Implementing the IUCN RHINO approach at Fortescue's Eliwana mine, Western Australia

About the IUCN RHINO approach

The IUCN RHINO approach provides a science-based, actionable track for companies, governments, and civil society to deliver Rapid, High-Integrity Nature-positive Outcomes (RHINO) and contribute to the KMGBF and the UN Sustainable Development Goals (SDGs). Focusing on reducing species extinction risk and ecosystem collapse, it provides a means for companies to embark on no-regrets actions that are robust and scientifically supported.

RHINO's core metric is STAR (Species Threat Abatement and Restoration), derived from the IUCN Red List of Threatened Species™. It quantifies global extinction risk reduction through $STAR_T$ (Threat abatement) and $STAR_R$ (Restoration of historical impacts), which are spatially explicit, scalable, and support aggregation across sites, portfolios, and jurisdictions. IUCN RHINO pilots are based on the use of $STAR_T$, as the mitigation of threats in places where biodiversity still occurs is the most effective mechanism to reduce the loss of biodiversity.

The calculation of $STAR_T$ scores involves summing the proportion of a threatened species' Area of Habitat (AOH) within the considered area, weighted by its IUCN Red List extinction risk category (100 for Near Threatened, up to 400 for Critically Endangered). The scores are disaggregated by threat, to show the relative contribution of different threat types to the overall STAR score and identify priority actions to reduce the species extinction risk.

Background, objectives and implementation of the pilot

In 2022, Fortescue developed their Environment Policy and committed to work towards a net positive impact for biodiversity. Following this publication, a Biodiversity Strategy was implemented in 2023, which outlined the key pillars and strategic partnerships needed to create a roadmap. In 2024, Fortescue entered a partnership with IUCN to develop credible pathways to achieving net positive impact on biodiversity.

The first joint activities focused on their Eliwana mine and the surrounding Western Hub exploration area, located on the Country of the Puutu Kunti Kurrama and the Pinikura (PKKP) Traditional Custodians, in the Pilbara region of Western Australia. In 2025, an independent site review was performed to assess Fortescue's approach to biodiversity net positive impact and explore options for enhancing biodiversity value on their non-operational areas that could also deliver contributions to the Kunming Global Biodiversity Framework (KMGBF).

In this context, Fortescue was interested in piloting the IUCN RHINO approach to understand how using a science-based metric like $STAR_T$ could further inform their biodiversity management to contribute to net positive and Nature Positive outcomes. It can also support the disclosure of state of nature metrics related to species extinction risk.

The first phases of the project were implemented over a seven-month period between May and November 2025, and involved Fortescue in-house experts, consultants, and IUCN.

Implementing IUCN RHINO's Direct Impact Track

A1. Locate

The Locate phase aims to provide a thorough understanding of an organisation's interface with areas important for biodiversity, to help identify priority sites and areas for conservation. In the context of this pilot, the Locate phase focused on gathering local information related to the project area, which was a priority for Fortescue.

Screen and prioritise for the pilot

The Pilbara region has rich biodiversity characterised by unique, and arid-adapted fauna. A number of threatened species occur within the project area, which have been confirmed by the $STAR_T$ analysis (see A2).

Gathering pilot location information and data

The Eliwana mine, within the project area, began operating in 2020, over an expected 24-year mine life. It covers 443 km², while the future Strategic Assessment Project Area, known as Western Hub, covers 4,200 km². The project includes development of above and below water table open-cut mine pits, ore processing facilities, waste landforms, tailings storage, accommodation camps, aerodrome, power generation, and supporting infrastructure.

The Eliwana project area is located in the Pilbara region of Western Australia, an area with a dry climate, hot summers, and rainfall that can vary a lot from year to year. The landscape includes rocky hills, plateaus, drainage channels, and wide stony plains. The soils are generally shallow and low in nutrients. Water in the area mostly flows through creeks and drainage lines after heavy seasonal rain. These waterways are usually dry but can carry large amounts of water during storms, eventually feeding into the Ashburton River systems. Groundwater is found in alluvial aquifers, valley-fill and paleochannels aquifers, fractured rocks supporting some vegetation that relies on underground water.

Much of the native vegetation in the area is considered to be in good to very good condition, based on available site data. It includes plants adapted to dry environments, such as Acacia shrublands, spinifex grasslands, and vegetation that grows along creeks and riverbanks.

Map stakeholders at the landscape level

Land use around the Eliwana project area is predominantly associated with iron ore mining, the region's primary economic activity, with several major companies operating in the area. Companies holding nearby mining concessions are therefore key stakeholders for Fortescue, alongside other organisations established to support related operations.

Cattle grazing and ranching activities are also present in the area. Traditional Custodians are key stakeholders, representing local communities with strong cultural ties to the land.

Regulators of land use include State and Federal Governments, within which the Department of Biodiversity, Conservation and Attractions (DBCA) plays a key role in sustainable land management.

Define the Area of Influence of Fortescue Eliwana mine and Western Hub

The 'Area of Influence' refers to the geographic area where Eliwana mine site's activities, including associated facilities, could potentially impact biodiversity and ecosystem services. It encompasses zones of direct, indirect, and cumulative effects. It is the area for which a meaningful action to deliver IUCN RHINO outcomes with clear accountability mechanisms should be developed and managed. The project area also includes future exploration areas, known as the 'Western Hub'; this area was extended to follow the natural features of the landscape, such as watersheds. The Area of Influence covers a total of 13,797 km², of which the Eliwana Mine accounts for 443 km² (3% of the area). Figure 1 shows the defined Area of Influence of Fortescue's Western Hub exploration area, and Eliwana Mine area.

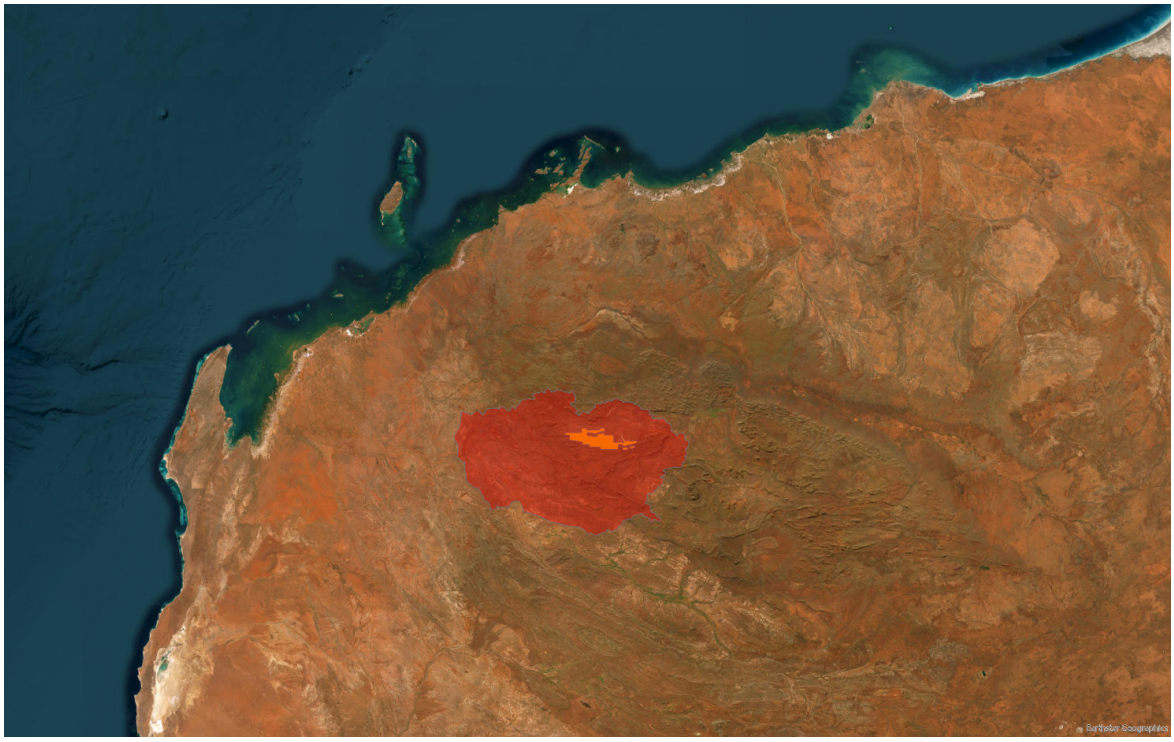

Figure 1: Map of the Area of influence showing Fortescue's Western Hub exploration area in red (13,797 km²), and Eliwana mine in orange (443 km²). Projection realised by IUCN on ArcGIS software based on data provided by Fortescue.

Compile preliminary threatened species and associated threat data

The project team had access to a comprehensive database of existing information and studies on species, previously collected by Fortescue at the site (for example, through wildlife trapping and camera surveys) with the assistance of subject matter experts. No additional data collection was carried out.

An *IBAT Species Report (estimated STAR)* was generated for the Area of Influence, to provisionally identify the key drivers impacting globally threatened terrestrial fauna species present in the area, and their relative importance, based on estimated $STAR_T$ scores. This report identified 10 mammal and bird species contributing to the Western Hub's estimated $STAR_T$ score, which amounts to 998.07 centiSTAR.

Endemic reptile subspecies present in the Pilbara are classified as Least Concern (LC) on the IUCN Red List, which does not assess taxa at the subspecies level. As a result, no reptiles were included in the *IBAT Species Report*, despite their abundance in the area and the fact that several subspecies hold endangered status at the national level.

Results from this report could be used by Fortescue to inform the TNFD LEAP L4 component 'Interface with sensitive locations' and are aligned with state of nature metrics requirements.

A2. Evaluate

During this phase of the IUCN RHINO approach, the project team confirmed and revised species occurrence and threat presence on the ground within the Area of Influence (or "area"). A calibrated $STAR_T$ score was calculated to serve as a baseline for the species extinction risk and provide a more detailed evaluation of nature-related dependencies and impacts.

Confirm species

The species in the IBAT Species report presenting estimated $STAR_T$ scores were compared against Fortescue's existing surveys and expert knowledge for mammals and birds.

As a result, the presence of four of the 10 species listed in the *IBAT species report (estimated STAR)* was confirmed in the area and taken into account in the calculation of the calibrated $STAR_T$: two mammals, the Endangered (EN) Northern Quoll *(Dasyurus hallucatus)* and the Vulnerable (VU) Ghost Bat *(Macroderma gigas)*; and two Vulnerable birds, the Grey Falcon *(Falco hypoleucos)* and the Southern Whiteface *(Aphelocephala leucopsis)*.

In addition, Fortescue included another Critically Endangered (CR) bird in the region, the Night Parrot (*Pezoporus occidentalis)*, which was not listed in *Species report* but was incorporated into the $STAR_T$ calibration. This cryptic species has not been recorded during field surveys; however potential suitable habitat may be present. Consequently the species may occur in the Area of Influence and was included in the calibrated $STAR_T$.

For these five species, Fortescue teams worked with a specialist ecological consultant to refine species' Areas of Habitat (AOH) by species distribution modelling methodology, to improve accuracy of results. The modelling was trained using a combination of species location data with consideration of survey efforts. Twenty-five environmental variables were selected based on landscape, soil, geology and vegetation characteristics. The SDM output converts the probability of occurrence into three likelihood ranks: Low, Medium, and High.

Figure 2 shows the resulting Area of Habitat generated for the Northern Quoll, highlighting areas with low, medium and of high suitability to guide conservation action. The refined AOH were used in the manual calculation of $STAR_T$, for the Area of Influence, however the new IBAT module enabling the calibration process of $STAR_T$ will not support such refinement.

The AOH refinement performed by Fortescue resulted in significant changes to the species' spatial distribution. The AOH of the Northern Quoll increased by 47%, while those of the Ghost Bat and Night Parrot reduced by 21% and 7%, respectively. In addition, an AOH of 480 km² for the Night Parrot – previously not identified in the *IBAT Species report (estimated STAR)* – was found within the area.

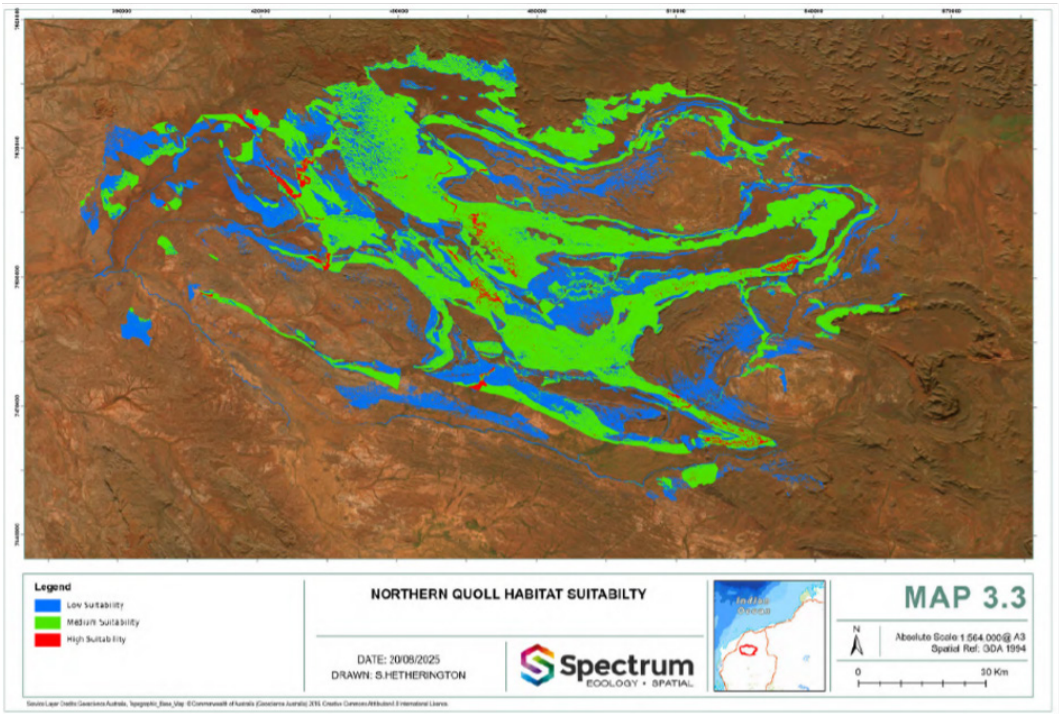

Figure 2: Area of Habitat generated for the Northen quoll. Low suitability of habitat in blue, medium suitability in green and high suitability in red. Source: Fortescue / Spectrum

Confirm threats

The Fortescue team revised the threats that were listed in the *IBAT Species report (estimated STAR)* for each species present in the area. The team referred to the IUCN Threats Classification Scheme, which Level 2 is used to define threats for STAR scores.

During an internal workshop, they evaluated the scope and severity of threats using National Recovery Plans, State Government advice documents, baseline and compliance survey data and academic literature. Each threat was quantified as a percentage of population decline (based on Mair et al. 2021), as shown in Figure 3. This work, the most labour-intensive part of the calibration, proved critical as it provides important insights to identify priorities for action.

		Severity					
		Very rapid declines	Rapid declines	Slow, significant declines	Negligible declines	No decline	Causing/ could cause fluctuations
Scope	Whole (>90%)	63	24	10	1	0	10
	Majority (50-90%)	52	18	9	0	0	9
	Minority (<50%)	24	7	5	0	0	5

Figure 3: Translating population decline into numeric percentage (based on Mair et al. 2021)[1]

Calculate first version of baseline

Based on the confirmed species and identified threats, the calibrated $STAR_T$ score stands at 676.62 centi-stars, which represents 68% of the estimated $STAR_T$ score. This relatively low calibrated $STAR_T$ score is due to a lower number of species recorded in the field compared to global data – five species instead of 10. Figure 4 shows the scores for the five species.

Common Name	*Scientific Name*	Taxa	IUCN Red List status	Final Global AOH (km^2)	% AOH within area	STAR score (censi-star)	% STAR score
Northern Quoll	*Dasyurus hallucatus*	Mammals	EN	226,751	1.39%	277.79	**41.06%**
Night Parrot	*Pezoporus occidentalis*	Birds	CR	69,752	0.69%	248.78	**36.77%**
Grey Falcon	*Falco hypoleucos*	Birds	VU	4,034,785	0.26%	76.89	**11.36%**
Ghost Bat	*Macroderma gigas*	Mammals	VU	793,859	0.29%	59.31	**8.76%**
Southern Whiteface	*Aphelocephala leucopsis*	Birds	VU	3,873,121	0.03%	13.86	**2.05%**

Figure 4: Calibration results by species

While the calculation was performed manually for this pilot, the new IBAT module supporting the process will calculate the calibrated $STAR_T$ score based on field survey data confirmed by users.

The IBAT Species Report (calibrated STAR) meets the requirements for species of the TNFD E3 phase related to measuring changes to the state of nature and E4, which recommends assessing the severity of impact for materiality assessment.

[1] Source: Mair et al (2021), A metric for spatially explicit contributions to science-based species targets – Supplementary information, Nature. https://doi.org/10.1038/s41559-021-01432-0

A3. Assess

Through this phase of RHINO, a company will identify, from the *IBAT Species Report (calibrated STAR)*, the threats that are most important to mitigate and consult with stakeholders to refine the analysis.

Assess most important threats

The top three threats in the Area of Influence contributing the most to the calibrated $STAR_T$ score were the invasive alien species (16.7%), livestock farming and ranching (16.7%), and fire and fire suppression (13.2%). The complete analysis is shown on Figure 5.

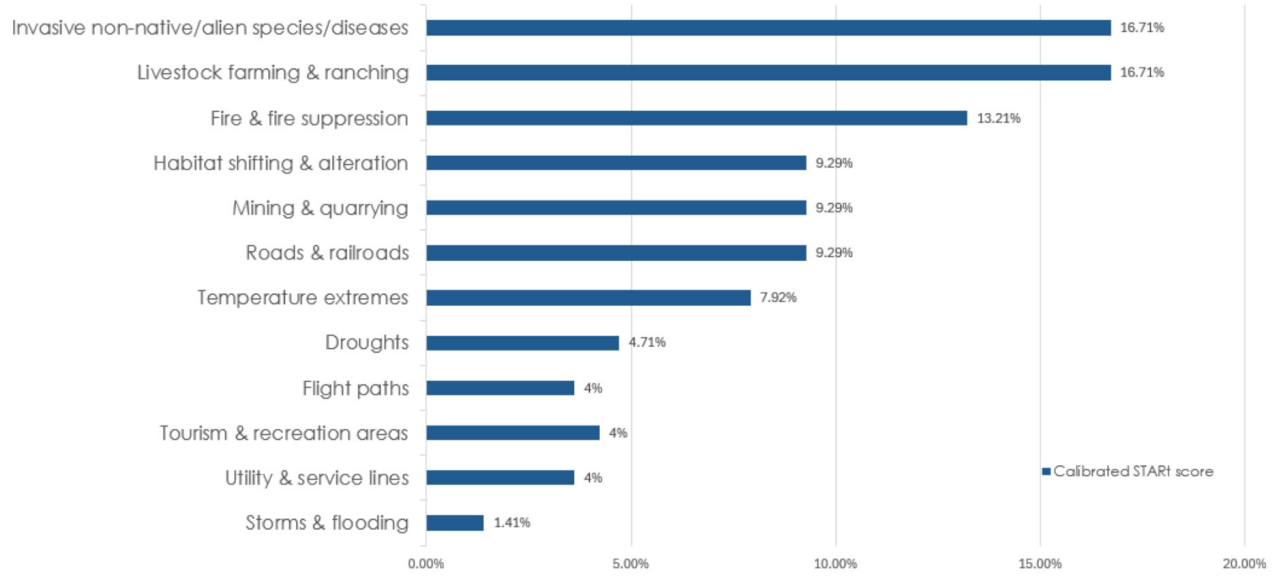

Figure 5: Ranking of the main drivers of the species loss in the area (calibrated $STAR_T$)

Two endemic species, with the Endangered and Critically Endangered status, account for about 77% of the score and should therefore be prioritised for threat abatement and conservation action: Northern Quoll *(Dasyurus hallucatus)* accounting for 41%, and the Night Parrot *(Pezoporus occidentalis)* for 36.8%.

For mammals, invasive non-native species, livestock farming and ranching, and fire and fire suppression are the three main threats representing together 29% of the $STAR_T$ – results mostly driven by the Northern Quoll. For birds, the top three threats include invasive species, livestock farming and ranching, and temperature extremes. While fire and fire suppression are not among the primary threats, temperature extremes emerge as an important factor to address.

Fortescue's *Conservation Significant Fauna Management Plan* (CSFMP) implemented for the Eliwana site includes initiatives to protect significant fauna, including the Northern Quoll, the Night Parrot and the Ghost Bat. A few other species classified as 'Least Concern' are also covered by this plan. The CSFMP is a regulatory framework designed to protect priority fauna and their critical habitats in the context of industrial development. It applies the mitigation hierarchy using site-specific baseline data collected prior to disturbance, and sets clear objectives, targets, and management actions to minimise impacts on conservation-significant species.

Key measures include pre-disturbance surveys and relocations, risk assessments, feral animal control, and operational practices such as dust suppression, traffic management, and progressive rehabilitation. The plan also establishes strict requirements, including zero mortality targets and the avoidance of unauthorised habitat degradation. Through ongoing monitoring and adaptive management, it supports the long-term conservation of fauna while ensuring regulatory compliance.

Socialise results

The IUCN RHINO approach recommends to socialise results of the $STAR_T$ calibration to discuss results and share a common understanding of the key threats should be addressed in priority to reduce the species extinction risk. Fortescue plans to engage with key experts and stakeholders to confirm the priorities identified in the $STAR_T$ calibration process during 2026.

Recalculate baseline in response to new data and insights

Engaging with stakeholders may result in adjustments in the calculation of calibrated $STAR_T$: This may lead to recalculating the baseline in response to new data and insights, which is the last step of the Assess phase. This baseline can be used to inform, for the species-related elements, the TNFD LEAP A3 'Risk and opportunity measurement and prioritisation' and A4 'Risk and opportunity materiality assessment'.

A4. Prepare

Once the socialisation of results is done, the next steps for Fortescue on its journey to achieving net positive impact for biodiversity and identifying net positive contributions will be to further update its biodiversity action plans, targeting the most important biodiversity relevant threats identified by the IUCN RHINO approach (A4 – Prepare).

During the Prepare phase, as part of the IUCN RHINO approach, the objective is to understand how to respond to the material impacts on biodiversity identified and risks to the organisation identified in the Assess phase. The outcome will be the development of an action plan to abate the most important threat, thereby delivering a net positive impact for biodiversity and the greatest contribution to Nature Positive outcomes. The action plan can be translated into a science-based target for the reduction of the threats that cause species extinction risk.

This may involve developing actions with clearly defined objectives, supported by research, industry, government and Traditional Custodians - subject to their interest in participation - to jointly identify and implement actions that balance land use with measurable biodiversity outcomes.

Contributed by: Todd Edwards, James Waterhouse (Fortescue), Mathieu Carrara, Charlie Butt, Florence Curet (IUCN).

Picture credit: Mathieu Carrara (IUCN)

Please get in touch to learn more
www.iucnrhino.org
rhino@iucn.org