tr>
<tr><td>8</td><td>Ensure the BESS facility layout adheres to the separation distances outlined in the FSS report. This has been repeated below.
<table>
<tr><th>Installation</th><th>Minimum clearances</th><th>Smithfiled BESS separation distances</th><th>Exceed Tesla’s clearance distances?</th></tr>
<tr><td colspan="4">Tesla Megapack 2XL</td></tr>
<tr><td>Front</td><td>2440 mm (96 in)</td><td>2850 mm</td><td>Yes</td></tr>
<tr><td>Back-to-back</td><td>- 460 mm (18 in) recommended for access purposes
- 230 mm (9 in) with prior Tesla approval</td><td>350 mm</td><td>Yes- confirmed and accepted by Tesla</td></tr>
<tr><td>Side</td><td>150 mm (6 in)</td><td>2000 mm to BESS units
1700 mm to transformers</td><td>Yes</td></tr>
<tr><td colspan="4">BESS Transformer</td></tr>
<tr><td>-</td><td>4m (23 kW/m^2, equivalent to potential escalation for unmitigated fire) (by radiation calculation as shown in FSS Appendix C)</td><td>Min 4.2m from the transformer centre to adjacent BESS units
(BESS layout)</td><td>-</td></tr>
</table></td><td>Agreed
Separation distances have been included in the final BESS design layout.</td></tr>
</table>

APPENDIX B. TESLA TEST REPORTS

Attached overleaf are the Tesla fire test reports:

- ANSI/CAN/UL 9540A:2019 for Megapack 2 XL- 1848844-XX-Y
- Fire Protection Engineering and UL9540A Interpretation report for Tesla Megapack2 XL.

APPENDIX C. SEPARATION DISTANCES

In support of the non-intervention fire strategy, Iberdrola commits to adhering to the separation distances for the BESS facility. The FSS (Table 3.1, Section 3.5.4) outlines the separation distances. A summary table is shown below.

Table C.1: Summary of Separation Distances for Smithfield BESS Facility

Installation	Minimum clearances	Smithfiled BESS separation distances	Exceed Tesla's clearance distances?
Tesla MP2XL			
Front	2440 mm (96 in)	2850 mm	Yes
Back-to-back	- 460 mm (18 in) recommended for access purposes - 230 mm (9 in) with prior Tesla approval	350 mm	Yes- confirmed and accepted by Tesla
Side	150 mm (6 in)	2000 mm to BESS units 1700 mm to transformers	Yes
BESS Transformer			
-	4m (23 kW/m^2, equivalent to potential escalation for unmitigated fire) (by radiation calculation as shown in FSS Appendix C)	Min 4.2m from the transformer centre to adjacent BESS units (BESS layout)	-

APPENDIX D. FIRE RADIATION DIAGRAMS

D1. Incidents modelled

Diagrams showing the worst case scenario heat flux distances (with no mitigation controls) covering:

- Fully developed BESS fire (Figure D.1)
- HF maximum impact area from BESS fire (Figure D.2)
- BESS transformer fire (Figure D.3)
- SEF Gas Yard fire directed towards the BESS facility (Figure D.4 to Figure D.7).

These will be referenced in the proposed update of the SEF emergency response plan (ERP).

Figure D.1: Fully developed BESS fire-heat radiation impact

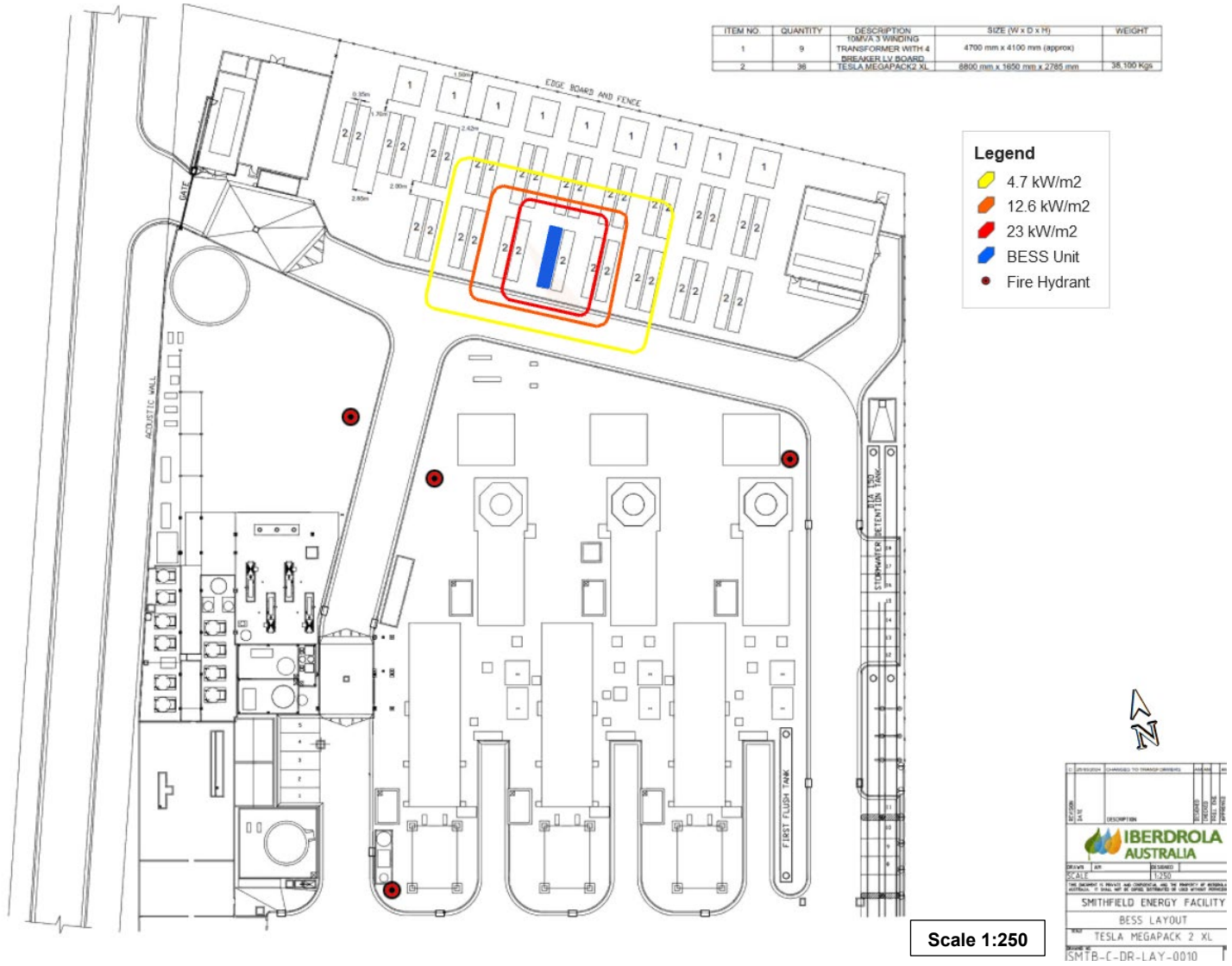


Figure D.2: BESS unit fire-toxic dispersion

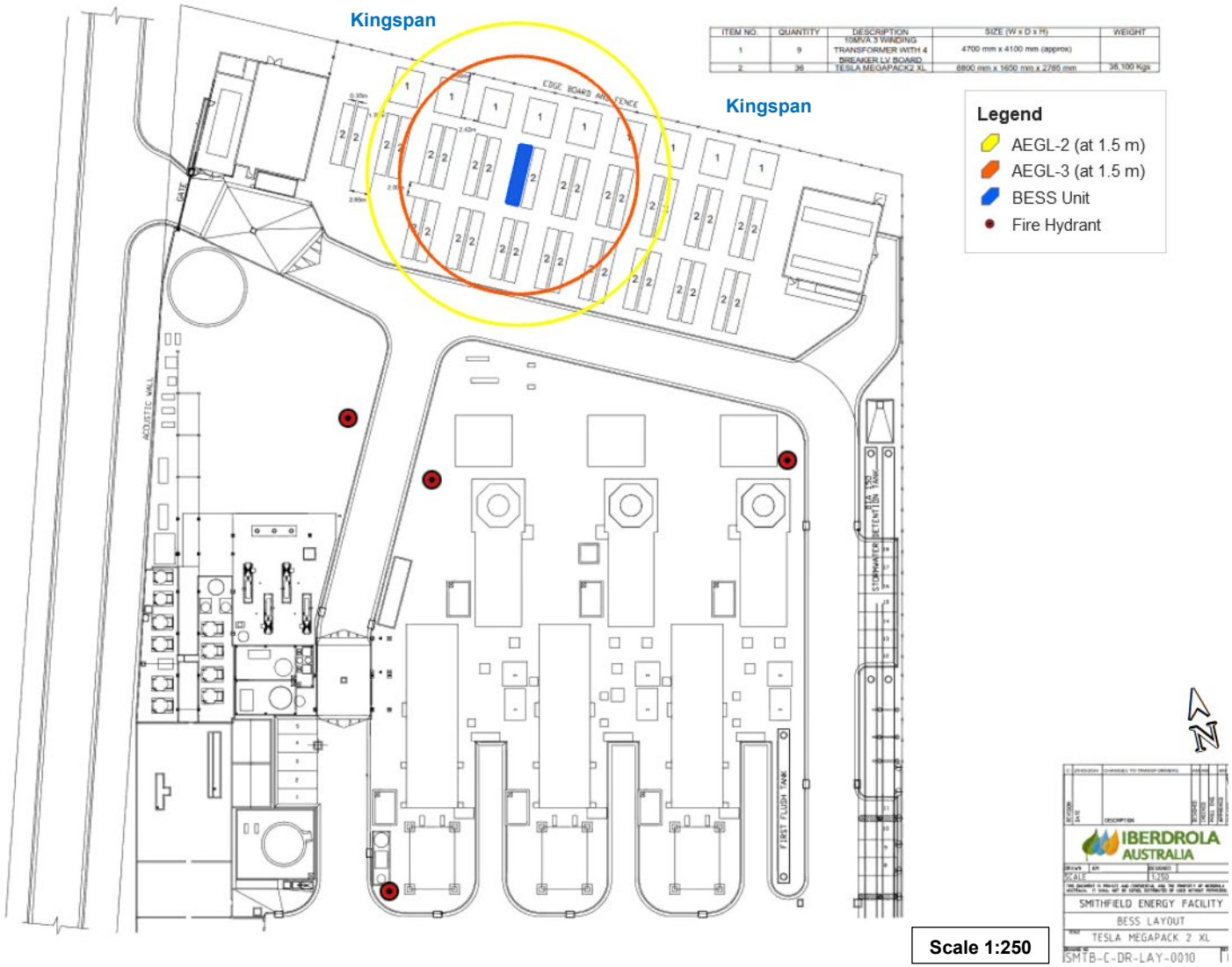


Figure D.3: BESS transformer fire

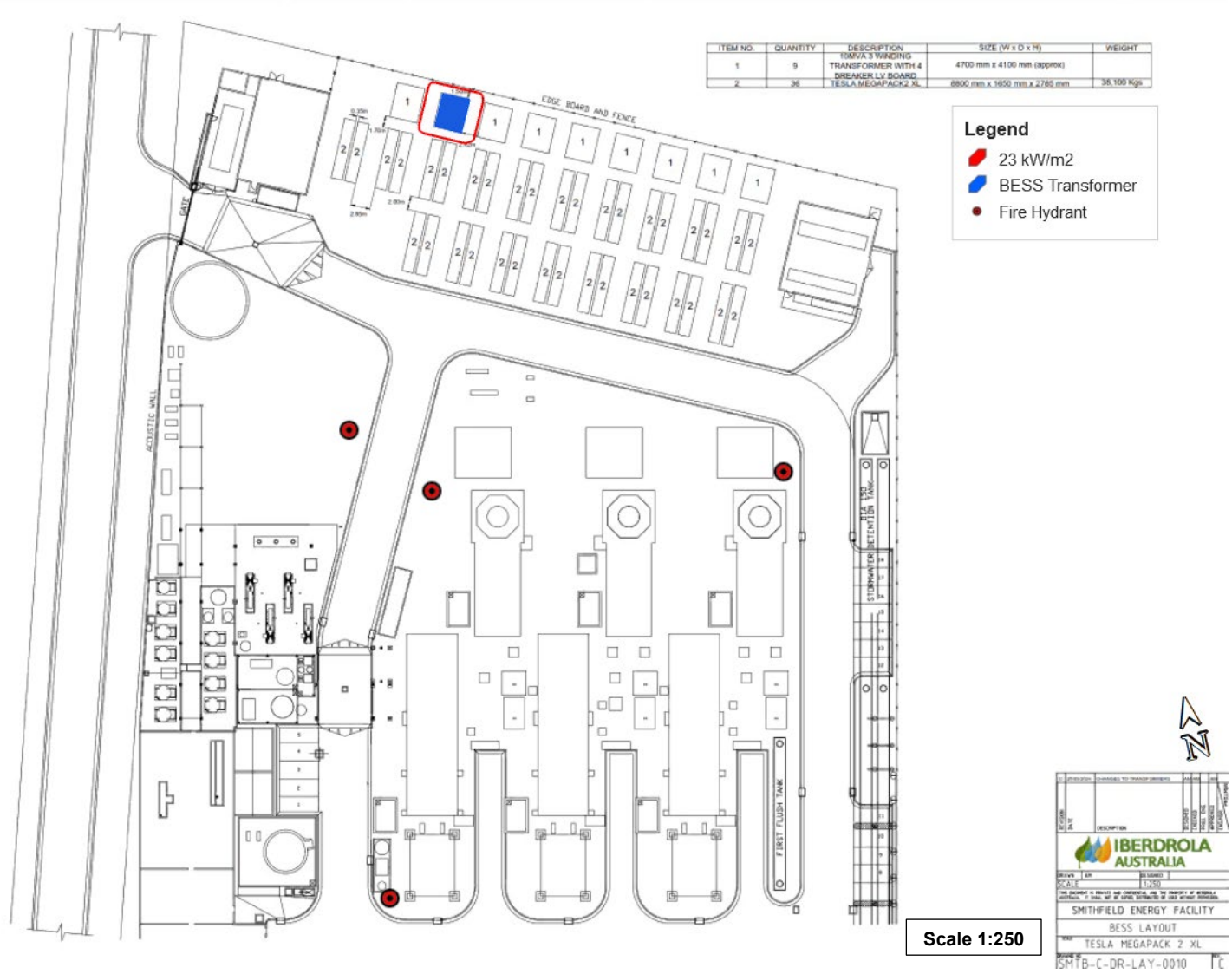


Figure D.4: SEF Gas Yard (20 mm jet fire)

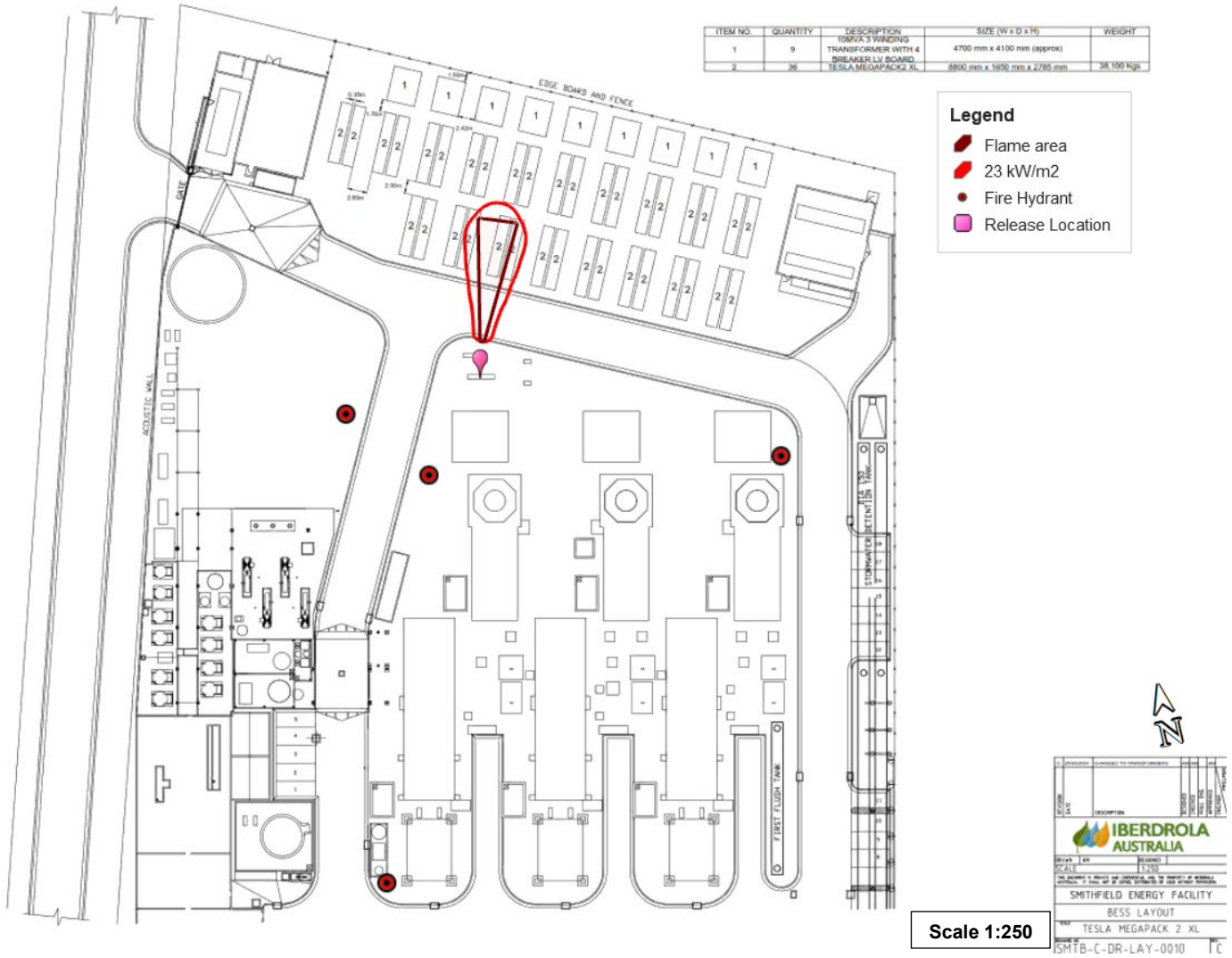


Figure D.5: SEF Gas Yard (20 mm unignited event)

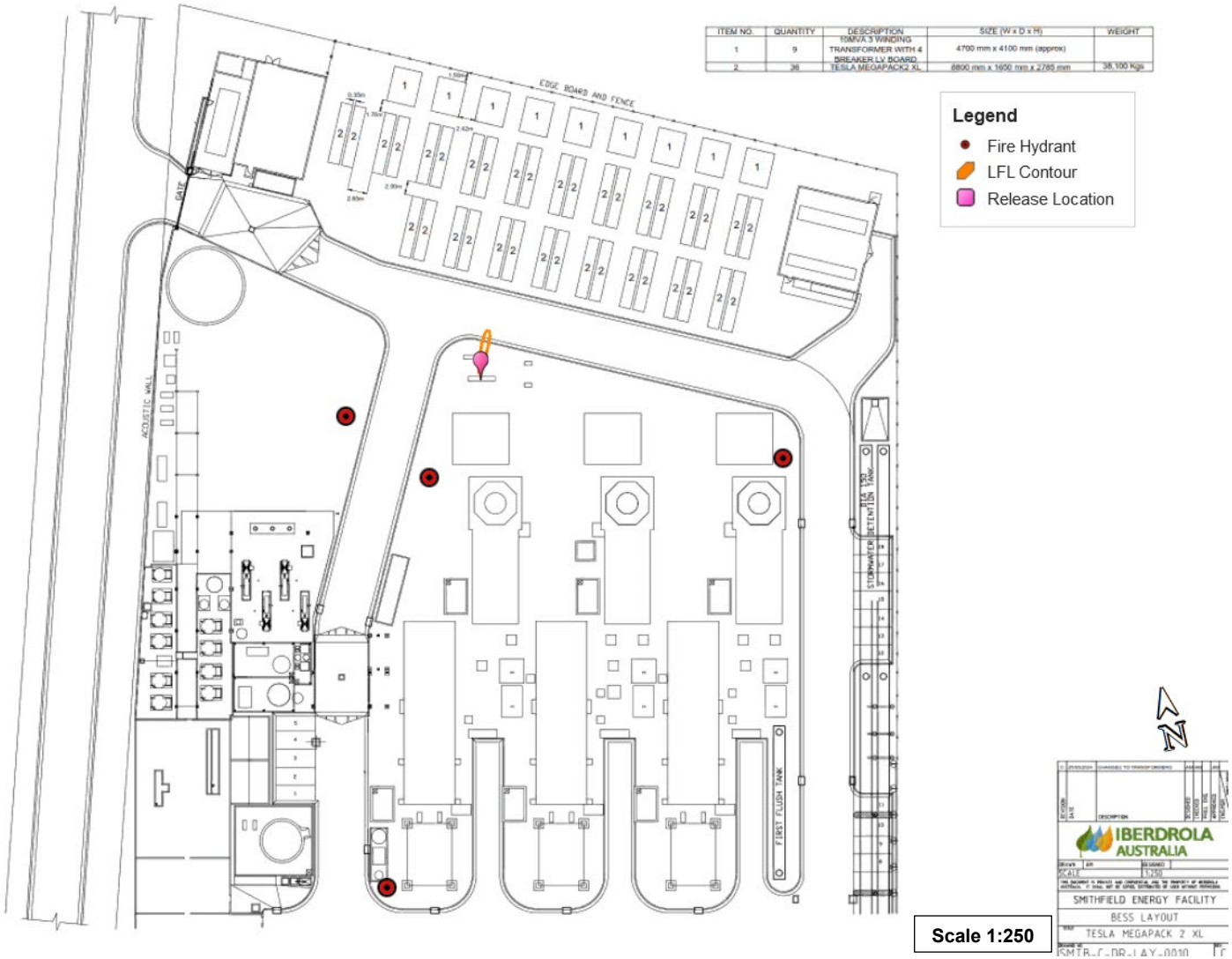


Figure D.6: SEF Gas Yard (50 mm jet fire – initial release, no isolation)

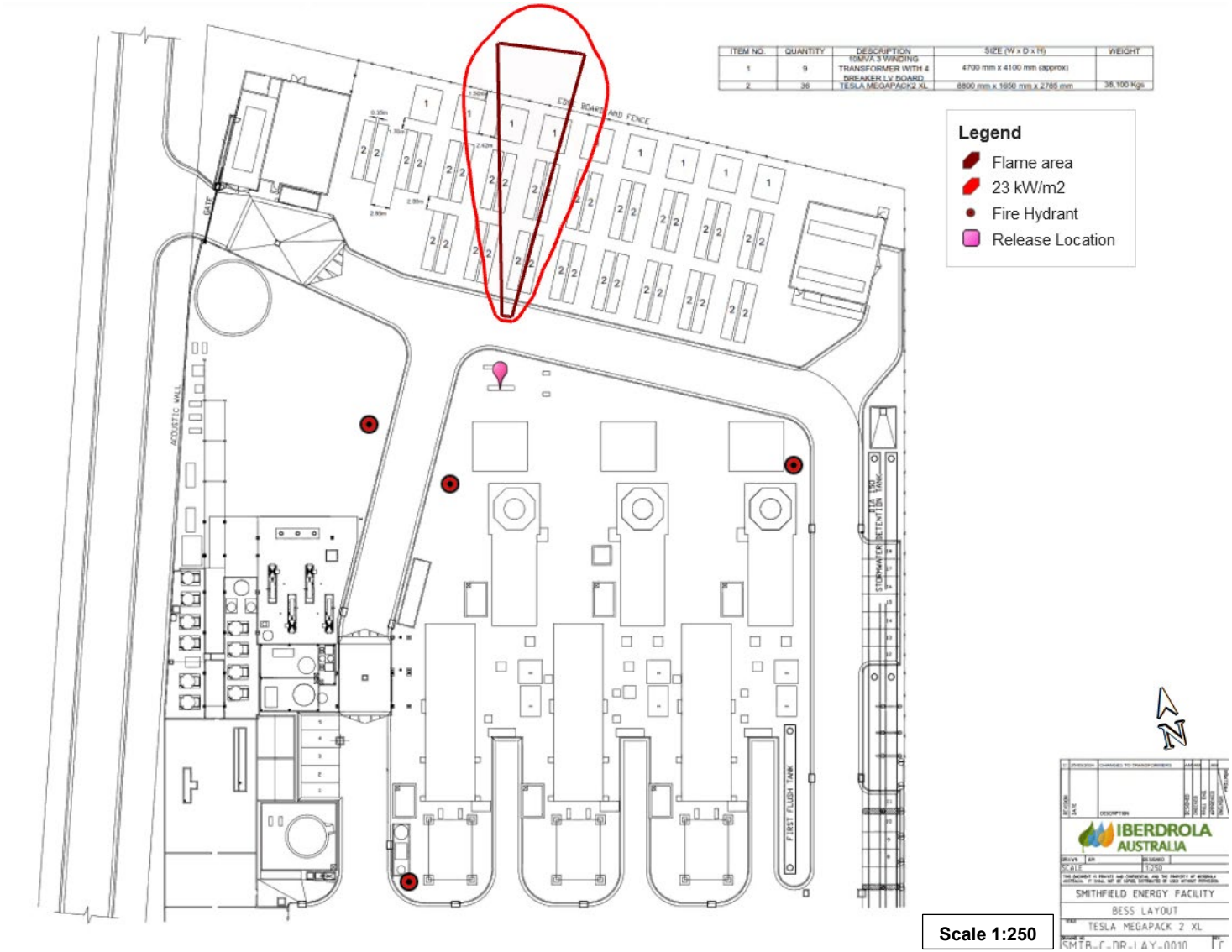
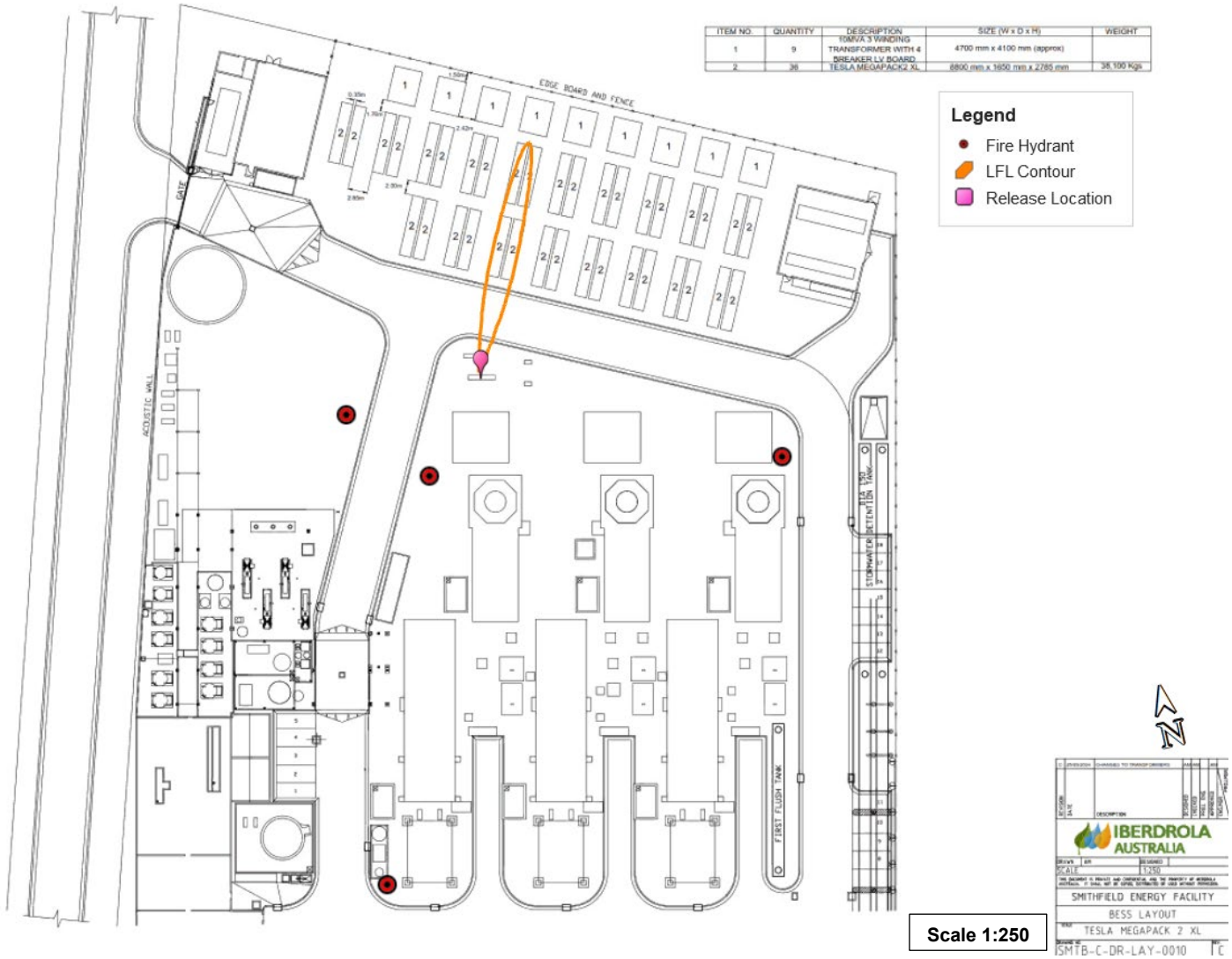


Figure D.7: SEF Gas Yard (50 mm unignited event, initial release, no isolation)



APPENDIX E. LAND USE PLANNING SAFETY STUDIES

As per FRNSW request, the following land use planning studies are attached:

- Sherpa Consulting (2024), Preliminary Hazard Analysis for Smithfield BESS Facility (document: 21775-RP-001 Rev0)
- Mark Consulting Pty Ltd (1995), NEPCO Transfield Joint Venture , Fire Safety Study for Smithfield Energy Facility (document DMC:LJW:L-89)

APPENDIX F. SEF SITE HYDRANT AND BESS LAYOUT

As per FRNSW request, the following documents are attached:

- Existing SEF hydrant system, overlayed with
- BESS Layout.

APPENDIX G. SEF PUMP HOUSE FIRE RATING

While Iberdrola could not find a certification of the pump house fire rating. The pump house is made up of that are 190mm thick Besser blocks. According to the fire rating of such blockwork, these are at a minimum rated to 120 minutes.

There are two walls between the Jemena gas station and the proposed Battery Energy Storage System, as such the rating of the pump house is estimated to be 4 hours.

Attached are:

- Architectural drawing of the pump house
- AdBri Besser blocks technical specifications