Mining Management Plan

North Batten Project Exploration Activities

1. PROJECT DETAILS

1.1 Operator Details

Project Name	North Batten

Authorization Number	

Operator Name	Sandfire Resources Limited is owner of the North Batten tenement package with Teck Australia the operator through an Option and Joint Venture Agreement.
Operator ABN and ACN numbers	ABN: 35 091 271 911 ACN: 091 271 911

1.2 Mining Interest and Land Ownership

The North Batten Project currently comprises 11 granted tenements, and two applications. Table 1 summarizes the tenements, and Figure 4 illustrates the locations of the North Batten project tenements.

On the 7th of April 2020, Sandfire Resources entered into an option and joint venture agreement with Teck Australia Pty Ltd "Teck" with respect to the 11 North Batten licences collectively referred to as GR504. Teck have been operator of the project since then.

Title Number	Title Holder	Expiry Date	Underlying Property Name or Land Holder
EL25501	Sandfire Resources	-	
EL26299	Sandfire Resources	-	

Title Number	Title Holder	Expiry Date	Underlying Property Name or Land Holder
EL26831	Sandfire Resources	08-Jun-23	McArthur River Pastoral Lease
EL26833	Sandfire Resources	08-Jun-23	McArthur River Pastoral Lease
EL26835	Sandfire Resources	08-Jun-23	Lorella Springs
EL26836	Sandfire Resources	08-Jun-23	Lorella Springs
EL28656	Sandfire Resources	26-Oct-23	McArthur River Pastoral Lease
EL29022	Sandfire Resources	24-Jul-23	Lorella Springs
EL30048	Sandfire Resources	02-Jun-23	Lorella Springs
EL30137	Sandfire Resources	08-Jun-23	Lorella Springs
EL30152	Sandfire Resources	08-Jun-23	Lorella Springs
EL30156	Sandfire Resources	08-Jun-23	McArthur River Pastoral Lease
EL30158	Sandfire Resources	08-Jun-23	Lorella Springs

1.3 Organizational Structure and Responsibility

Position Title	Name
Exploration Manager/Radiation Safety Officer	**Andrea Reed**
Senior Project Geologist (Project Leader)	**Christine Smith**
Project Geologist	**Gregory Poole**
Geologist	**David Fox**
Environmental Manager (HSE Lead)	**Jemayne Abduramanoski**
Communities Manager	**Jennifer Shewan**
Compliance Geologist	**Joanna Mander**

2. OPERATOR SELF-ASSESSMENT OF THE ENVIRONMENTAL RISK

2.1 Environmental Considerations

ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (e.g., evidence of consultation with DEPWS and/or management plan where required).
Step 1: Are there any threatened flora and fauna species or habitats of significance that may occur in the proposed work area?	NO	• No identified threatened flora or fauna registered within the work area according to DEPWS database. • All flora and fauna will be managed following the Teck environmental plan. • A registered sighting of Gouldian finch outside work area identified, however in extended potential habitat zone. • Sighting of the Gouldian Finch, the Carpentarian Grasswren and the Mitchell's Water Monitor all occur within tenement EL26831 (Cow Lagoon). However, no ground disturbing work is planned in this area in the 2022 program.	**Appendix I (within this document):** DEPWS Map
Step 2: Are there any known declared weeds within the proposed work area?	YES	• Potential to encounter weeds when clearing tracks and drill pads, or to bring in from external sources on dirty equipment. • Weed management detailed in site induction manual; includes washdown of all vehicles/ equipment prior to arriving on site. • Vehicle wash-downs to take place at Borroloola. • Weeds and Seeds vehicle wash-down log. • Images of known weeds in the area to be put into the project induction to promote awareness and recognition.	**Appendix I (within this document):** DEPWS Map and Weeds and Seeds excerpt from Field Induction Manual
Step 3: Will you be using water from bores or other sources for the operation?	YES	• Water is planned to be extracted from existing water bores on site. • However, if these bores are not accessible or have been buried, Teck will apply for permits and if successful, will drill one water bore in the Bing Bong (Fandango) drill area and one water bore in the Mount Young drill area. • Water usage is monitored. • Water quality monitoring program conducted by Teck staff.	**Figure 4** for water bore locations

2.2 Environmental Assessment and Cultural Considerations

ASSESSMENT ASPECT	YES or NO	MANAGEMENT REQUIREMENTS
Step 4: Is your project likely to have a significant impact on the environment?	NO	• Minimal ground clearing will be undertaken during the 2022 work program to create tracks, drill pads, a laydown area/campground • Sumps will be lined to ensure management of drilling fluids. • Tracks, pads and laydown/campground will be rehabilitated once the drill program is complete. • NT EPA Environmental factors and objectives incorporated into project induction manual. • Environmental impact monitored and managed onsite by Teck staff.
Step 5: Are there Aboriginal sacred sites in the Project area?	YES	• Teck applied for an abstract of records from the AAPA and reviewed the following authority certificates which were available for inspection covering the North Batten tenement package: C1994/011, C2002/062, C2015/138, C2017/040, C2017/040, C2016/165, C2015/140, C2015/138, C2014/179, C2004/075, C1994/011, C1992/187, C2017/040, C2014/113, C2018/098, C2018/008, C2017/038, C2014/114, C2007/116, C2002/061, C1997/059, C1995/116, C1995/113, C1994/010, C1994/006, C1993/105, C1992/186, C1991/097 • All proposed work activities avoid recorded Aboriginal sacred sites by at least 2km and will adhere to all work condition from within the above AAPA certificates. • One proposed drill hole PROP_NB_DDH_09 is planned in an area not covered by any of the AAPA certificates above. If this planned hole was to go ahead, a heritage survey would be conducted before any ground disturbance. Exploration activities would only be carried out in heritage cleared areas. • See Appendix V. • Teck will continue to meet with Local Aboriginal Groups to ensure relevant cultural heritage monitors will be on site for heritage clearances during any activities that are defined as new ground disturbance (this excludes existing disturbance e.g. track upgrades).
Step 6: Are there archaeological and heritage sites in the Project area?	No	• An online review of the NT heritage register has indicated there are no archaeological or heritage sites in the work area.

3. AMENDMENTS

Section	Amendment
n/a	n/a

4. ACTIVITIES PROPOSED

Proposed activities below comprise the expected 2022 - 23 program.

Mining Interests (i.e. titles)	EL29022 Bing Bong (Fandango)	EL30048 Bing Bong (Fandango)	EL26836 Mount Young	EL30152 Mount Young	EL26835 Rosie Creek
Number and type of proposed drill holes	10 diamond drill holes (5 priority and 5 contingency holes)	1 Diamond Hole	4 diamond drill holes (2 priority and 2 contingency holes)	4 diamond drill holes (2 priority and 2 contingency holes)	N/A
Maximum depth of proposed holes (m)	500-1000m	500-1000m	500-1000m	500-1000m	N/A
Number and size of drill pads to be cleared (Length: m x Width: m)	11 drill pads 40m x 40m with two sumps (including a pad for water bore)	1 drill pad 40m x 40m with two sumps	5 drill pads 40m x 40m with two sumps (including a pad for possible water bore)	5 drill pads 40m x 40m with two sumps (including a pad for possible water bore).	N/A
Total area of drill pads to be cleared (ha)	1.76ha	0.16ha	0.8ha	0.8ha	N/A
Number of proposed water bores	1 water bore	N/A	1 water bore	1 water bore	N/A
Is drilling likely to encounter groundwater in multiple or confined aquifers?	unsure	unsure	unsure	unsure	unsure

(Y, N, unsure) If answering yes, please provide the number of exploration holes where this is likely to occur					
Number of costeans	N/A	N/A	N/A	N/A	N/A
Volume to backfill costeans (Length: m x Width: m x Depth: m)	N/A	N/A	N/A	N/A	N/A
Number of bulk sample pits	N/A	N/A	N/A	N/A	N/A
Volume to backfill bulk sample pits (Length: m x Width: m x Depth: m)	N/A	N/A	N/A	N/A	N/A
Bulk sample pits approved under *Mineral Titles Act*? (Y or N)	N/A	N/A	N/A	N/A	N/A

Length of line/track clearing **(km: x Width: m)**	2022 - 2023 Field Season – Tracks require assessment from a third-party contractor to determine sections for upgrading. • Up to 6 km x 4m wide of existing tracks will be upgraded, infilling erosion, and building drainage. • In addition, up to 16 km x 4m wide of new track will require low lying vegetation (shrubs) and overhead branches to be cleared to access drill sites	2022-2023 Field Season – 3km by 4m of new track will be constructed	2022 - 2023 Field Season – Tracks require assessment from a third-party contractor to determine sections for upgrading. • Up to 4.5 km x 4m wide existing tracks will be upgraded, blade-up clearing of regrowth, infilling erosion, and building drainage. • In addition, up to 12.34 km long x 4m wide of new tracks will require low lying vegetation (shrubs) and overhead branches cleared to access drill sites	2022 - 2023 Field Season – Tracks require assessment from a third-party contractor to determine sections for upgrading. • Up to 4.5 km x 4m wide existing tracks will be upgraded, blade-up clearing of regrowth, infilling erosion, and building drainage. • In addition, up to 12.22 km long x 4m wide of new tracks will require low lying vegetation (shrubs) and overhead branches cleared to access drill sites	2022 - 2023 Field Season – Tracks require assessment from a third-party contractor to determine sections for upgrading. • In addition, up to 0.95km long x 4m wide of new tracks will require low lying vegetation (shrubs) and overhead branches cleared to access drill sites
Area of proposed line/track clearing (ha)	2.4ha of existing track to be upgraded. 6.42ha of new track will require low lying vegetation (shrubs) and overhead branches to be cleared to access drill sites	1.16 ha of new track will require low lying vegetation (shrubs) and overhead branches to be cleared to access drill sites	1.8ha to 4.93ha of new tracks will require low lying vegetation (shrubs) and overhead branches cleared to access drill sites	1.8ha to 4.89ha of new tracks will require low lying vegetation (shrubs) and overhead branches cleared to access drill sites	0.37
Camp area to be cleared (ha)*	0.32ha blade up clearing for a driller's camp	N/A	0.32ha blade up clearing for a driller's camp	0.32ha blade up clearing for a driller's camp	0.32ha blade up clearing for a driller's and/or small field camp
Camp Infrastructure**	Drill camp will be one caravan and an annex	N/A	Drill camp will be one caravan and an annex	Drill camp will be one caravan and an annex	Drill camp will be one caravan and an annex

(i.e. demountable, tents) Please provide a complete list with measurements as required in the security calculation					
Other	N/A	N/A	N/A	N/A	n/A
Total area disturbed proposed (ha) ***	Between 5.23ha (minimum) and 11.6ha (maximum) depending on condition of existing tracks	1.32ha	Between 1.88ha (minimum) and 13.4ha (maximum) depending on condition of existing tracks	Between 1.82ha (minimum) and 13.5ha (maximum) depending on condition of existing track	1.26ha

Notes

***Five options for camp locations provided on map in Appendix VII, however a maximum of three will be utilized.**

****All camp Infrastructure is included within the calculated camp cleared area.**

*****Security Calculation has been completed on the maximum disturbance proposed.**

4.1 Track Improvements

A field reconnaissance trip in early July 2021 determined the need for significant improvements on tracks to enable future access into the project area. A contractor will be scheduled to assess the portion of tracks requiring improvements. For tracks in reasonable condition, general clearing of low-lying shrubs and overhead branches will be sufficient. For tracks that have been eroded, overgrown, or water-logged, more significant earthworks will be required.

An assessment will be made at the end of the program with regard to rehabilitation – complete, partial or none, contingent on further use of the road. This decision process will also involve the local land holders; new tracks can serve as vital infrastructure for land access and fire breaks.

5. PREVIOUS DISTURBANCE (FOR EXISTING AUTHORISATIONS ONLY)

The 'Disturbance Tracking' spreadsheet must be completed and attached to the MMP submission to complete this section. The spreadsheet is available on the departmental web page where this template is located.

6. ENVIRONMENTAL MANAGEMENT

By checking these boxes, you are agreeing to implement the following minimum environmental management standards on the project area. Where boxes have been left unchecked, justification is required.

6.1	X	Blade-up approach for clearing will be used (i.e. no windrows, leave root stock and topsoil)
6.2	X	Significant vegetation will be avoided during clearing (i.e. large trees, specimens providing habitat or food sources, riparian vegetation, and threatened species)
6.3	X	Vegetation clearing during, and immediately after rainfall events, will be avoided
6.4	X	Vegetation clearing will be kept to the minimum required to safely traverse vehicles and drill rigs along tracks and drill pads
6.5	X	Where blade-up techniques cannot be employed, topsoil and vegetation will be stockpiled appropriately for rehabilitation purposes
6.6	X	All employees and contractors will be trained and inducted in relation to the management of environmental risks in the work area, including weeds, waterways, threatened species, soil erosion, sacred sites and heritage areas
6.7	X	Sumps will be lined or tanks of appropriate size to contain water, sediment and drilling fluids encountered during drilling, will be used.
6.8	X	Sumps, drill holes, and fuel stores will be located away from environmentally significant areas and water courses
6.9	X	Excavations (sumps, costeans and pits) will be appropriately ramped to allow fauna egress
6.10	x	Drill holes will be securely capped immediately after drilling
6.11	X	Vehicle hygiene measures will be employed to prevent the introduction and spread of invasive species and pathogens when mobilising vehicles and equipment from one location to another
6.12	X	Hydrocarbon spills will be minimised using liners and drip trays under machinery, and appropriately sized spill-kits available in the event of a spill
6.13	X	Hazardous substances (including hydrocarbons) will be stored and handled in accordance with relevant Australian Standards
6.14	X	Hydrocarbons will be stored in lined and bunded areas
6.15	X	Waste will be stored securely while on-site to minimise windblown rubbish and access by feral animals
6.16	X	Waste will be removed off-site and disposed of at an appropriate waste management facility

6.17	X	All environmental incidents will be reported to the Department in accordance with Section 29 of the *Mining Management Act*.
6.18		Acid and Metalliferous Drainage (AMD) and Potentially Acid Forming (PAF) material derived from drilling cuts will be managed to avoid AMD and PAF related issues on site.
6.19		Radioactive/NORM drill cuttings will be managed to avoid radiation related issues on site.
6.20	X	Dust management will be implemented on site.

Justification and alternative management measures:

6.1 – Where possible. If this method causes a trip hazard or safety issue then 6.5 is employed.

6.10 – If the drill hole is not grouted upon pulling out drill gear, then it will be temporarily capped with concrete plugs until a more secure cap is fitted at final rehabilitation.

7. REHABILITATION AND CLOSURE

By checking these shaded boxes, you are agreeing to implement the following minimum rehabilitation standards on the project area. Where boxes have been left unchecked, justification is required.

A refund of security related to completed rehabilitation on site requires the submission of a rehabilitation report including photographs, an updated security calculation and updated disturbance tracking spreadsheet to the Department.

7.1		Drill holes will be plugged below ground level at a minimum depth of 0.4 metres and soil mounded to prevent subsidence, within 6 months of completion of drilling.
7.2	X	Drill holes encountering multiple or confined aquifers will be grouted with concrete.
7.3	X	Drill samples/spoil will be returned down drill holes, buried in sumps, or removed from site.
7.4		All drill hole and access markers including flagging tape, wooden markers and star pickets will be removed from site.
7.5	X	Cut and fill drill pads will be re-contoured to be consistent with the surrounding terrain.
7.6	X	Drill pads and compacted areas along the contour (on sloping ground) will be ripped/scarified of and tracks will be cross-ripped (zig-zag).
7.7	X	Tracks will be rehabilitated, including pushing in all windrows, unless otherwise agreed in writing by the land holder or appropriate third party.
7.8	X	Appropriate erosion and sediment controls will be installed where erosion is evident or likely to occur.
7.10	X	Access through watercourses will be removed and banks restored.
7.11	X	All previously disturbed areas will be stable, with no evidence of active soil erosion.
7.12	X	All excavations will be backfilled within 6 months of their completion.
7.13	X	All water bores will be decommissioned unless otherwise agreed in writing by the land holder or appropriate third party.
7.14	X	All rubbish and infrastructure will be removed from site.
7.15	X	Topsoil will be replaced and vegetation re-established.
7.16	X	Contaminated soils (e.g. hydrocarbon or hazardous chemicals) will be rehabilitated or removed from site.
7.17	X	Monitoring will be undertaken following the wet season or a significant rainfall event.

Justification and alternative management measures:

7.1- Drill holes may be temporarily capped with a concrete plug until final rehabilitation is completed. Drill holes are kept open until final decision to not re-enter the hole is determined.

7.4 - Sighting pegs are kept at collar locations for continuity of rehabilitation photographs

7.7 - Major tracks are kept open until the end of the project. Minor tracks are rehabilitated at the end of each field season.

8. REQUIRED ATTACHMENTS

8.1	X	Initial Application for Authorisation or variation of Authorisation (only if details on the form have subsequently changed). **Appendix II**
8.2	X	Nomination of Operator Form, where required **Appendix III**
8.3	X	Security Calculation Spreadsheet **Appendix IV**
8.4	X	**Appendix V** Evidence of Land Access Agreement if operating on an Exploration Licence (EL) on Pastoral Lease (e.g. two-ways exchange of email) **Land Access Agreement will be submitted separately once executed.**
8.5	X	Disturbance tracking spreadsheet (for existing Authorisations)
8.6	X	Spreadsheet with coordinates of proposed drill holes or polygons of target areas **Appendix VI**
8.7	X	KML/shape files/track logs of proposed tracks, camp sites and proposed drill holes or polygons of target areas **Polygons Appendix VI**
8.8	X	Map(s) of the work area(s) showing: 1. title boundaries and title numbers 2. current and proposed drill holes, or polygons of target areas 3. current and proposed tracks 4. rehabilitated areas 5. camp sites 6. heritage sites or significant environmental areas 7. environmental constraints **Appendix VII**
8.10	X	Radiation Management Plan (if applicable) **Appendix VIII**
8.12		Document(s) being appended in relation to Section 2 (if any): **Appendix I and V**

9. DECLARATION

The Mining Management Plan must be endorsed by a senior representative of the company who has the appropriate level of authority to do so.

	Author		Approved by
Date	27/06/2022		28/06/2022
Name	Christine Smith		Andrea Reed
Signature	C Smith		

I Andrea Reed, Country Manager, Teck Australia declare that I have the authority to make the commitments contained in this mining management plan on behalf of the company. To the best of my knowledge the information contained in this plan is true and correct and commit to undertake the works in accordance with the agreed minimum standards and all relevant Northern Territory and Commonwealth Government legislation.

SIGNATURE: .....

DATE: 28/6/2022