

Objection — SSD-85939708 (Rothbury Battery Energy Storage System, 135 MW / 540 MWh)

To: Department of Planning, Housing and Infrastructure (via NSW Planning Portal) **Application:** SSD-85939708 — construction, operation and decommissioning of a 135 MW / 540 MWh grid-scale Battery Energy Storage System and associated infrastructure, 1309-1337 Wine Country Drive, Rothbury (Lot 182 DP 787820), Cessnock LGA **Exhibition:** 19 June 2026 – 17 July 2026 **Submission type:** Objection **Submitter:** A resident of the Cessnock local government area (name withheld under the NSW Planning Portal privacy provisions) **Date:** July 2026

1. Position

I object to the grant of consent for SSD-85939708, and I ask the Department to **refuse** the application.

My objection is unconditional. I do not accept that a grid-scale Battery Energy Storage System is an appropriate land use at this location, in this landscape, or on the exhibited assessment. I hold the further position that grid-scale battery storage of this class should not be sited in rural, agricultural and tourism communities of this kind at all; that broader question of energy policy and public cost I have put separately to the elected representatives able to act on it. The grounds below are confined to matters the consent authority must, or may, take into account in evaluating this application under section 4.15 of the Environmental Planning and Assessment Act 1979 (NSW), so that each may be weighed as a planning matter.

The application does not discharge the burden of assessment that a facility of this scale, hazard class and ecological sensitivity carries. The deficiencies identified below go to whether the consent authority can lawfully be satisfied, on the exhibited material, that the development is in the public interest (section 4.15(1)(e)). On the evidence, it cannot.

2. Definitions

For the purposes of this submission:

- **BESS** — Battery Energy Storage System: a grid-scale installation of lithium-ion battery cells, together with the power-conversion, transformer, connection, cooling, control and fire-safety infrastructure required to charge from and discharge to the electricity network.
- **Thermal runaway** — an uncontrolled, self-sustaining exothermic reaction within a lithium-ion cell in which heat generation exceeds the cell's capacity to dissipate it, driving further reaction until the cell vents, ignites or explodes, and which can propagate cell to cell and enclosure to enclosure.
- **Off-gassing** — the venting of flammable and toxic gases from lithium-ion cells during and before thermal runaway, including hydrogen fluoride, hydrogen cyanide, carbon monoxide and volatile organic compounds.
- **Deflagration** — a rapid combustion of accumulated flammable gas producing a pressure wave; the failure mode that injured nine responders at McMicken (Arizona, 2019).
- **Stranded energy** — residual electrical energy retained in cells after a fire appears out, capable of driving reignition hours to weeks later.
- **HF** — hydrogen fluoride: a corrosive acid gas and systemic metabolic poison produced in quantity in lithium-ion fires.
- **EIS** — Environmental Impact Statement.
- **SEARs** — Secretary's Environmental Assessment Requirements: the requirements issued by the Planning Secretary that the EIS for this development must address.
- **BDAR** — Biodiversity Development Assessment Report, prepared under the Biodiversity Conservation Act 2016 (NSW) (BC Act) in accordance with the Biodiversity Assessment Method.
- **PHA** — Preliminary Hazard Analysis: the quantified assessment of off-site risk expected of potentially hazardous development under the hazardous-industry planning framework.
- **HIPAP** — Hazardous Industry Planning Advisory Paper (in particular No. 4, Risk Criteria for Land Use Safety Planning, and No. 6, Guidelines for Hazard Analysis).

- **SAII** — a serious and irreversible impact on biodiversity values, as provided for under the BC Act and the Biodiversity Assessment Method.
 - **CEEC** — Critically Endangered Ecological Community, listed under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act).
 - **MNES** — Matters of National Environmental Significance under the EPBC Act.
 - **PBP 2019** — Planning for Bush Fire Protection 2019, a relevant consideration for development on bushfire-prone land.
 - **FRL** — Fire Resistance Level, in minutes. **RFS** — NSW Rural Fire Service. **FRNSW** — Fire and Rescue NSW.
 - **AS 3959** — the Australian Standard Construction of buildings in bushfire-prone areas, which classifies bushfire exposure by radiant heat flux.
 - **BAL** — Bushfire Attack Level: the exposure categories under AS 3959, expressed as radiant heat flux (12.5, 19, 29 and 40 kW/m²), with **BAL-FZ** (Flame Zone) above 40 kW/m² and involving direct flame contact.
 - **Runaway onset temperature** — the cell temperature at which thermal runaway becomes self-sustaining: of the order of 150°C for NMC chemistry and approximately 190°C for the more thermally stable lithium iron phosphate (LFP), with exothermic self-heating beginning at lower temperatures again.
 - **SSD** — State Significant Development.
 - **Cumulative impact** — the combined effect of this development together with the separately-exhibited adjacent BESS at Rothbury (SSD-92914712) and other development in the locality.
-

3. Grounds of objection

Ground 1 — Impact on a Critically Endangered Ecological Community and on Matters of National Environmental Significance; the biodiversity assessment must be tested and the precautionary principle applied

The site lies within, or immediately adjacent to, the mapped range and known habitat of the following matters of national and state environmental significance. Whether each is present within the

disturbance footprint, and the adequacy of any avoidance, minimisation and offset proposed, is a question the exhibited BDAR must answer, and I ask the Department to verify that it does, rather than accept an indicative footprint:

- **Central Hunter Valley eucalypt forest and woodland** — a Critically Endangered Ecological Community under the EPBC Act — is mapped across the Central Hunter and its presence within the project area must be assessed on the exhibited material.
- **North Rothbury Persoonia (*Persoonia pauciflora*)** — Critically Endangered — is endemic to an area of approximately 2.5 square kilometres in the North Rothbury locality, a short distance from the site, with a wild population estimated at fewer than 350 to 400 mature individuals. It exists nowhere else on Earth. A development on or near the edge of the entire global range of a single-population critically endangered plant demands the most exacting scrutiny.
- **Hunter Valley Delma (*Delma vescolineata*)** — a legless lizard listed as Endangered on 16 July 2024 — occurs in the locality and its presence must be tested against the BDAR.
- **Large-eared Pied Bat, Grey-headed Flying-fox and White-throated Needletail** — each protected under the EPBC Act — are recorded in the locality.

The wider locality is habitat for the **Regent Honeyeater** (Critically Endangered; approximately 300 to 400 birds remain in the wild, and the Lower Hunter, including the nearby Tomalpin Woodlands, is among the single most important breeding areas for the species nationally), the **Swift Parrot** (Critically Endangered), and forest-dependent species including the **Koala, Greater Glider** and Black Cockatoos.

Two legal consequences follow. First, the clearing of native vegetation and the fragmentation of habitat corridors by the transmission connection engage the **serious and irreversible impact (SAII)** provisions of the BC Act and the Biodiversity Assessment Method; a critically endangered, single-population endemic is the textbook SAI entity, and a serious and irreversible impact is a matter the consent authority is required to consider for State significant development. Second, the **precautionary principle** applies: on the test in *Telstra Corporation Ltd v Hornsby Shire Council* [2006] NSWLEC 133, both limbs are satisfied — there is a threat of serious or irreversible

environmental damage, and there is scientific uncertainty as to the footprint and its effect — so the absence of full scientific certainty is not a reason for postponing measures to prevent the harm. A biodiversity offset purchased elsewhere does not replace habitat for a plant that grows in a single 2.5 square-kilometre area. These considerations point firmly to refusal.

I further ask the Department to confirm whether the action has been referred to the Commonwealth as a **controlled action** under the EPBC Act, given the CEEC and MNES engaged.

Ground 2 — The thermal-runaway hazard and its off-site toxic consequence are not assessed to the standard the hazardous-development framework requires

A 540 MWh facility carries an inherent and well-documented thermal-runaway hazard. The fire and toxic-plume risk engages the hazardous-development framework: the associated Hazardous Industry Planning Advisory Papers (HIPAP No. 4 and No. 6) and the "Applying SEPP 33" guidance contemplate a **Preliminary Hazard Analysis** quantifying off-site risk for potentially hazardous development. The exhibited EIS does not provide a PHA-grade, site-specific, quantified assessment of off-site risk. The record establishes the following, none of which is adequately addressed:

- **Toxic gas is generated in mass quantity.** Peer-reviewed measurement establishes hydrogen fluoride generation of 20 to 200 milligrams per watt-hour of capacity (Larsson et al., Toxic fluoride gas emissions from lithium-ion battery fires, Scientific Reports 7:10018, 2017), together with hydrogen cyanide, carbon monoxide and volatile organic compounds. As a bounding estimate for a 540 MWh installation, that corresponds to tens of tonnes of hydrogen fluoride under full-burn conditions. (This tonnage is a bounding calculation from the published emission factor, not a measured plant emission; it is offered to show the order of magnitude the assessment fails to model.) No site-specific dispersion model quantifies the behaviour of that plume over the surrounding dwellings, vineyards and habitat.
- **Local meteorology and topography make the plume path a live safety question.** The Lower Hunter is subject to strong valley-

channelled north-westerly to west-north-westerly winds, hot and fast on high fire-danger days (peer-reviewed: Channelling flows in the Hunter Valley, J. Southern Hemisphere Earth Systems Science 73(2):194-211, 2023). Under those conditions a plume from 1309 Wine Country Drive travels south-east to south-south-east toward Cessnock; under the summer sea breeze it is driven toward the Pokolbin vineyards; the Brokenback Range acts as a documented smoke trap; and under calm or night conditions the plume pools in the valley. None of this is modelled.

- **The fire cannot be extinguished, only cooled.** BESS fires are contained and allowed to burn out over hours to days: the Victorian Big Battery (2021) burned approximately three days; Moss Landing (January 2025) reignited 33 days later from stranded energy.
- **The highest-risk window is commissioning and early operation.** Analysis of the EPRI BESS Failure Incident Database (2024) found 72% of documented incidents occurred in construction, commissioning or the first two years, and that 26% of inspected systems had fire-suppression defects. Both documented Australian grid-scale BESS fires occurred during commissioning. (No published per-facility annual fire probability exists; that is a gap in the evidence, not a basis for treating the risk as immaterial.)

The consent authority cannot weigh a consequence the proponent has not characterised. The absence of a PHA-grade consequence and dispersion assessment tied to local meteorology and receptors is a fundamental deficiency.

Ground 3 — Emergency response depends on a volunteer service and an unidentified water supply

A significant BESS fire is cooled and contained over an extended period and consumes very large volumes of water; the Victorian Big Battery event required more than 30 appliances and about 150 firefighters for two containers. FRNSW has adopted a 240-minute (four-hour) Fire Resistance Level requirement for lithium-ion storage rooms, reflecting that such fires burn for many hours. The Rothbury area is served by the volunteer RFS. The exhibited EIS does not contain a Fire and Emergency Response Plan agreed with FRNSW and the RFS, and does not identify a sustainable, independent on-site water supply of the required volume

that would not draw down the domestic network or rural water table. The McMicken deflagration (Arizona, 2019) seriously injured four professional, HAZMAT-equipped firefighters — two with traumatic brain injury, one thrown more than 70 feet — who were not fighting the fire but opening the unit to assess it; rural response times, which permit longer gas accumulation, amplify precisely that risk. The hazard to responders is chronic as well as acute: firefighting as an occupation is itself an IARC Group 1 (established) human carcinogen (2022), and a battery fire adds a concentrated respirable-metal load to that burden. Consequence to human safety of this kind, to responders and residents alike, is a matter for consideration under section 4.15(1)(b) and (e).

Ground 4 — The toxicological consequence to human health is unassessed, and the documented human record is grave

The gases released by a lithium-ion battery fire are acutely and chronically toxic, and their harm does not require the fire to reach the fence line:

- **Hydrogen fluoride** causes delayed pulmonary oedema 12 to 48 hours after an apparently mild exposure, together with hypocalcaemia and cardiac arrhythmia (ATSDR Medical Management Guidelines).
- **Hydrogen cyanide** is a cytotoxic asphyxiant lethal within minutes at high concentration.
- **Carbon monoxide** produces delayed neuropsychiatric injury days to weeks later.
- **Metal-oxide particulates** include nickel (IARC Group 1 human carcinogen), manganese (cause of the irreversible disorder manganism) and cobalt; after Moss Landing these metals were measured in soils up to two miles away at 100 to 1,000 times background.
- **Volatile organic compounds** include formaldehyde, benzene and 1,3-butadiene, each carcinogenic.

Documented human cases confirm the harm is real:

- **McMicken, Arizona (2019):** a deflagration caught nine responders; four career firefighters were seriously injured, two with traumatic brain injury, plus multiple fractures, a collapsed lung,

internal injury and burns; the captain was thrown more than 70 feet.

- **Moss Landing, California (2025):** approximately 1,200 to 1,500 residents evacuated; more than 50 became personal-injury plaintiffs; heavy-metal contamination was confirmed in adjacent wetlands.
- **Guildford, Sydney (February 2025):** Haider Ali, aged 21, died in a lithium-ion battery fire; FRNSW recorded 323 lithium-ion battery incidents in NSW in 2024.
- **London (2023-2025):** five deaths recorded by the London Fire Brigade from lithium-ion battery fires.

The peer-reviewed literature is explicit that no case report yet directly links hydrogen fluoride inhalation injury to a lithium-ion battery fire, and that this is a knowledge gap rather than evidence of safety; the toxic mechanism and the mass production of the gas are both established. The exhibited EIS assesses neither the acute nor the latent health consequence to the surrounding population, nor local hospital capacity against a mass-casualty inhalation event.

Ground 5 — The site is on bushfire-prone land with a severe and recent fire history; summer fire weather coincides with peak agricultural and tourism exposure; and the exhibited assessment models neither direction of the hazard, including the initiation of thermal runaway by external radiant heat

Planning for Bush Fire Protection 2019 is a relevant consideration for development on bushfire-prone land. The site is mapped bushfire-prone land, and a grid-scale BESS here creates a compounding, two-directional hazard in a landscape with a documented and recent history of serious fire.

The local fire record is severe and current. In the 2019–2020 Black Summer, a major blaze burned near Laguna and Cessnock and local brigades (Central Cessnock, Wollombi and Laguna among them) were engaged across the district; to the west, the approximately 154,000-hectare Little L Complex forced backburning around Broke-Fordwich that directly threatened the Hunter vintage, and as much as 90% of the 2020 Hunter crop was lost to smoke taint. On 14 December 2023, three

fast-moving fires broke out in a single afternoon and placed Abermain, Kurri Kurri, South Weston and Pelaw Main — all within or adjoining the Cessnock LGA — under Emergency Warning "leave now" alerts, with flames reaching residential fence lines. Pokolbin itself, the vineyard district adjoining the site, has experienced a major bushfire on Halls Road that required residents to evacuate (NSW RFS). This is not a location where fire is a remote contingency; it is one where serious fire is a recurring event.

Summer fire weather coincides with the period of maximum exposure. The window of worst fire danger is also the grape-harvest window and the peak tourism season, so a serious fire at or around this facility strikes when the vineyards are carrying fruit and the district is carrying visitors.

Direction one — an external fire can initiate thermal runaway by radiant heat alone, before any flame reaches the plant. Thermal runaway is triggered when a cell reaches its onset temperature, not by flame contact as such: of the order of 150°C for NMC and approximately 190°C for lithium iron phosphate, with exothermic self-heating beginning at lower temperatures again. A bushfire front radiates at the intensities AS 3959 uses to classify building exposure — 12.5, 19, 29 and 40 kW/m², with the Flame Zone above 40 kW/m² — at separation distances of tens of metres, with flame temperatures of 800 to 1,100°C. A steel enclosure whose active cooling has been lost with the site power (a common and foreseeable consequence of a bushfire) behaves as a closed oven, absorbing and conducting external radiant heat onto the cells and driving them to their runaway onset with no flame ever contacting the enclosure. The exhibited EIS does not quantify the separation distance needed to keep cell temperature below onset during an external fire, does not demonstrate a passive (unpowered) thermal barrier effective once active cooling is lost, and does not exhibit UL 9540A external-fire and propagation test data for the proposed units against this scenario.

Direction two — a BESS fire can seed a bushfire. A battery fire cannot be effectively suppressed and burns for a prolonged period with intense radiant heat that, under high fire-danger conditions, can ignite surrounding dry vegetation — turning a contained industrial incident

into a landscape fire in exactly the conditions in which a volunteer service is least able to hold it.

The exhibited EIS does not adequately assess either direction of this hazard, and in particular does not model the radiant initiation of thermal runaway by an external fire with site power lost. On bushfire-prone land with this fire history, that omission is fundamental.

Ground 6 — The development threatens an existing and highly sensitive agricultural land use, and risks catchment contamination

The immediate planning objection is the impact of this development on an existing, established and highly smoke-sensitive agricultural land use surrounding the site: the Pokolbin and Rothbury vineyards. A BESS fire is qualitatively worse for viticulture than a bushfire, because its smoke carries hydrogen fluoride and metallic particulates whose effect on grapes and harvested fruit is not characterised to the standard a viticulturally sensitive setting demands; a significant fire in the pre-harvest or harvest window could cause total loss across proximate vineyards. Separately, the very large volumes of water required to fight such a fire produce contaminated firewater runoff carrying nickel, cobalt, manganese and fluoride at concentrations exceeding freshwater ecosystem-protection guidelines (at Moss Landing, approximately 25 tonnes of nickel, cobalt and manganese were deposited into the adjacent Elkhorn Slough wetland). The Rothbury locality drains to the Hunter River catchment and its alluvial groundwater; uncontained runoff could reach licensed vineyard irrigation dams and bores. The exhibited EIS does not adequately assess either the smoke-taint pathway to the surrounding vineyards or the firewater-contamination pathway to the catchment.

The scale of what is at risk gives these pathways their weight: the surrounding wine and tourism economy is a \$557 million per annum industry supporting some 2,800 jobs and 1.4 million annual visitors, and the 2019-2020 smoke-taint season alone caused approximately \$160 million in direct loss, with some producers losing 80% of their crop.

Ground 7 — Construction traffic burdens a tourism corridor not engineered for it

The construction program relies on heavy-vehicle movements over an extended period on Wine Country Drive, the primary tourism and commuter artery for the district. The exhibited traffic assessment understates both cumulative pavement damage from axle loads the road was not built for and the safety and congestion consequence for the visitor-economy corridor, and does not account for the concurrent construction traffic of the adjacent SSD-92914712 proposal.

Ground 8 — Industrial scale, amenity and noise are at odds with the locality and its planning controls

The built form, comprising battery enclosures, inverters, a substation and 132 kV connection works, is incompatible with the rural and landscape-tourism character of Rothbury and with the objectives of the applicable land-use zone under the Cessnock Local Environmental Plan. Immature screen planting will take years to be effective, leaving a prolonged industrial intrusion in a prominent rural setting, and the continuous around-the-clock low-frequency noise of power-conversion and cooling plant is inadequately characterised against nearby receptors.

Ground 9 — The exhibited assessment is silent on secured end-of-life liability, on a mistaken residual-value assumption

The consent authority cannot weigh the end-of-life liability of this facility because the exhibited EIS does not secure it. Most decommissioning models assume the retired batteries carry positive scrap value; for the lithium iron phosphate chemistry now dominant in grid storage, recycling currently costs money rather than yielding value, and asset-retirement reserves are documented to underestimate real cost by 30 to 50%. Absent a secured, quantified financial assurance in the exhibited material, the risk that the community is left with a stranded, hazardous, contaminated site on the proponent's insolvency is real and unassessed. (Whether that assurance is best delivered by condition or by a standing bond regime is a policy question I have raised elsewhere; the planning point here is that the EIS does not address the liability at all.)

Ground 10 — The cumulative impact of two adjacent BESS facilities is unassessed

This application and SSD-92914712 propose two large battery facilities — together approximately 255 MW and 1,020 MWh of storage — in one small rural locality. Neither EIS assesses the combined hazard, traffic, water-demand, noise, visual and biodiversity load the two developments would impose on the same community at the same time. In fire-safety terms, two such facilities in close proximity present the possibility of concurrent or mutually-exacerbating incidents that would overwhelm a volunteer-based response. Assessing each in isolation understates the true burden on Rothbury and is, in itself, a fundamental deficiency in the exhibited material.

Ground 11 — Aboriginal cultural heritage and SEARs compliance must be demonstrated, not assumed

The locality is Wonnarua Country. I ask the Department to confirm that an adequate Aboriginal Cultural Heritage Assessment, prepared with the relevant Aboriginal parties, forms part of the exhibited material, and to test the EIS against the Secretary's Environmental Assessment Requirements for this application. To the extent the SEARs required a quantified hazard analysis, a human-health risk assessment, a bushfire assessment, or a definitive biodiversity assessment, and the EIS has not delivered those to the required standard, the assessment is inadequate and consent cannot properly be granted on it.

4. Relief sought

I ask that the Department **refuse** consent for SSD-85939708.

The engagement of a Critically Endangered Ecological Community and of Matters of National Environmental Significance in and around this site, combined with the uncharacterised thermal-runaway and human-health hazard, the threat to the surrounding viticultural land use, and the unassessed cumulative impact of two adjacent facilities, means the consent authority cannot be satisfied on the exhibited material that this development is in the public interest under section 4.15(1)(e). These are deficiencies in the adequacy of the assessment itself.

If, contrary to this submission, the Department is minded to consider the application further rather than refuse it, I ask in the alternative that determination be deferred and the application re-exhibited only after: a PHA-grade thermal-runaway consequence and toxic-plume dispersion assessment tied to local meteorology and receptors; a Fire and Emergency Response Plan agreed with Fire and Rescue NSW and the RFS with an identified independent water supply; a bushfire assessment modelling both the external radiant initiation of thermal runaway with site power lost and the separation distance and passive fire barrier required to prevent it; a human-health risk assessment; a genuine cumulative-impact assessment of both Rothbury facilities together; a definitive (not indicative) biodiversity disturbance footprint tested for serious and irreversible impact, with a full assessment of impact on the North Rothbury Persoonia, Hunter Valley Delma and the Central Hunter Valley eucalypt CEEC; an assessment of the smoke-taint and firewater-contamination pathways to the surrounding viticulture and catchment; a secured, quantified decommissioning financial assurance; and confirmation of Aboriginal cultural heritage assessment and SEARs compliance.

A resident of the Cessnock area

Evidence base and full citations: accompanying research dossier (fire science; medical toxicology; Australian and international incidents and failure-rate data; wind and bushfire analysis; ecology, threatened species and agriculture; financial and policy analysis). All sources verified at URL; evidentiary tiers marked; knowledge gaps stated rather than filled. NOTE FOR FILING: the site-level presence of the Persoonia, Delma and CEEC should be checked against the exhibited BDAR species list before lodgement; this submission is framed to call for that verification rather than to assert confirmed on-site presence.