

**Independent Expert Scientific Committee on Unconventional Gas Development and
Large Coal Mining Development (IESC)
Meeting 104, 9-11 April 2024**

**MINUTES
Videoconference**

ATTENDANCE AND APOLOGIES

IN ATTENDANCE

Dr Chris Pigram (Chair)
Dr Andrew Boulton
Professor Jenny Davis
Dr Juliette Woods
Professor Rory Nathan

APOLOGIES

Dr Jenny Stauber
Associate Professor Phil Hayes
Professor Wendy Timms

OFFICE OF WATER SCIENCE (OWS)

Dr Des Owen, Director
Amelia Lewis
Andriana Stoddart
Aranza Bulnes-Beniscelli
Ben Klug
Dylan Stinton

Frances Knight
Jason Smith
Dr Laura Richardson
Loren Pollitt
Dr Sarah Taylor

Note: OWS attendees include those with full or partial attendance.

1. Welcome and Introductions

The Chair acknowledged the traditional owners, past and present, on whose lands this meeting was held, and welcomed members of the Independent Expert Scientific Committee on Unconventional Gas Development and Large Coal Mining Development (IESC) to the meeting.

1.1 Attendance and Apologies

IESC members in attendance and apologies are recorded above.

1.2 Disclosure of Interests

Committee members were invited to make disclosures. Committee members also completed a Meeting Declaration of Interests before the meeting commenced. No actual, potential or perceived conflicts of interest were recorded for this meeting.

1.3 Confirmation of Agenda

The Committee endorsed the agenda for Meeting 104.

1.4 Confirmation of Out-of-Session Decisions

The Committee noted that:

- minutes of the Committee's 103rd meeting on 6 March 2024 were agreed out-of-session and published on 26 March 2024; and

1.5 Correspondence

The Committee noted the status of correspondence to 31 March 2024.

1.6 Action Items

Ongoing items were noted and updates were provided on the timing of completion.

1.7 Forward Planning Agenda

The Committee noted the forward planning agenda.

It was agreed that the next meeting be scheduled to be a videoconference on 15 May 2024.

1.8 Environmental Scan

The OWS reported on recent events.

2. Advice on Projects referred by governments

2.1 New Lenton Coal Project

The New Lenton Coal Project (the 'project') is a proposed new metallurgic coal mine located in the Bowen Basin in Queensland. The mine lease is in the Isaac River headwaters and includes Ti-Tree Creek, an unnamed tributary of the Isaac River, and the confluence of Hill Creek with the Isaac River. The project includes the development of two open-cut pits (East and West pits), mine infrastructure areas, haul roads, a water management system and multiple crossings of the Isaac River. Ti-Tree Creek upstream of the pits will be permanently diverted to the unnamed tributary north of the project area. The diversion will replace approximately 4.95 km of Ti-Tree Creek with a 2.8 km diversion.

The project proposes to extract up to 1.9 Mt per annum of run-of mine (ROM) coal over 18 years, targeting the Rangal Coal Measures. Coal handling and preparation and train loadout facilities at the adjacent Burton Coal Mine will be utilised to process the ROM coal and transport it to export facilities. Although West Pit will be backfilled, East Pit will only be partially backfilled, leaving a residual, progressively saline final void lake in the landscape. Waste overburden rock will be stored at the project site in in-pit and out-of-pit stores, with tailings to be stored at Burton Coal Mine.

The project is located in an area of active and historic coal mining, with some coal seam gas projects also planned. The other primary land use in the area is cattle grazing. Remnant vegetation occurs along and near watercourses, including the Isaac River, Hill Creek and Ti-Tree Creek. Riparian vegetation in the region is habitat for several species listed by the *Environment Protection and Biodiversity Conservation Act* (EPBC Act 1999) as Matters of National Environmental Significance (MNES) such as the Greater Glider (*Petauroides volans*) and Koala (*Phascolarctos cinereus*). It also provides important landscape connectivity in an area that has already been extensively cleared. Groundwater drawdown and changes to runoff and surface water flows from the project are likely to adversely affect the riparian vegetation in and adjacent to the project area. The proponent has hypothesised that groundwater-dependent riparian vegetation in the project area only uses perched groundwater although insufficient evidence has been provided in the documentation to support this.

Key potential impacts from this project are:

- Permanently reduced water availability for terrestrial groundwater-dependent ecosystems (GDEs), potentially impacting the health of remnant vegetation and reducing habitat availability and landscape connectivity in a largely cleared landscape, via the following potential pathways:
 - reduced recharge to perched groundwater

- altered recharge to alluvial aquifers (also potentially impacting stygofauna and other aquatic GDEs)
- drawdown of the watertable.
- Removal of approximately 4.95 km of Ti-Tree Creek and its replacement with a 2.8 km diversion into the unnamed tributary which are likely to:
 - isolate the vegetated lower reaches of Ti-Tree Creek from episodic streamflow and hyporheic recharge of its alluvial sediments, potentially reducing condition and persistence of remnant vegetation
 - remove riparian and instream habitat and pool refugia along 4.95 km of the current watercourse, reducing aquatic habitat availability and potentially impacting downstream water quality
 - change the flow regime and increase flows in the unnamed tributary downstream of the diversion, potentially resulting in erosion and sedimentation of the tributary downstream to the Isaac River.
- Disturbance of 886 ha, including clearing of approximately 397 ha of remnant and high-value regrowth vegetation (including 112.2 ha of the Poplar Box Grassy Woodland on Alluvial Plains Threatened Ecological Community) that provides habitat for native wildlife, including multiple EPBC Act-listed species, in a landscape largely cleared for agriculture.
- Multiple waste rock dumps, both in-pit and out-of-pit, which could provide a source of contaminants and sediment, potentially affecting water quality downslope.
- A progressively saline final void lake which will remain in the floodplain, with long-term legacy risks to downstream and subsurface receiving waters and their biota.

The IESC has identified additional work required to address the key potential impacts, as detailed in this advice. These are summarised below.

- Further field-based data and information must be collected and analysed to provide a more rigorous evidence-based conceptualisation of the groundwater systems and their connectivity, especially recharge to both the perched groundwater and the alluvial aquifer, and groundwater usage requirements of GDEs such as riparian vegetation to ensure that potential impacts are fully assessed and appropriately monitored and managed.
- Informed by refined conceptualisation as described above, improvements are needed to the groundwater modelling, including parameterisation, representation of shallow groundwater processes, representation of faulting, consideration of climate change in the post-mining predictions and greater clarity of modelling outputs. All of these will increase confidence in the predicted range of potential impacts.
- Further characterisation is needed of the Ti-Tree Creek instream habitats and flow regime components relevant to ecological function and geomorphological performance to ensure appropriate design of the proposed diversion channel.
- Assessment of the likely effects of the diversion on the unnamed tributary (e.g. channel form, benthic habitat availability, riparian zone condition) to ensure appropriate monitoring and management measures (e.g. of increased erosion) are adopted.
- Given the use of perched groundwater by terrestrial GDEs, the proponent should consider installing shallow bores in areas where remnant vegetation is likely to be impacted by altered recharge of the perched groundwater and at unimpacted reference sites.
- Proposed monitoring and management plans should be developed and provided for assessment of their likely adequacy.

Consistent with the *Environment Protection and Biodiversity Conservation Regulations 2000*, advice will be published on the IESC's website within 10 business days of being provided to the regulators.

2.2 Baralaba South Project

The Baralaba South Project (the 'project') is a greenfield open-cut metallurgical coal mine located in the lower Bowen Basin region of Queensland, approximately 8 km south of the town of Baralaba and 115 km west of Rockhampton. The project will disturb up to 1,211 ha of land within Mine Lease Application 700057 (the MLA) and produce up to 2.5 million tonnes per annum of run-of-mine coal over the 23-year life of mine (AARC 2023a, Chapter 2, p. 2-1).

The project includes the excavation of an open-cut pit, construction of a coal handling and preparation plant, on-site disposal of waste material in waste rock emplacements, and construction of supporting infrastructure (including electricity transmission lines, roads and operational facilities). The open-cut pit will be mined from north to south, with progressive backfilling and staged rehabilitation works as mining advances. Proposed rehabilitation of the project area will include stabilisation and reseeded of the waste rock emplacements and retention of the final void as a pit lake.

As part of operations, the proponent plans to release mine-affected water (MAW) into the Dawson River when the mine water system is at capacity during wet periods, and when Dawson River flows are greater than 100 m³/s. The proponent also plans to take raw water from the river under existing licences.

The proponent's ecological surveys reported diverse water resources within and near the project area, including a High Ecological Significance (HES) wetland and other wetlands, multiple watercourses, stygofauna and other groundwater-dependent ecosystems (GDEs). Terrestrial GDEs extend along the Dawson River, its anabranch and Banana Creek, and are considered to be mainly using groundwater in sandy lenses perched above and disconnected from the regional groundwater table. Stygofauna were collected from the Dawson River's alluvium. Threatened Ecological Communities (TECs) listed by the *Environment Protection Biodiversity and Conservation Act 1999* (EPBC Act) in and near the project area include Brigalow (*Acacia harpophylla* dominant and co-dominant) and Coolibah Black Box Woodlands of the Darling Riverine Plains, along with at least nine species listed as Matters of National Ecological Significance (MNES) under the EPBC Act.

Key potential impacts from this project are:

- clearing of habitat and riparian corridors important for flora and fauna in a landscape already largely cleared for agriculture;
- permanent impacts to 2.33 ha of ground-truthed waterways considered to provide fish passage;
- decreases in surface water quality from controlled discharge of mine-affected water and uncontrolled overflow from sediment dams releasing contaminated water and sediments downstream, impacting downstream users and the receiving environment;
- impacts to tributary streams within the MLA, including loss of first- and second-order streams, from the mine development footprint, stream diversions and reduction or loss of catchment areas, with repercussions for Shirley's Gully, the downstream receiving stream reach which has been identified as having moderate to high values for fish, turtles and other aquatic species;
- groundwater drawdown within the alluvial system impacting stygofauna and other groundwater-dependent ecosystems (GDEs);
- impacts to fish and turtle movements and habitat downstream due to stream diversions limiting passage and increasing sediment loads to the downstream environment;
- changes to flood levels and velocities from the mine disturbance area and final landform, potentially exacerbated by climate change; and
- cumulative impacts of the proposed project, such as groundwater drawdown, loss of habitat corridors and loss or changes to tributary streams, combining with those from current and proposed activities in the catchment (e.g. Baralaba North Mine and Dawson Mine).

The IESC has identified additional work to address the key potential impacts as detailed in this advice. This work is required to convincingly demonstrate that the potential impacts identified above will either not occur or can be adequately mitigated, and is summarised below.

- Site-specific water quality and streamflow data are needed, including from Shirley's Gully and watercourses within the MLA, to develop site-specific water quality objectives and flow regimes and inform water balance and flood modelling.
- Further information is needed regarding the potential for flood-overtopping of sediment dams and the associated potential impacts to water quality and infrastructure.
- An assessment is needed of the potential water quality of mine-affected water (MAW) beyond just electrical conductivity (EC) to be able to fully assess potential impacts of controlled releases of MAW into the Dawson River on downstream users and the environment, as well as inform monitoring and management plans.
- More recent (post-2020) field surveys are needed of the ecological values of surface waters within and downstream of the project area (e.g. Shirley's Gully) and of aquatic and terrestrial GDEs that may be affected by drawdown and other project-related activities.
- Clearer explanation is needed of planned rehabilitation strategies, such as revegetation of the stream diversion along Tributary 8 to remediate loss of riparian corridors and reduce impacts to EPBC Act-listed species.
- Further assessment is needed of the HES wetland's and other wetlands' potential dependence on groundwater to properly identify potential impacts from groundwater drawdown. This information will inform monitoring plans, including which ecological values need to be monitored.
- Detailed management plans should be developed to describe monitoring, mitigation and management measures to address all potential residual impacts on water resources during and after the project.

Consistent with the *Environment Protection and Biodiversity Conservation Regulations 2000*, advice will be published on the IESC's website within 10 business days of being provided to the regulators.

3. Other business

There was no other business.

4. Close of Meeting

The meeting closed at 1.00pm on Thursday 11 April 2024.

Next Meeting

The next meeting is scheduled as a videoconference on 15 May 2024.

Minutes confirmed as true and correct:

Dr Chris Pigram AM, FTSE

IESC Chair

18 April 2024