Attachment 1

Hemi Gold Project

Environmental Review Document
Assessment No. 2380

COMMENTS FROM EPA SERVICES

This document provides the comments from EPA Services regarding the revised Referral Supporting Document for the Hemi Gold Project proposed by De Grey Mining Ltd.

Item	EPA Services and Agency comments	Proponent response
Flora and vegetation		
1.	The proposed disturbance of 34.5% and 24.6% of the known individuals of *Euploca mutica* (P3) and *Triodia chichesterensis* (P3), respectively, may represent a significant impact on the local and regional distribution. Similarly, the proposed disturbance of 45.2% of the local population and 42.3% of the regional population of *Polymeria* sp. nov. is likely to represent a significant impact on this species as well. Further management measures are required to mitigate the potential direct and indirect impacts on Priority flora species.	De Grey has amended the Proposal footprint to further avoid *Triodia chichesterensis, Euploca mutica and Polymeria* sp. nov. This has reduced the potential impacts upon known individuals of these species from 25.6, 35.4 and 42.3 % to 2, 26.5 and 12.8% respectively. Section 9.4.3 has been updated accordingly.
2.	As discussed in Appendix 13, it is noted that similar vegetation types to VT 16 may occur regionally. However, the presence of groundwater dependent species with the broader occurrence is unknown. Regional scale mapping of the Pilbara (Alaibaksh et al. 2017) indicated that groundwater dependent vegetation cover represents approximately 10.5% of riparian vegetation of the Pilbara region. In addition, VT 16 was identified as suitable habitat for potential SRE species (e.g., *Oratemnus* `BPS437`), conservation significant flora (e.g., *Gymnanthera cunninghamii* (P3) and *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)), and conservation significant fauna (e.g., northern quoll (EN)). As it is associated with the Turner River, VT 16 is also likely to have significant cultural values. For these reasons, it is likely that VT 16 could be considered as significant vegetation, as outlined in EPA (2016). Provide clarification as to why 45 ha of clearing is required for a discharge outlet. An adaptive management approach may also be required to avoid clearing key flora and vegetation species within VT 16, for the reasons outlined above. Elevated concentrations of contaminants may also adversely impact VT 16 beyond the proposed 45 ha extent. However, it is expected that appropriate management of these contaminants, as discussed under inland waters below, will also minimise the potential impacts on values associated with VT 16.	De Grey has amended the Proposals footprint to further avoid Vegetation Unit 16. This has reduced the potential impact from 45 ha (1.2%) of the mapped extent to 10 ha (0.4 %). Section 9.4.3 has been updated accordingly. In addition to the above De Grey has proposed an upper limit of clearing for Vegetation Unit 16 to ensure impacts are not greater than predicted. Section 9.5 has been updated accordingly. It should be noted that as this vegetation unit aligns with the Major River Habitat Type and is recorded as critical habitat for the Northern Quoll an offset will apply under the *Environment Protection and Biodiversity Conservation Act 1999*.
3.	It is not clear how weed presence/abundance will be appropriately minimised if the baseline conditions are established during the construction phase. Baseline conditions should be established prior to any ground disturbing activities. A number of weed species were recorded along the Turner River. In response to the discharge of surplus mine dewater, these weed species may increase in abundance. Mitigation and management of the spread of weed species along the Turner River does not appear to have been included in the EMP. Further, it is not clear where the 'high-risk areas' referenced in Table 2-1 of the EMP are located. Provide clarification on where these areas are located, or how they will be established.	It should be noted that the Proposal is located on an active Pastoral Station, which De Grey does not own and as such De Grey cannot fully control the presence/abundance of weeds within the Development Envelope. De Grey considers that a condition and/or monitoring and reporting on weed presence/abundance is not feasible for the Proposal and would be inappropriate in the circumstances. De Grey have however included mitigation and management measure for the Proposal to reduce the potential for the introduction and spread of weeds within the Development Envelope as per Table 9-4 of the RSD. Noting the importance of the Turner River and potential that discharge may increase the presence of weed species along its reaches Table 2-6 of the EMP included a commitment to monitoring weed species and cover (%) as part of the health of the Turner River. High risk areas as reference in Table 2-1 that will be monitored for the introduction and/or increased presence of weeds include cleared areas, rehabilitated areas and/or stockpiles, in particular topsoil stockpiles. The EMP has been amended accordingly.
4.	It is noted that the results of the Ecoscape (2021) desktop study and surveys were incorporated into Appendix 13. However, Ecoscape (2021) appears to	De Grey has amended Table 9-1 and Figures 9-2, 9-3 and 9-4 to clearly present the vegetation units mapped by Ecoscape (2021) between and up to and including the Yule River.

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	have performed surveys that extend beyond the boundary of the development envelope. For example, the vegetation associated with the Yule River appears to have been surveyed, and this vegetation may be adversely impacted by groundwater drawdown. Provide the Ecoscape (2021) report and provide updated figures that clearly present the vegetation and fauna habitat type associated with the Yule River.	Three vegetation units were recorded: • AiAacAanTOS - Acacia inaequilatera, Acacia acradenia and Acacia ancistrocarpa tall open shrubland • AiAanGwMSS - Acacia inaequilatera, Acacia ancistrocarpa and Grevillea wickhamii mid sparse shrubland • EcMaEvMW - Eucalyptus camaldulensis subsp. refulgens, Melaleuca argentea and Eucalyptus victrix mid woodland Only EcMaEvMW was considered by Ecoscape to represent a GDV. The Proposal will not impact EcMaEvMW either directly or indirectly through drawdown associated with the Proposal. De Grey has included monitoring of groundwater drawdown in the EMP along the Yule River to monitoring drawdown to ensure impacts are not greater than predicted. Furthermore, De Grey have included an environmental outcome of no impact to the Yule River for the Proposal. The Ecoscape report has not been appended to the ERD as no impacts are predicted to theses vegetation units and the Umwelt report provides vegetation mapping for the entirety of the Development Envelope.
Terrestrial fauna		
5.	The EMP does not include pre-clearance surveys for the northern quoll. In addition, Attachment 1 of the EMP (Greater Bilby Disturbance Protocols) notes that pre-clearance surveys must be undertaken 'two weeks before land clearing within Greater Bilby critical habitat'. As consistent with recently published Ministerial Statements (such as MS 1205 and 1224), pre-clearance surveys for the northern quoll and greater bilby should be undertaken within 7 days of ground disturbing activities within critical habitat. Consideration should also be given to undertaking pre-clearance surveys when ground-disturbing activities are undertaken near important habitat, not just within. It is recommended that the EMP be developed further in consultation with DBCA.	The Greater Bilby Disturbance Protocol, EMP and RSD have been updated to state that pre-clearance surveys for Greater Bilby will occur within 7 days of ground disturbing activities. In addition, pre-clearance surveys for Northen Quoll have also been included to occur 7 days prior to ground disturbing activities within identified critical habitat (i.e. vegetation unit 16, major river habitat type). De Grey notes the comment regarding pre-clearance surveys near important habitat. Pre-clearance surveys will be conducted when ground disturbing activities are located within or close to critical habitat for listed species. De Grey has consulted with a Senior Environmental Officer at the DBCA's Environmental Management Branch (24.02.2025) who has advised that further consultation on the EMP will be via the EPA and not directly with the proponent to ensure any advice provided is not contradictory to EPA (TEB Branch) advice.
6.	Several potential short-range endemic (SRE) species were collected from the development envelope, including three pseudoscorpion species that may be susceptible to a loss of habitat connectivity (Appendix 18). Appendix 18 also considered that the Turner River (VT 16) is the area most likely to host susceptible SRE species, and that excessive clearing should be avoided, where possible. Further, activities such as groundwater drawdown and discharge of mine dewater may indirectly impact SRE species through a reduction in available habitat. Management measures should be provided to ensure impacts to SRE species are avoided, where possible, and otherwise minimised.	None of the potential SRE species were recorded from isolated/restricted habitats within the Development Envelope as depicted in Figure 10-6 of the RSD (reproduced below). Instead, they occurred within widespread and common habitats (Spinifex Sandplain, Sandplain Drainage and Major River) that occur broadly across the Development Envelope and its surrounds. These widespread habitats are less likely to be barriers to species dispersal and typically do not support significant refugia/microhabitats required by SRE species. De Grey further notes that the Proposal will not result in the creation of small and/or disconnected islands or fragments within or across habitat types and as such connectivity throughout the mapped habitat types would largely remain during and after implementation of the Proposal. De Grey has amended the Proposal footprint to further avoid Vegetation Unit 16. This has reduced the potential impact from 45 ha (1.2%) of the mapped extent to 10 ha (0.4%). Vegetation Unit 16 is the only vegetation unit known to contain potentially groundwater dependent vegetation. Groundwater drawdown is not predicted to reach this vegetation unit and thus indirect impacts from groundwater drawdown will not indirectly impact upon SRE species through a reduction in available habitat. Similarly, discharge to the Turner River (Vegetation Unit 16) will only occur in a limited extent of the Turner River and thus impacts to this vegetation unit from discharge are unlikely to be significant and short lived upon potential SRE species. De Grey have provided for management measures in Table 10-7 of the RSD in relation to SRE species.

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		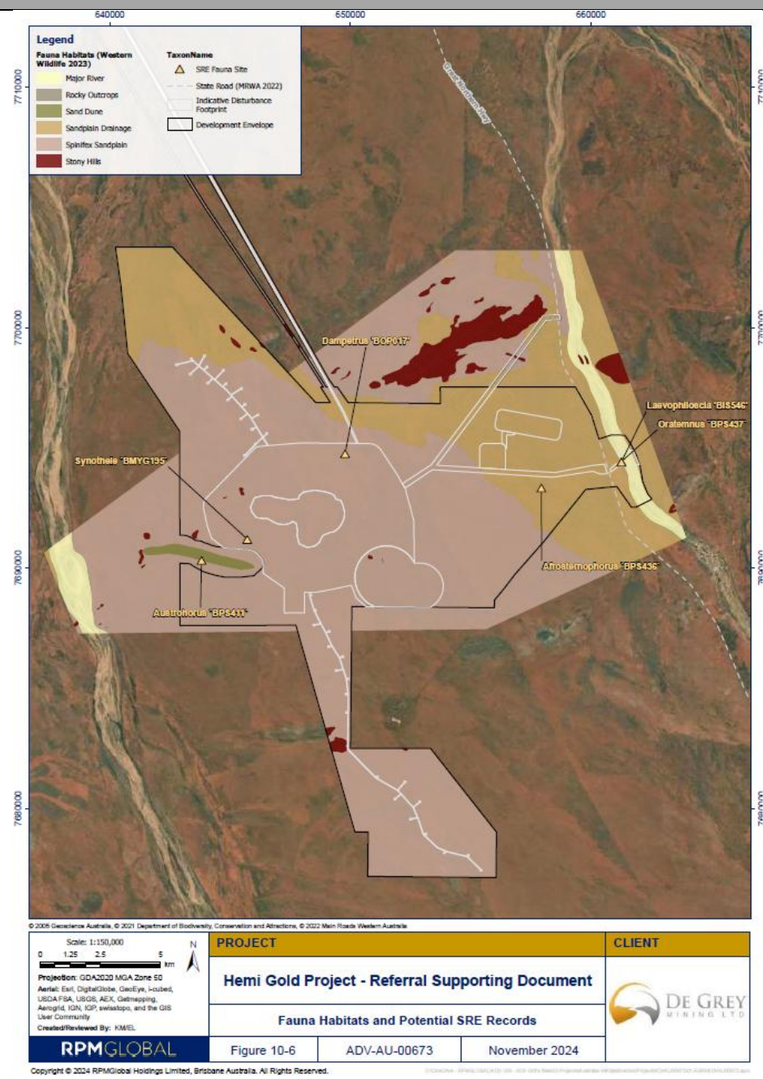
7.	The extent of suitable habitat for the night parrot (mature, unburnt spinifex) appears to be limited by the occurrence of fire. Page 156 and 271 of the RSD state that this is “due to regular fires by the pastoralist.” Clarify whether the pastoralist intends to continue this during the life of the proposal, and whether this will impact the proposed monitoring of environmental impacts.	De Grey is unable to manage the pastoralist fire regime. Any fires will be reported on during annual environmental reports with a summary of impacts on environmental monitoring provided.
8.	It is not clear if bunds, such as those associated with pipeline corridors, will be suitably constructed to avoid trapping vertebrate fauna.	All drains across the Development Envelope will include fauna egress points to avoid the trapping of terrestrial fauna. In addition, all tailings and process water pipelines will be subject to inspections each shift for leaks and/or spills. These inspections will also identify fauna that may have become trapped within the drains. Table 10-7 has been amended with this additional information.

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Inland waters		
9.	The RSD notes that obligate phreatophyte species are known to exist within riparian vegetation associated with the Yule River. The impact assessment should consider a 0.5 m drawdown extent (as presented in Plan 10-7 of Appendix 2) given the proximity to riparian vegetation associated with the Yule River. The EMP, including Figure 1-4, should be revised to consider the modelled 0.5 m drawdown extent.	De Grey has: • Revised the RSD to include an assessment of the 0.5 m contour as presented in Plan 10-7 of Appendix 2. By year 15 the model shows that the 0.5 m drawdown, while proximate, will not impact upon the Yule River Channel. Furthermore, there is no predicted impact to the riparian vegetation and/or groundwater dependent vegetation within the Yule River. • Considered the 2 m drawdown contour, which accounts for the observed natural variation in groundwater levels. Drawdown is expected to remain at 1.5 km from the Yule River and 6.2 km from the Turner River, ensuring that no riparian vegetation or groundwater dependent vegetation within these water systems will be impacted. Therefore, no impacts are expected on riparian vegetation, GDVs or riverine pools. • Proposed a robust monitoring regime in the environmental management plan to ensure groundwater drawdown is not greater than predicted. It consists of early warning, trigger and threshold monitoring bores with appropriate management measures.
	In addition, the proposed monitoring bores (as presented in Figure 2-1 of the EMP) do not appear to be sufficient to monitor the potential impacts from groundwater drawdown. For example, the early response monitoring bore HMB096 appears to be completely outside of the modelled drawdown extent. It is not clear why a 3 m variation has been chosen in Table 2-2 as the early response criteria if this bore location is not expected to receive a 0.5 m drawdown.	De Grey has reviewed and updated the: • Locations of the early response, trigger, and threshold monitoring bores to ensure they are located within the modelled extent of groundwater drawdown. • Number of monitoring bores to improve coverage and monitoring sensitivity, addressing concerns about insufficient monitoring of potential impacts. • Criteria associated with variation. Details of the updated monitoring network and criteria are outlined in Section 2 of the EMP.
	The monitoring bores presented in the EMP also do not match the monitoring bores as presented in Plan 10-7 of Appendix 2. It is unclear why some monitoring bores have not been included in the EMP, such as the bores to the north-west of the develop envelope.	De Grey notes that: • The monitoring bores presented in Plan 10-7 of Appendix 2 were suggestions from the consultant and have not been formally committed to by De Grey in any official document. • A thorough review and update of the monitoring bore locations has been undertaken, including the early response, trigger, and threshold monitoring bores (see Section 2 of the EMP). These updated locations ensure adequate coverage of areas impacted by groundwater drawdown, in alignment with the modelled extent, including areas to the northwest of the Development Envelope.
10.	The survey effort downstream of the proposed discharge location in the Turner River is limited to a single pool (Appendix 11; Appendix 12). It is unclear how impacts to potential pools will be mitigated and managed if all pools have not been characterised. Further, Appendix 11 and 12 present photographs of pools containing water during both the wet and dry seasons. It is unclear why some of these pools (such as pools TR1 and TRD2) have not been characterised as permanent, when the presence of water appears to be year-round.	The baseline aquatic ecology study of the Turner and Yule River (Appendix 11) undertaken by Stantec was completed by suitably qualified Pilbara specialists. Sites were selected on the review of Satellite imagery and known (named) pools, with locations ground truthed in the field for accessibility and the presence of surface water. Subsequently, 10 sites were sampled during the dry season survey (November 2021); four sites within the Turner River (including one site in Turner River East) and six sites in the Yule River. During the wet season (May 2022), 12 sites were sampled; repeat sampling of 10 dry season sites with an additional two sites sampled (one each on the Turner and Yule Rivers). Reconnaissance of several additional sites along both the Turner and Yule River was also undertaken during the Study; however, these sites were dry during both the wet and dry season sampling and thus were excluded from the sampling program (i.e. pools did not form). A summary of the sites sampled, is provided in Stantec (2022) and reproduced below.

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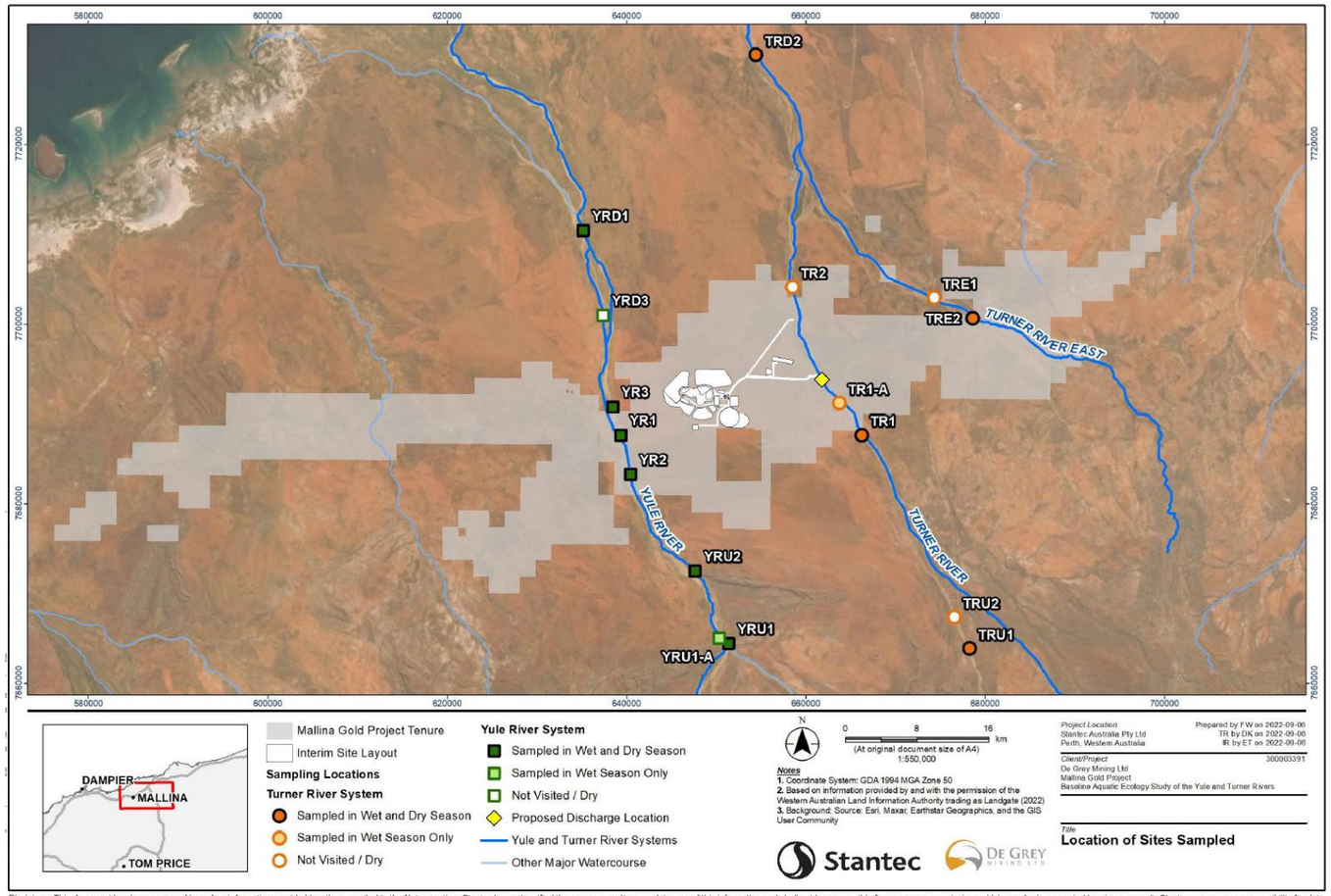

At each site during the Study, habitat characterisation was undertaken, to document the key hydrological, geological, and biological attributes of the waterway. Photographs were also captured to provide a record of site conditions at the time of each survey. It should be noted that these photographs represent a point in time as opposed to a time series of data.

The majority of the sites along the Turner River were classified by Stantec as semi-permanent pools influenced by rainfall with the exception being TR1, classified as permanent, which is located to the south (upstream) of the proposed discharge. TR1 will not be impacted by the Proposal.

To address the presence of water in some pools during both wet and dry seasons and ensure appropriate classification, De Grey undertook a precautionary review of aerial imagery. This assessment focused on TRD2, the only pool consistently sampled and located within the predicted wetting front of the surplus water discharge. The analysis confirmed that TRD2 experiences drying phases over time, supporting Stantec's classification as semi-permanent (refer to Section 8.3.4.2 of the RSD). The Figure below presents an example of TRD2 in a dry state.

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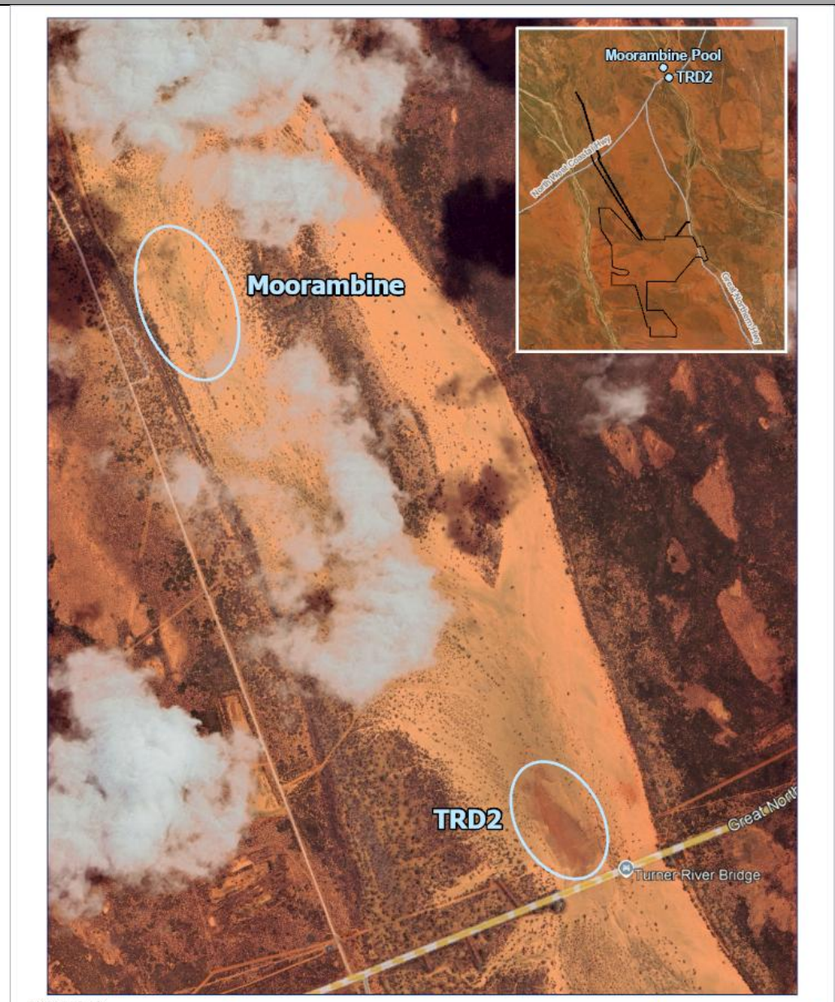

In addition to the pools identified by Stantec De Grey has also included in its assessment several pools identified and classified by the Department of Water in a report on the Lower Turner groundwater allocation limit report produced in 2011 (DoW 2011). The classification of these pools relies upon the DoWs classification system of permanent, semi-permanent and intermittent.

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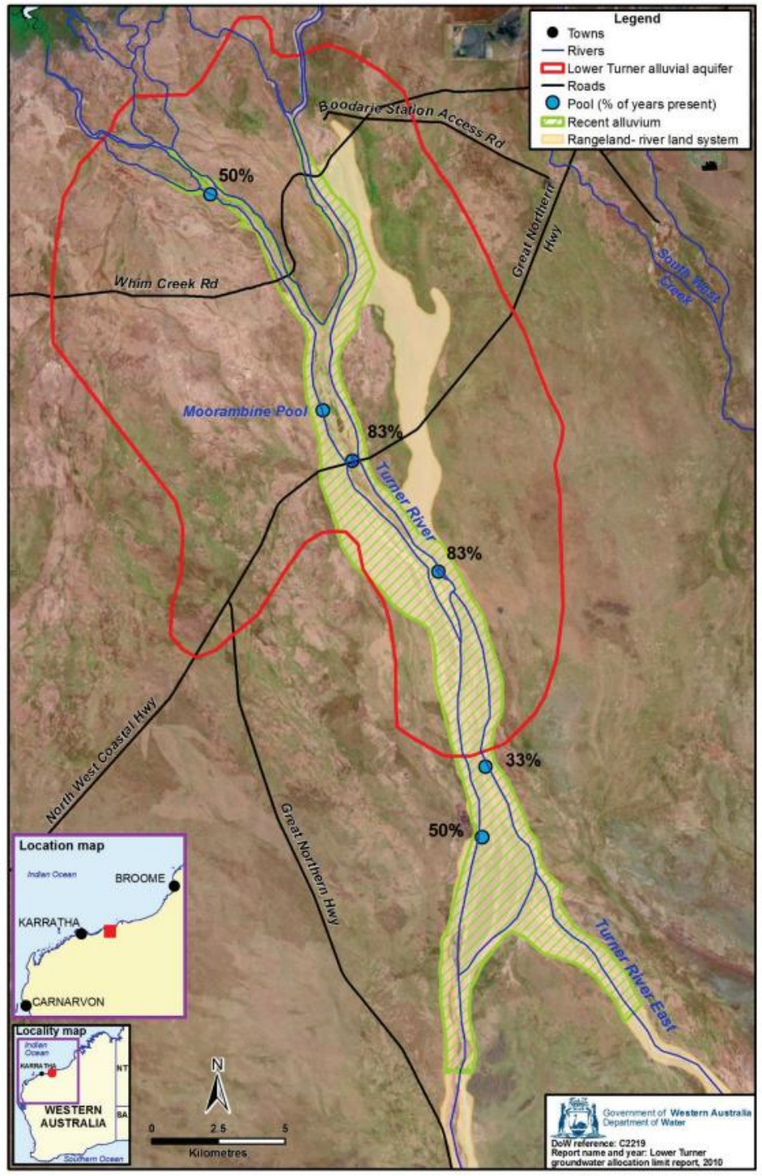

Figure 2 Pools along the lower Turner River that are possibly groundwater-dependent ecosystems and their permanency

Based upon the above De Grey is confident that sufficient survey effort and scientific information has been used to classify the pools within the Turner and Yule Rivers such to inform a robust environmental impact assessment.

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		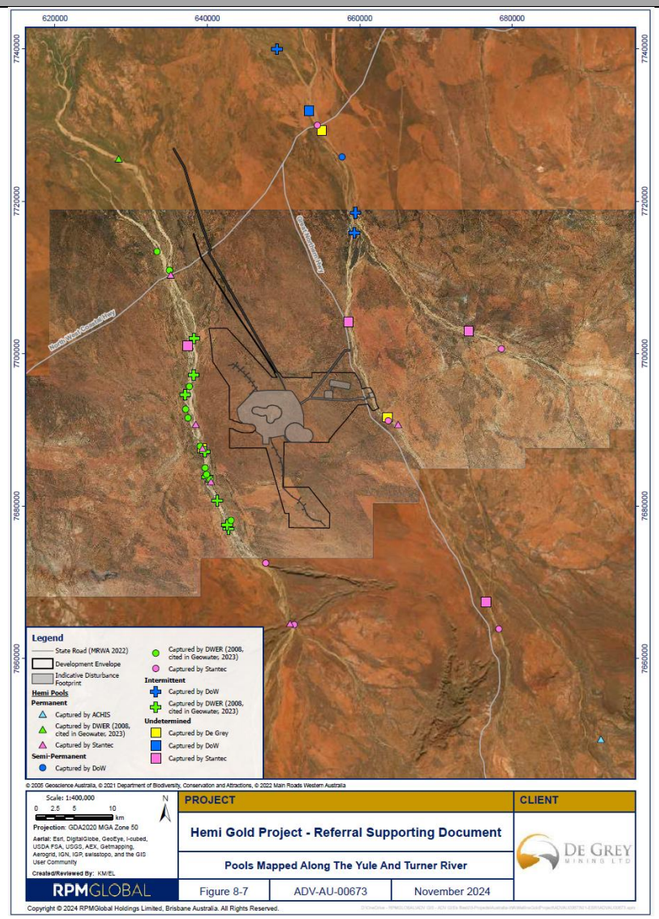 Whilst Appendix 11 and 12 may present photographs of pools containing water during both the wet and dry season it should be noted that these photos are only four points in time. The pools have been classified by Pilbara biological experts based upon geomorphological, hydrological and biological features
	Provide a clear characterisation of all pools that may be impacted by the proposal and propose adequate mitigation measures to these pools based on these characteristics.	De Grey has included this information in a new section (Section 8.4.4 – Surplus Water Discharge) of the RSD
11.	The EMP should be revised to address all potential impacts to GDE's, including stygofauna species and all potentially impacted surface water pools. Section 13.4 of Appendix 2 includes a commitment to monitoring the pool water quality and levels for both the Yule and Turner River; however, this has not been included in the EMP. For example, the trigger and threshold	The impact on stygofauna is assessed in Section 11 of the RSD, which includes: • Direct and indirect impacts from open pit development, dewatering, and borefield reinjection and abstraction. • Use of a numerical groundwater model (Geowater Consulting Pty Ltd, 2023) to predict potential impacts, supported by a peer review (Jurassic Groundwater, 2023) and sensitivity analyses to ensure conservative estimates. • Calculation of habitat loss for stygofauna and troglofauna, demonstrating that sufficient interconnected habitat remains available for persistence during and after mining (De Grey, 2023). Based upon the robust impact assessment undertaken, De Grey has confidently concluded that impacts to subterranean fauna are unlikely to be significant and that the EPA subterranean fauna objective can be met.

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	criteria in Table 2-2 only monitor the potential elevated concentrations of metals at the discharge outlet. Due to the high permeability and storage of the alluvial aquifer, pools with a potential to be groundwater fed should be monitored to ensure they are not adversely impacted. This includes Pool 1286, 1287, 1289, and the Jelliabidina, Mardagubbidina, and Portree pools. Management measures should also include consideration for uncertainty in the groundwater model predictions.	It should be noted that to ensure impacts are not greater than predicted De Grey has proposed the following environmental outcomes for subterranean fauna: • Limit the Proposal groundwater abstraction to up to: – 30 GL/a for years 1 – 4 – 18 GL/a for years 5 – 7 – 11 GL/a for years 8 – 15 Until such time as De Grey submits an updated groundwater model inclusive of the additional abstraction (up to 30 GL/a) to the satisfaction of the CEO of the EPA. • Limit groundwater mounding to no greater than 2 m from surface within the reinjection borefields. As such subterranean fauna have not been included in the EMP.
		De Grey has included an objective-based provision for monitoring groundwater levels within the drawdown extent. This provision aims to verify that the drawdown behaves as predicted by the model and includes a commitment to update and recalibrate the groundwater model every three years. Furthermore, De Grey has undertaken a review of the early response, trigger and threshold bore locations and criteria and amended the EMP to ensure that: • Bore locations are established based on predicted drawdown contours over time (i.e. time series data) • Criteria are based upon predicted drawdown less natural variation. • Water level data (natural variation of 2 m) is provided as an Appendix to the EMP to support the chosen criteria. • Management actions are implemented following a single exceedance. Details of the updated monitoring network and criteria are outlined in Section 2 of the EMP. Based upon the impact assessment undertaken in Section 8.4 of the RSD and overall monitoring proposed in the EMP, De Grey does not consider monitoring of pools 1286, 1287, 1289, Jelliabidina, Mardagubbidina and Portree pools is required.
12.	The trigger and threshold criteria presented in the EMP are not considered to be appropriate. The EMP relies on the 2018 ANZ Guidelines for Fresh and Marine Water Quality, however, it would be more appropriate to base the criteria on baseline site water quality of the Turner River. Further, the EMP only includes provisions for elevated concentrations of arsenic and vanadium. A wider range of contaminants should be included, for example, selenium. It is noted that the ANZG Guidelines (2018) do not specifically consider bioaccumulation for selenium.	De Grey has revised the EMP to include: • Site specific criteria developed from baseline site water quality of the Turner River, ensuring this reflects natural background conditions rather than ANZG 2018 guidelines. • A wider range of contaminants. It should be noted that the criteria are adaptive, meaning they will be updated as new data from ongoing monitoring becomes available. This ensures that site-specific conditions continue to be accurately reflected in the management framework.
13.	Appendix 9 refers to the treatment of water in ponds prior to discharge to the Turner River, to reduce the amount of arsenic and vanadium discharged. However, this is not clearly elaborated on in the RSD or EMP. Further information should be provided in the Response to Submissions document and EMP on how the water will be treated prior to discharge, and what water quality monitoring of these ponds is proposed.	De Grey has amended section 8.4.2 of the RSD to include additional details related to the environmental risk assessments undertaken for arsenic, uranium and vanadium. This includes details related to the residency time that groundwater will need to be retained within treatment ponds prior to discharge to the Turner River to ensure sorption of arsenic and vanadium is reduced to below trigger levels as defined in the EMP. The EMP has also been updated to include this information as well as including water quality monitoring for the pond/s.
14.	The RSD has proposed to manage surplus dewater into two streams; Type I (<24 µg/L of dissolved arsenic) and Type II (>24 µg/L of dissolved arsenic). Specific bores have been allocated to reinject either Type I or Type II,	The Proposal defines two surplus water discharge streams based on dissolved arsenic (As) concentrations: • Type I: <24 µg/L of dissolved As - suitable for discharge to the Turner River, reinjection into RBN and RBS, and potable use (after treatment via soil -based ponds).

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	however, it is not clear if this allocation is flexible and adaptive based on changes to water quality over the life of the proposal. If reinjection of surplus water to specific bores is intended to be flexible and adaptive, this should be reflected in the EMP. EPA Services notes that the proposed water management method should not be deferred to other regulatory processes, to ensure risk are appropriately assessed.	• Type II: >24 µg/L of dissolved As - (naturally elevated in arsenic) will be suitable for reinjection into RBS and will become available for re-abstraction after 2–10 years for use in the processing plant, prioritised for use in the processing plant once operational. This classification is based on the analysis of over 350 water quality samples and aligns with the ANZG 2018 guidelines for protecting 95% of aquatic species. As new boreholes are drilled, developed, and pump-tested, water quality sampling will determine whether the water falls under Type I or Type II classification. No adaptive management is required because: • Once a borehole's water quality is classified as Type I or Type II, its designation remains fixed based on inherent groundwater chemistry. • Type II reinjected water will be contained within RBS and, while it will eventually be re-abstracted, this process is controlled and does not alter the overall water management strategy. • The existing management strategy ensures risks are fully addressed within the EMP, without deferring to other regulatory processes.
15.	Table 2-2 of the RSD and the Proposal Content Document state that up to 30 GL/a will be abstracted, and that up to 100% of abstracted water may be reinjected. However, the groundwater model (Appendix 2) does not appear to have considered a reinjection volume of this amount, with section 3.4 of the RSD describing that a 50% reinjection option was considered. If a reinjection volume greater than that described in Appendix 2 is proposed, updated groundwater drawdown modelling, and reinjection trial results, should be provided. It is noted that if a staged reinjection is proposed (such as that described in section 2.8 of the RSD), it is likely that this will need to be included as a limit or extent of the proposal.	The key characteristics of the Proposal, as per the Proposal Content document, is for the dewatering of up to 30 GL/a and the reinjection of up to 100% of groundwater abstracted (appendix 2). This is based upon the current mine plan, which includes abstraction decreasing over time and reinjection of up to 50% of groundwater abstracted. As the Proposal is a Greenfields operation the information presented to date is based upon data available and is inherently predictive not definitive. Noting the above De Grey has proposed the following additional constraints on dewatering and reinjection to ensure the predicted environmental outcomes will be met in Section 8.5 of the RSD: • Limit the Proposals groundwater abstraction to up to: – 30 GL/a for years 1 – 4 – 18 GL/a for years 5 – 7 – 11 GL/a for years 8 – 15 Until such time as De Grey submits an updated groundwater model inclusive of additional abstraction (up to 30 GL/a) to the satisfaction of the CEO of the EPA. • Limit the Proposals reinjection of groundwater to up to 50% of groundwater abstracted until such time as De Grey submits an updated groundwater model inclusive of additional reinjection (up to 100%) to the satisfaction of the CEO of the EPA
16.	Adequate information has not been provided on the potential impacts associated with groundwater drawdown. Further information should be provided on the potential impacts to other groundwater users. The cumulative impact assessment should consider the combined drawdown impact on the groundwater resource.	De Grey has included two new sections to the RSD, Section 8.3.7 Existing Groundwater Use and Section 8.4.5 Potential for Drawdown to Affect other Users. The assessment undertaken considered: • All publicly available information with regards to other groundwater users within the predicted area of drawdown. At the time of revising the RSD, no publicly accessible groundwater models and/or reports were available to support a combined drawdown or cumulative impact assessment. • Potential impacts on adjacent pastoral bores. It is anticipated that five Indee Station pastoral bores may be impacted by dewatering activities. De Grey has committed to replacing these bores in consultation with the pastoral leaseholder access agreement to ensure continued water access. • Potential impacts on the adjacent Mt Dove borefield. Whilst some Atlas Iron production bores may experience a drawdown of up to 1 m. This level of drawdown is unlikely to affect bore yields. Although the Atlas Iron site is currently in care and maintenance with limited borefield use, the assessment conservatively assumed full-capacity operation of its borefield to provide a worst-case scenario analysis. De Grey remains committed to ongoing engagement with relevant stakeholders to address any groundwater-related concerns.

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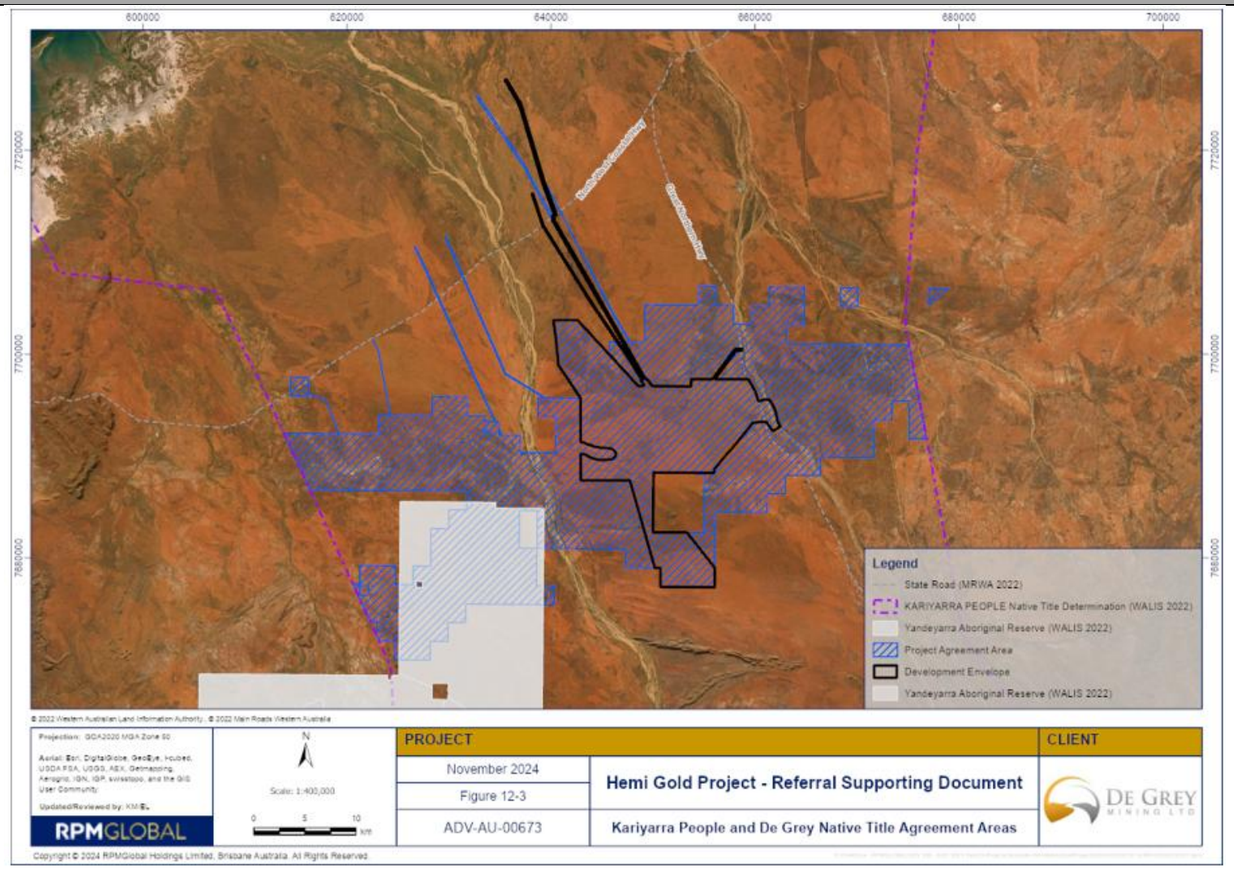
17.	It is unclear how the early response, trigger, and threshold criteria were established for groundwater drawdown. Water level data presented as time series water levels for the full period should be provided to support the chosen criteria. Further, the management actions for these criteria are proposed to be implemented only if three consecutive monthly exceedances are observed. However, to ensure there are no unacceptable impacts to GDE's, management actions should be implemented after a single exceedance.	De Grey has included an objective-based provision for monitoring groundwater levels within the drawdown extent. This provision aims to verify that the drawdown behaves as predicted by the model and includes a commitment to update and recalibrate the groundwater model every three years. Furthermore, De Grey has undertaken a review of the early response, trigger and threshold bore locations and criteria and amended the EMP to ensure that: • Bores locations are established based on predicted drawdown contours over time (i.e. time series data). • Criteria are based upon predicted drawdown less natural variation. • Water level data (natural variation of 2 m) is provided as an Appendix to the EMP to support the chosen criteria. • Management actions are implemented following a single exceedance. Details of the updated monitoring network and criteria are outlined in Section 2 of the EMP
18.	The groundwater mounding label on Figure 1-4 of the EMP does not reflect the information present in the figure. Figure 1-4 should be amended to clearly present the same mounding extent across various modelled years. Figure 1-4 should also present the maximum mounding extents modelled (i.e., the 0.5 m contours as presented in Plan 10-8 of Appendix 2).	De Grey has amended Figure 1-4 of the EMP to ensure that the groundwater mounding label accurately reflects the information presented in the figure. This figure has also been updated to include the 0.5 m contour as presented on Plan 10-8 of Appendix 2.
19.	Table 2-2 of the EMP states that 'Reference and monitoring sites are shown in Figure 2-1', however, no reference bores have been included. Designated reference bores should be located within the alluvial aquifer, outside the modelled drawdown contour, and outside the drawdown extent from other projects.	De Grey has included an objective-based provision for monitoring groundwater levels within the drawdown extent. This provision aims to verify that the drawdown behaves as predicted by the model and includes a commitment to update and recalibrate the groundwater model every three years. Furthermore, De Grey has undertaken a review of the early response, trigger and threshold bore locations and criteria and amended the EMP to ensure that: • Bores locations are established based on predicted drawdown contours over time (i.e. time series data) • Criteria are based upon predicted drawdown less natural variation. • Water level data (natural variation of 2 m) is provided as an Appendix to the EMP to support the chosen criteria. • Management actions are implemented following a single exceedance. Details of the updated monitoring network and criteria are outlined in Section 2 of the EMP
20.	Section 3.1 of the EMP outlines the annual environmental reporting efforts. To ensure that environmental outcomes are being achieved, and that this section has been prepared in accordance with the Annual Environmental Report Guidelines (DMIRS 2022), annual environmental reporting should include: • Time series monthly water level data for the monitoring and reference sites. • A summary of water quality data (relevant to Table 2-4) • A summary of vegetation health data (relevant to Table 2-5 and Table 2-6)	De Grey has amended Section 3.1 of the EMP accordingly.
Subterranean fauna		
21.	Appendix 20 reports on the preliminary findings of a targeted stygofauna survey conducted by Bennelongia Environmental Consultants. However, it does not appear that this report has been provided.	The Targeted Stygofauna Survey was provided as Appendix 20 on both the EPA and De Grey websites during the consultation period. (https://www.epa.wa.gov.au/sites/default/files/PER_documentation2/App_20_Hemi%20Targeted%20Stygo_Bennelongia_2024.pdf)

Item	EPA Services and Agency comments	Proponent response
Human health		
22.	The dust air quality assessment (Appendix 26) found some likely exceedances of PM10 and PM2.5 at the accommodation village and Mount Dove Camp. While these air quality exceedances are likely to be manageable, only non-toxic dust has been considered. There is a possibility that the mineral or processed material may contain free arsenic, and this should be considered by the proponent.	De Grey notes that the EPA did not determine Human Health to be a preliminary Key Environmental Factor for the Proposal. Free arsenic in relation to human health will be managed under the *Mining Act 1978* and relevant health and safety legislations, as required.
23.	Clarification is required on whether asbestiform minerals may occur, and whether this may result in potential impacts to human health via dust exposure.	De Grey notes that the EPA did not determine Human Health to be a preliminary Key Environmental Factor for the Proposal. As such asbestiform minerals have not been considered in the RSD. Asbestiform material in relation to human health will be managed under the *Mining Act 1978* and relevant health and safety legislations, as required.
Social surroundings		
24.	Many of the archaeological sites referenced in Table 2-1 in Appendix 27, such as the site DG-23-03, have been incorrectly described. For example, site DG-23-03 is described as 'partially located within the Development Envelope, excluded from the Disturbance Footprint'. However, this site appears to be located entirely within the DE, and almost entirely within the disturbance footprint. Clarification should be provided on the proposed impacts to sites of social or cultural values.	De Grey acknowledges the description for DG-23-03 contained an error. This has been updated to state it is located within the Development Envelope and Indicative Disturbance Footprint. De Grey continues to refine the project description and areas of activity including the location of the discharge outfall at the Turner River and associated pipeline infrastructure. De Grey will avoid the archaeological site DG-23-03 in the first instance. Where this is not possible due to other constraints, De Grey will seek formal approval through KAC and s.18 process of the AH Act.
25.	It is not clear if the Traditional Owners have been adequately consulted on the siting of the infrastructure, such as the discharge outlet or infrastructure corridors, as the "Project Mining Agreement Area" does not capture all areas of the development envelope. Appendix 27 also does not clearly describe whether the Traditional Owners have been consulted on the pipeline/powerline corridors.	De Grey notes that the: • Project Agreement Area means the whole and each part of the business of mining and recovering, processing, stockpiling, blending, transporting any minerals or other substances and products derived from any minerals or other substances by De Grey in the Agreement Area, including the planning, development, operation and expansion, further expansion, closure, decommissioning and rehabilitation of each of those things. • The Mining Agreement Area is within the Project Agreement Area and is the area in which KAC consents to the grant and subsequent renewal of new mining leases to the extent any such leases are within the Mining Agreement Area. The Project Agreement Area does capture all areas of the Development Envelop as shown in Figure 12-3 of the RSD and reproduced below. De Grey has undertaken extensive consultation with the Traditional Owners, particularly in relation to the discharge outlet and pipeline corridor associated with this outlet. This is evident from Appendix 27 that identifies several confidential sites within these corridors.

Item	EPA Services and Agency comments	Proponent response
		
26.	It is not clear if the Traditional Owners have been consulted on the development of the mitigation and management measures included in the EMP. For example, it is not clear if the Traditional Owners will be invited to engage in monitoring of impacts to the pools along the Yule and Turner Rivers.	De Grey has consulted on the proposed mitigation and management measures with Traditional Owners via the KAC/Implementation Committee during onsite consultations in 2024. In addition to onsite consultation De Grey have provided KAC with an opportunity to provide comments on the EMP prior to and during the public consultation period. De Grey will continue to consult with the Traditional Owners via the KAC/Implementation Committee as per the Native Title Mining Agreement. De Grey has previously met with the KAC Heritage and Environment Group Manager and Ranger Coordinator to discuss and plan for future ranger programs which will include monitoring in accordance with the EMP requirements.
Greenhouse gas emissions		
27.	The language in the RSD regarding the ‘on-site solar farm’ is ambiguous. Provide clarity on whether the solar panels will be onsite (and therefore part of the proposal).	De Grey has included the solar farm as an optional supply of power generation for the Proposal. The disturbance required for the solar farm has been accounted for in the Proposals request of 5,830 ha. The solar farm will remain an activity in the Proposal as De Grey continue to refine the design of the Proposal and power requirements. Impacts are limited to the area of disturbance, with any power generated contributing to the reduction of scope 2 emissions for the Proposal.
28.	It is not clear whether emissions associated with haulage of ore to Port Hedland have been included in the greenhouse gas estimates, and whether these emissions will be regulated under the Safeguard Mechanism. As consistent with EPA (2024a), haulage emissions should be included in	Section 2.11 of the RSD explains the Proposal does not include haulage of ore to Port Hedland, rather De Grey has opted to process the gold ore on site to produce gold dorè bars. A description of the decision-making process to produce gold dorè on site rather than haul ore to Port Hedland and export offshore is provided in Section 3.1.

Item	EPA Services and Agency comments	Proponent response
	estimates and sufficient information should be provided as detailed under Option A or Option B, as appropriate.	
General comments		
29.	It is advised that geotechnical elements related to the project will be reviewed by DEMIRS, as part of the review process for the Mining Proposal and Mine Closure Plan required under the *Mining Act 1978*. This will include the provision of additional information regarding waste characterisation, anticipated volumes of each lithology, and proposed management strategies. The proponent is encouraged to consult with DEMIRS prior to, and during, the preparation of these documents. DEMIRS has recently released a guideline for the development of a Mining Development and Closure Proposal (DEMIRS 2024), which is expected to replace Mining Proposals and Mine Closure Plans in April/May 2025.	This is noted by De Grey. Approval under the *Mining Act 1978* will be sought prior to commencement of any works, with consultation to occur between De Grey and DEMIRS.
30.	It is noted in the RFI Response document that De Grey has opted to remove the onsite gas-fired power station (and subsequently, the air quality assessment in the revised RSD does not consider potential impacts from power station, and greenhouse gas emissions estimates do not include onsite power generation). Page 4 of the RSD, however, notes that redundant corridors can be removed once a decision regarding power supply was reached. It is not clear if this pipeline corridor is still required, and if so, for what purpose. Further, it is not clear if the two linear infrastructure corridors to the east (the 'primary access road/dewatering pipeline' and the 'secondary access road') are both required, or whether one access road could be constructed.	De Grey continue to refine the Proposal including activities related to power generation and access. Retention of the infrastructure corridors both to the northeast allow De Grey flexibility in the ongoing design process and provide opportunities to avoid or minimise impacts where possible.
31.	EPA Services notes that Impact Reconciliation Procedures are typically finalised after the Ministerial Statement for a proposal has been published. However, the following comments are provided: • The offset rates in Table 2-1 of Appendix 28 does not reflect the 2023/2024 offset rate. • 'Boundaries' and 'baseline' spatial datasets should be provided for review, as consistent with EPA (2024b). • The proposed timings in Table 3-1 should be populated.	De Grey notes the EPA services comment with regards to Impact Reconciliation Procedures. De Grey has: • Revised the offset rates in Table 2-1 of Appendix 28 to reflect 2023/2024 rates. • Provided boundaries and baseline spatial datasets with the revised RSD. • Populated timings in Table 3-1.
32.	Section 4 of the EMP states that any 'significant' changes to the EMP will be documented and communicated to relevant authorities. However, all changes to an EMP must be documented and communicated to the CEO, in alignment with the EPA standard condition set as part of its recommended conditions to the minister. This includes any changes to management actions or monitoring programs.	De Grey has amended this sentence to read "Any changes to the EMP will be documented and communicated to the CEO and other relevant stakeholders as required".
33.	Table 2-5 and 2-6 of the EMP do not clearly present when aerial imagery and/or field monitoring will occur.	De Grey has amended the timing/frequency column of Tables 2-5 and 2-6 (now Tables 2-7 and 2-8) of the EMP to clearly present when aerial imagery and/or field monitoring will occur.

Item	EPA Services and Agency comments	Proponent response
	It is also unclear how the health and canopy cover of understorey vegetation will be established based on aerial imagery.	Health and canopy cover of understory vegetation will be established based upon the acquisition of LIDAR and high resolution multispectral. Data will be analysed to produce metrics for vegetation canopy cover, vegetation canopy height and vegetation health across the full length of the predicted discharge inundation area, the reference area upstream, and the full width of the river. The canopy height model will be developed to separate trees from understorey. The resulting metrics will be used for change assessment against criteria from baseline and throughout the monitoring timeframe.
34.	Many of the tables in the EMP (such as Table 2-5 and 2-6) do not include clear response actions aside from undertaking an investigation. As consistent with the EPA's Instructions (2024c), response actions (particularly the trigger level actions and threshold contingency actions) should be specific actions that are implemented to quickly reduce the level of impact back below the current level. For example, one of the response actions for an exceedance of the threshold criteria in Table 2-5 and 2-6 of the EMP is to 'report to the EPA'. Further to the above, the correct contact for reporting non-compliances is the CEO of DWER and should be done for all exceedances of trigger and threshold criteria.	De Grey has reviewed the response actions within the EMP and consider them to be specific actions that if implemented will quickly reduce the level of impact to back below criteria being exceeded. It should be noted that for response actions associated with: • Trigger criteria the response is in addition to those actions undertaken for early response criteria • Threshold criteria the response is in addition to those undertaken for early response and trigger criteria. As such a complement of work will be built on over time with the final response action being modification or cessation of the activity. De Grey has amended the contact for reporting on non-compliance to the CEO of DWER.
35.	Table ES 1, Table 2-2, and section 1.2.2 of the EMP refer to 'potential' groundwater dependent vegetation. As identified in Appendix 2 and 13, the Yule and Turner Rivers contain obligate phreatophytes and therefore should not be considered 'potential' GDV.	The EMP has been revised to remove the word potential when in association with GDVs.

References

Alaibakhsh, M., Emelyanova, I., Barron, O., Khiadani, M., and Warren, G. 2017, *Large-scale regional delineation of riparian vegetation in the arid and semi-arid Pilbara region*, Hydrological Processes, WA, 31(24):4269-4281.

ANZG Guidelines 2018, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.

Department of Mines, Industry Regulation and Safety (DMIRS) 2022, *Annual environmental report guideline*.

Ecoscape 2021, *Mallina Gold Project: Flora and vegetation survey* (Report (4605-21R draft) prepared for De Grey Mining Ltd; p. 170).

Environmental Protection Authority (EPA) 2016, *Environmental factor guideline: Flora and vegetation*, EPA, Perth, Western Australia.

EPA 2024a, *Environmental factor guideline: Greenhouse gas emissions*, EPA, Perth, Western Australia.

EPA 2024b, *Instructions on how to prepare Environmental Protection Act 1986 Part IV impact reconciliation procedures and impact Reconciliation Reports*, EPA, Perth, Western Australia.

EPA 2024c, *Instructions: How to prepare Environmental Protection Act 1986 Part IV environmental management plans,* EPA, Perth, Western Australia.

Hemi Gold Project

Environmental Review Document
Assessment No. 2380

Summary of Public Submissions

This document forms a summary of public submissions and advice received regarding the Referral Supporting Document for the Hemi Gold Project proposed by De Grey Mining Ltd.

The public review period for the proposal commenced on 25 November 2024 for a period of 4 weeks, ending on 23 December 2024. A total of 3 public submissions were received.

The principle issues raised in the submissions and advice received included environmental and social issues as well as issues focussed on questions of fact and technical aspects of the proposal. Although not all of the issues raised in the submissions are environmental, the proponent is asked to address all issues, comments and questions, as they are relevant to the proposal.

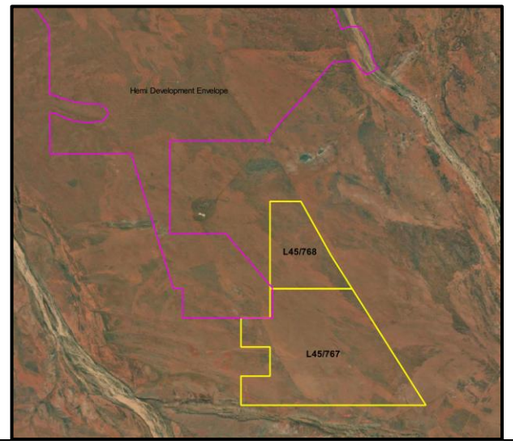
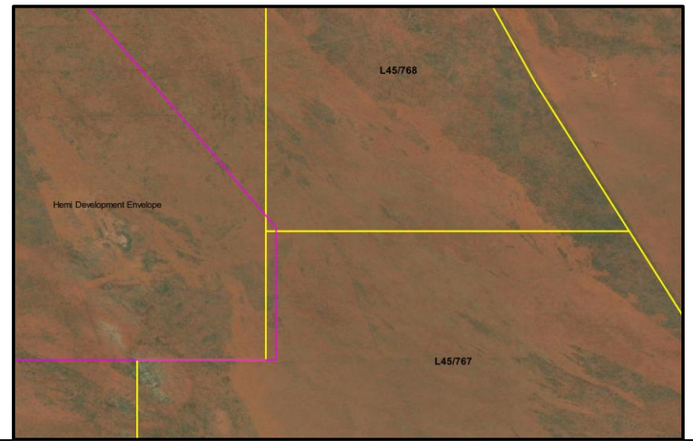
The key issues raised in the submissions include:

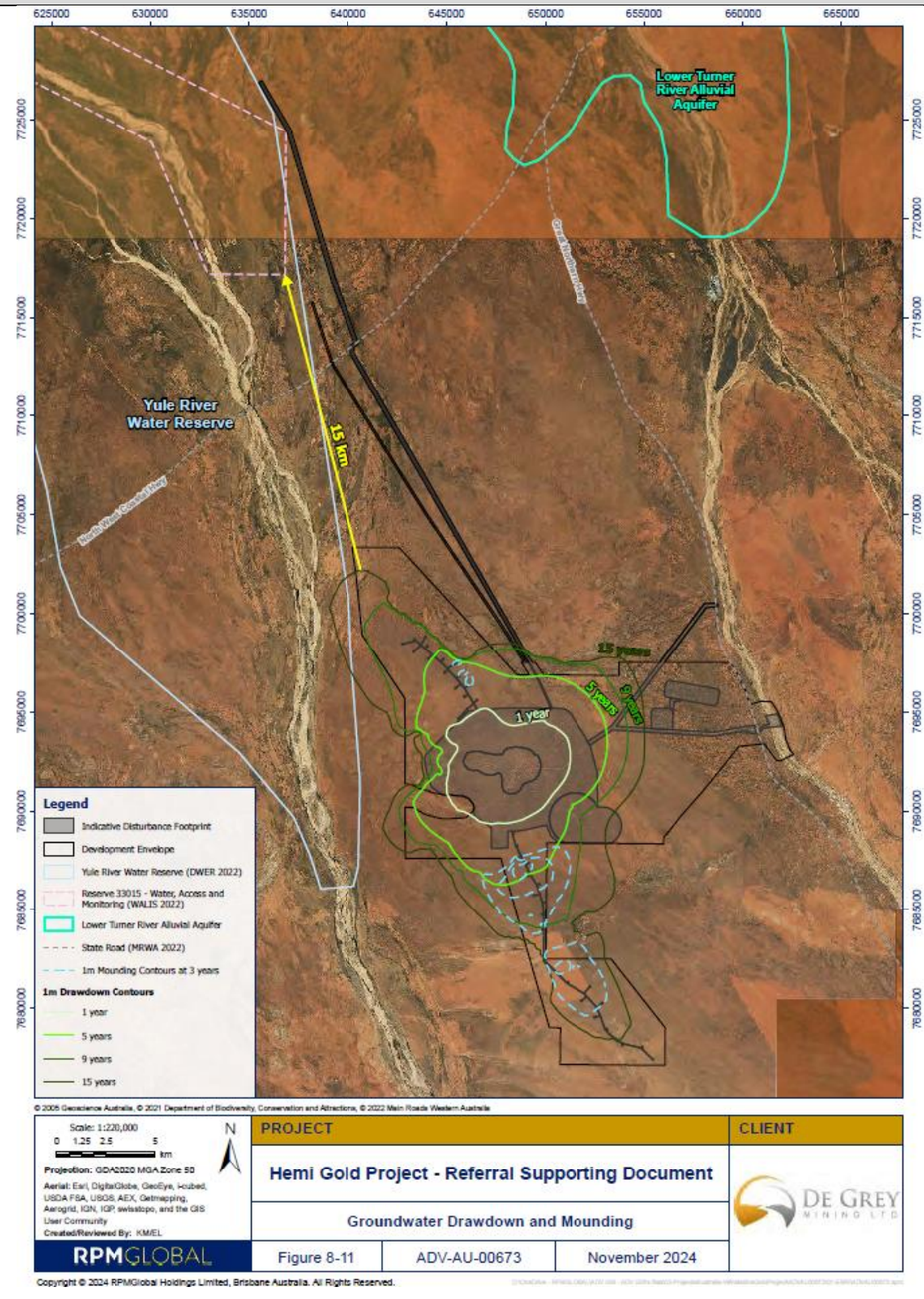
- Additional management measures are required to address the potential impacts to conservation significant flora species, groundwater dependent ecosystems, and the Gregory Systems P3 Priority Ecological Community (PEC).
- Insufficient management measures to address the potential impacts to fauna species, such as from pit lakes and the Tailings Storage Facility (TSF) on bird and bat species.
- Insufficient information has been provided to describe the potential impacts associated with groundwater abstraction, including post-closure and cumulative drawdown impacts, and the disposal of surplus water with elevated concentration of metals.
- The groundwater model and particle tracking analysis should be improved, such as to consider future climate scenarios.
- Additional management measures should be included to address the potential impacts to values of inland waters.
- Potential impacts to stygofauna species have not been adequately addressed.
- The proponent has not adequately considered the potential direct and indirect impacts to tangible and intangible values of Aboriginal cultural heritage.
- Stakeholders have not been adequately consulted.

Contents

No table of contents entries found.

The proposal – General comments

No.	Submitter	Submission and/or issue	Response to comment
1.	ANON-G4BN-BAQ4-F	It is unclear whether the proposed operational mine life is 13 years or 15 years, as text is not consistent across documentation.	The Proposal is for 15 years, including a two-year construction and dewatering period.
2.	ANON-G4BN-BAQ4-F	The submitter proposed that the development envelope should be expanded to include tenements L45/768 and L45/767, which were included in De Grey's 5C application to abstract water under the *Rights in Water Irrigation Act 1914*.	De Grey notes that the Part IV Development Envelope associated with the Proposal forms the boundary within which the Proposal may be developed under the Environmental Protection Act 1986. Further to the above De Grey notes that tenements L45/767 and 768, which form part of the 5 C application do intersect with a portion of the Development Envelope and these areas of intersection may be used in the future by De Grey for abstraction of water. De Grey will remain within the Development Envelope should infrastructure be placed on these tenements.  
3.	ANON-G4BN-BAQ4-F	The submitter considered that various guidelines have not been adequately considered in the development of the proposal. For example, the Global Industry Standard on Tailings Management (GISTM).	De Grey notes that there are a several guidelines that may be used to develop a Proposal over its lifespan and that not all of these guidelines will be applicable at all stages of a Proposal's assessment. De Grey believe that applicable guidelines have been adequately considered in the development of the Proposal to date. Any additional or new guidelines will guide the development of the Proposal throughout its implementation (as applicable).
4.	ANON-G4BN-BAQ4-P	The Conservation Significant Species Management Plan should be provided for review.	The Environmental Management Plan was provided as Appendix 1 on both the EPA and De Grey websites during the consultation period, this included the proposed management approach to conservation significant species. The EMP has since been amended in relation to regulatory and public submissions. (https://www.epa.wa.gov.au/sites/default/files/PER_documentation2/App_01_Environmental%20Management%20Plan_Nov%202024.pdf)
5.	ANON-G4BN-BAQ4-P ANON-G4BN-BAQ4-F	Insufficient consultation has occurred with stakeholders, such as the Kariyarra Aboriginal Corporation (KAC), on the development of the Environmental Management Plan (EMP; Appendix 1), Mine Closure Plan, or proposed offsets. It is unclear if stakeholder engagement on mitigation measures will continue through the life of the proposal, and how this consultation will occur.	De Grey have consulted on the Environmental Management Plan, Mine Closure Plan and proposed offsets with Traditional Owners via the KAC/Implementation Committee during onsite consultations in 2024. In addition to onsite consultation De Grey have provided KAC with an opportunity to provide comments on these documents prior to and during the public consultation period. De Grey will continue to consult with the Traditional Owners via the KAC/Implementation Committee as per the Native Title Mining Agreement throughout the life of the Proposal.
6.	ANON-G4BN-BAQ4-F	Clarification is required for the text "Groundwater model does not predict that reinjected water will not extend towards the Yule River or Yule River Water Reserve" in Table 8-5 of the RSD.	This was a typing error. The text should have read. The groundwater model predicts that reinjected water will not extend towards the Yule or Yule River Water Reserve. The groundwater model developed for the reinjection of groundwater (Figure 8-11 presented below) shows this prediction.

No.	Submitter	Submission and/or issue	Response to comment
			

Flora and vegetation

No.	Submitter	Submission and/or issue	Response to comment
	ANON-G4BN-BAQ4-F	Further information should be provided on the potential impacts to groundwater dependent ecosystems within the Turner River from the proposed discharge.	De Grey has included addition information on GDV's and potential impacts to GDV's in Section 9.3.2 and Section 9.4.2.
7.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-P	The EMP is insufficient. It is not clear how trigger and threshold criteria were determined, nor how baseline data was collected. The EMP should include outcome-based provisions for the potential impacts to conservation significant flora species and the potential impacts from groundwater drawdown and mounding, such as to the Gregory System P3 PEC.	De Grey has amended the Proposals footprint to further avoid *Triodia chichesterensis, Euploca mutica* and *Polymeria* sp. nov. This has reduced the potential impacts upon known individuals of these species from 25.6, 35.4 and 42.3 % to 2, 26.5 and 12.8% respectively. Section 9.4.3 has been updated accordingly. Furthermore, none of the Priority species recorded for the Proposal have been determined to be groundwater dependant and as such no impact to Priority species is anticipated to occur from groundwater drawdown. Similarly, Umwelt (2024b) determined that the vegetation of the Gregory Land System P3 PEC did not contain phreatophytic taxa and as such was not determined to be groundwater or surface water dependent. Based upon the above and taking into consideration the impact assessment undertaken for Priority species it is concluded that impacts to Priority species are not significant and can be managed through standard mitigation measures. As such monitoring is not proposed to occur for Priority species, nor the Gregory Land System P3 PEC.
8.	ANON-G4BN-BAQ4-P	It is unclear how impacts to conservation significant flora species will be managed as outcomes-based provisions were not included in the EMP.	
9.	ANON-G4BN-BAQ4-P	The submitter considered that the potential impacts to priority flora species *Euphorbia inappendiculata* var. *inappendiculata* (P2), *Gomphrena leptophylla* (P3), and *Stylidium weeliwolli* (P3) were not adequately addressed.	*Euphorbia inappendiculata* var. *inappendiculata* (P2), *Gomphrena leptophylla* (P3), and *Stylidium weeliwolli* (P3) have not been located within the Development Envelope despite being identifiable at the time of survey (Umwelt 2024). The closest records for each species to the Proposals Development Envelope are: • *Euphorbia inappendiculata* var. *inappendiculata* (P2) – 20 km west • *Gomphrena leptophylla* (P3) – 23 km northwest • *Stylidium weeliwolli* (P3) – 15 km southeast. Based upon the fact that these species occur well outside of the Proposals direct and indirect impact area, De Grey considers that there is no pathway to impacting these species and as such they were excluded from the impact assessment.

Terrestrial fauna

No.	Submitter	Submission and/or issue	Response to comment
10.	ANON-G4BN-BAQ4-P ANON-G4BN-BAQ4-F	Additional information is required to describe the potential impacts to terrestrial fauna from the TSF and formation of pit lakes post-closure. For example, invasive species such as cane toads may utilise pit lakes for breeding, and contaminants may adversely impact bird and bat species through ingestion or bioaccumulation. The impact assessment should be revised after kinetic leach column testing has been conducted. Insufficient management measures have been proposed to mitigate the potential impacts from the TSF or pit lakes.	**Cane Toads using the pit lake for breeding** Cane toads have not been recorded in the Proposal area, and their potential presence in the future is uncertain. While cane toads can tolerate brackish water, their ability to establish breeding populations is highly dependent on local conditions. The risk of cane toads using the pit lake for breeding is not considered credible at this stage. However, if future observations indicate cane toads have colonised the area and conditions are suitable for breeding, De Grey will implement targeted mitigation measures to manage potential impacts. **Bird and bat exposure to contaminants** The potential for bioaccumulation and ingestion risks in birds and bats depend on several factors, including: • Most terrestrial bird species avoid drinking saline water (>5,000 mg/L TDS). As pit lake salinity increases over time, it is expected to become an unsuitable drinking source for many species. • Contaminants can accumulate in aquatic food chains and pose risks to higher trophic level species. The extent of this risk will be further assessed through kinetic leach column testing to evaluate metal leaching rates and bioavailability. An adaptive management approach will be implemented, if results indicate potential risks to wildlife. • Insectivorous bats may skim water surfaces for drinking, which could lead to potential exposure to contaminants. To mitigate these risks, De Grey will implement the following measures:

No.	Submitter	Submission and/or issue	Response to comment
			• Post-closure monitoring of pit lake water quality, focusing on salinity and metal concentrations to confirm predicted trends. • Evaluate fauna deterrents, if monitoring identifies potential risk to wildlife. • Assess bioaccumulation risks based on kinetic leach testing results, with measures adapted as necessary. These mitigation measures will be further detailed and refined as part of the Part V Works Approval, Operating Licence, Mining Proposal and Mine Closure Plan process, ensuring pit lake quality remains acceptable throughout the life of the Proposal.
11.	ANON-G4BN-BAQ4-P	Further management measures are required to minimise potential impacts to conservation significant fauna, such as the northern quoll, and to short-range endemic (SRE) fauna species. Provide further information on how impacts to SRE species will be managed where clearing of suitable habitat cannot be avoided.	**Northern Quoll** De Grey has amended the Proposal footprint to further avoid Vegetation Unit 16 which coincides with the Major River habitat types which is classified as critical habitat for the Northern Quoll. This has reduced the potential impact from 45 ha (3.6%) of the mapped extent to 10 ha (0.8 %). Section 10.4.1 has been updated accordingly. In addition to the above De Grey has proposed an upper limit of clearing for Vegetation Unit 16 and the Major River habitat type to ensure impacts are not greater than predicted. Section 10.5 has been updated accordingly. It should be noted that as this vegetation unit (habitat types) is recorded as critical habitat for the Northern Quoll, biodiversity offsets will apply under the *Environment Protection and Biodiversity Conservation Act 1999*. Further to the above De Grey has included the requirement to undertake preclearance surveys 7 days prior to clearing occurring for the Greater Bilby and Northern Quoll. Fauna spotters will also be present during clearing. **Potential Short Range Endemic Species** None of the potential SRE species were recorded from isolated/restricted habitats within the Development Envelope as depicted in Figure 10-6 of the RSD. Instead, they occurred within widespread and common habitats (Spinifex Sandplain, Sandplain Drainage and Major River) that occur broadly across the Development Envelope and its surrounds. These widespread habitats are less likely to be barriers to species dispersal and typically do not support significant refugia/microhabitats required by SRE species. De Grey further notes that the Proposal will not result in the creation of small and/or disconnected islands or fragments within or across habitat types and as such connectivity throughout the mapped habitat types would largely remain during and after implementation of the Proposal. De Grey has amended the Proposals footprint to further avoid Vegetation Unit 16. This has reduced the potential impact from 45 ha (3.6%) of the mapped extent to 10 ha (0.8%). Vegetation Unit 16 is the only vegetation unit known to contain potentially groundwater dependent vegetation. Groundwater drawdown is not predicted to reach this vegetation unit and thus indirect impacts from groundwater drawdown will not indirectly impact upon SRE species through a reduction in available habitat. Similarly, discharge to the Turner River (Vegetation Unit 16) will only occur in a small portion of the Turner River and thus impacts to this vegetation unit from discharge are unlikely to be significant upon potential SRE species. De Grey have provided for management measures in Table 10-7 of the RSD in relation to SRE species.

Inland waters

No.	Submitter	Submission and/or issue	Response to comment
12.	ANON-G4BN-BAQ4-F	General comments about the proposal not meeting the EPA's objective for inland waters, as sufficient mitigation measures have not been proposed. This includes a potential significant risk to the Kariyarra paleochannel aquifer, and discharge to the Turner River being largely unacceptable.	De Grey has applied the mitigation hierarchy to protect the hydrological regime, water quality and ecological function of the key Inland Water features (Yule and Turner River) and potential GDVs as well as existing groundwater users within and surrounding the Development Envelope. Potential impacts and mitigation measures (avoid, reduce, manage and rehabilitate) are presented in Section 8.4 and summarised below: In addition to the above, De Grey has proposed the following Environmental Outcomes for the Inland Waters Factor for the Proposal to ensure impacts are not greater than predicted. **Groundwater Abstraction** Limit the Proposals groundwater abstraction to up to: • 30 GL/a for years 1 – 4 • 18 GL/a for years 5 – 7 • 11 GL/a for years 8 – 15 Until such time as De Grey submits an updated groundwater model inclusive of additional abstraction (up to 30 GL/a) to the satisfaction of the CEO of the EPA. **Groundwater Reinjection** Limit the Proposal's reinjection of groundwater to up to 50% of groundwater abstracted until such time as De Grey submits an updated groundwater model inclusive of additional reinjection (up to 100%) to the satisfaction of the CEO of the EPA. **Surplus Water Discharge** Limit the Proposal's surface water discharge to up to: • 8 GL/a for years 1 - 2 • 4 GL/a for years 3 – 6 • 2 GL/a for years 7 – 15 Until such time as De Grey submits an updated model inclusive of additional surface water discharge (up to 10 GL/a for years 1 - 3) to the satisfaction of the CEO of the EPA. **Yule River** The following environmental outcomes are proposed in relation to the Yule River and Public Drinking Water Reserve: • No direct impact from groundwater drawdown upon identified permanent and semi-permanent pools located along the Yule River, or the Yule River itself, attributable to the Proposal. • No indirect impact to groundwater quality greater than site specific criteria upon identified permanent and semi-permanent pools located along the Yule River, or the Yule River itself, attributable to the Proposal. • No indirect impact to groundwater quality greater than site specific criteria within the Yule Public Drinking Water Reserve attributable to the Proposal. To meet the above environmental outcomes, De Grey will implement the EMP as per Appendix 1. **Turner River** The following environmental outcomes are proposed in relation to the Turner River: • Discharge of surface water to the Turner River will be limited to: - 8 GL/a for years 1 - 2 - 4 GL/a for years 3 – 6 - 2 GL/a for years 7 – 15 • During periods of no natural flow, the discharge "wetting front" (affected area) in the Turner River will not extend more than 50 km downstream of the discharge point for the first three years, followed by a reduction in subsequent years. • The discharge water quality will meet site-specific water quality criteria established for the Turner River.

No.	Submitter	Submission and/or issue	Response to comment
			To meet the above environmental outcomes, De Grey will implement the EMP as per Appendix 1. **Public Drinking Water Reserve** The following environmental outcomes are proposed in relation to Reserve 33015 (Water Corporation borefield): • Groundwater drawdown will be limited to no closer than 15 km from Reserve 33015 (Water Corporation borefield). To meet the above environmental outcomes, De Grey will implement the EMP as per Appendix 1. **Conclusion** The groundwater and surface water assessments, combined with De Grey's proposed management measures, demonstrate that potential impacts to the hydrological and hydrogeological regimes of the Yule and Turner Rivers can be effectively managed, ensuring that the EPA's Inland Waters factor objective is met. The results indicate that: • The Yule and Turner Rivers are outside of the modelled drawdown zones. • Mounding caused by reinjection of mine dewater into the upper and lower alluvium/palaeochannel aquifers is not predicted to significantly impact the Yule or Turner Rivers or YRWR. • Reinjection and dewatering activities will not significantly impact GDEs. • There will be no significant impacts to the pastoral leaseholder's access to groundwater. • The quality of the water discharged into the Turner River is not predicted to alter the environmental value of the Turner River ecosystem. • No contamination to groundwater or surface water from landform leachates is predicted. De Grey has confidently concluded that impacts, when considered both individually and cumulatively, associated with changes to the hydrological and hydrogeological regimes are able to be managed (as described in RSD) such that the EPA's Inland Waters factor objective can met for the Proposal during and post mining.
13.	ANON-G4BN-BAQ4-F	The proponent has not adequately considered the principle of intergenerational equity in regard the discharge of surplus water and formation of pit lakes.	De Grey acknowledge the Principle of intergenerational equity, including as it applies to the Inland Waters environmental factor in the context of the Proposal. De Grey has consistently engaged in good faith over numerous years with Traditional Owners, Pastoral Lease Holders, other stakeholders and regulatory bodies, to ensure the responsible development of the Proposal. This includes in respect of surplus water discharges and pit lakes. This consultation has ultimately resulted in the signing of a Native Title Mining Agreement with the Traditional Owners and a Land Access Agreement with the Pastoral Station. De Grey remains committed to maintaining the health, diversity and productivity of the environment in the future, both ecological and cultural, and is fully dedicated to meeting its regulatory obligations and continuing to work with Traditional Owners, Pastoral Lease Holders, other stakeholders and regulatory bodies. Water management is complex and De Grey's consultation with stakeholders on this topic is ongoing, including KAC. De Grey is to continue to explore options that respect the Kariyarra people's concerns while also addressing the operational needs of the project. De Grey emphasises that the success of the Proposal depends on the ongoing collaboration and respect for all parties involved. De Grey is confident that our extensive environmental studies and the submissions to regulators reflect the best possible approach to balancing industrial activities with environmental stewardship, including the principle of intergenerational equity. While De Grey understand stakeholders concerns regarding the protection of the Turner River and other water-related issues, we believe that through continued dialogue and collaboration, a mutually beneficial outcome can be achieved. De Grey remains open to constructive discussions and are hopeful for a resolution that ensures the long-term success of the Proposal and the well-being of other stakeholders, importantly including the Kariyarra People.
14.	ANON-G4BN-BAQ4-F	The submitter considered that the proponent should provide the H3 hydrogeological assessment for review. Further, the results of this assessment do not appear to have been included in the revised RSD.	Hydrogeological data collection and analysis was conducted through an extensive groundwater monitoring network within and around the Proposal. This data was used to develop the Definitive Feasibility Study Conceptual and Numeric Groundwater Modelling (Appendix 2) that identified groundwater locations and flow patterns, as well as how geological structures may impede flow and how this relates to key environmental and social receptors. The conceptual model was then used to create a numerical representation of the natural system. This numerical model was calibrated with historical and recent groundwater level data. Once calibrated, the model simulated the proposed water abstraction activities for the Proposal to quantify their influence on groundwater levels. The results were used to refine the conceptual model,

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			forming the basis for groundwater management plans. Before any groundwater abstraction occurs under the Proposal, a groundwater licence impact assessment (H3 Report) and an associated Groundwater Operating Strategy (GWOS) will be submitted to DWER to meet the requirements of the *Rights in Water and Irrigation Act 1914* (RIWI Act). The report will detail the conceptual model, proposed activities, required groundwater abstraction, and predicted impacts on groundwater. It will also specify the monitoring locations for groundwater levels to validate the conceptual model and ensure impacts remain within approved limits. The GWOS is a comprehensive plan that outlines how the conditions of the groundwater licence will be monitored and enforced. It will include monitoring requirements, water allocation limits, groundwater receptor considerations, and contingency plans to address potential risks. Once the H3 and GWOS are approved, an Annual Aquifer Review (AAR) will be submitted to DWER annually. This review evaluates the aquifer's condition and performance over the past year, analysing data on groundwater levels, water quality, extraction volumes, recharge rates, and overall aquifer health. The review helps identify trends and assesses the effectiveness of current management practices. De Grey considers that the information provided in the RSD is sufficient for the EPA to undertake a robust environmental impact assessment for the Proposal, noting that groundwater abstraction may not occur until such time as De Grey obtains a 5c Groundwater Licence (with associated GWOS) from DWER.
15.	ANON-G4BN-BAQ4-F	Inconsistent definitions for the Type I and Type II injection borefields are used between the revised RSD and Appendix 2.	De Grey has reviewed the RSD and Appendix 2 and acknowledges that there may have been some confusion between the definitions in the two documents. For clarity the Proposal defines two surplus water discharge streams based on dissolved arsenic (As) concentrations: • Type I: <24 µg/L of dissolved As - suitable for discharge to the Turner River, reinjection into RBN and RBS, and potable use (after treatment via soil -based ponds). • Type II: >24 µg/L of dissolved As - (naturally elevated in arsenic) will be suitable for reinjection into RBS and will become available for re-abstraction after 2–10 years for use in the processing plant, prioritised for use in the processing plant once operational. This classification is based on the analysis of over 350 water quality samples and aligns with the ANZG 2018 guidelines for protecting 95% of aquatic species. As new boreholes are drilled, developed, and pump-tested, water quality sampling will determine whether the water falls under Type I or Type II classification. No adaptive management is required because: • Once a borehole's water quality is classified as Type I or Type II, its designation remains fixed based on inherent groundwater chemistry. • Type II reinjected water will be contained within RBS and, while it will eventually be re-abstracted, this process is controlled and does not alter the overall water management strategy. The existing management strategy ensures risks are fully assessed within the EMP, without deferring to other regulatory processes.
16.	ANON-G4BN-BAQ4-P	It is not clear where dewatering will draw groundwater from (i.e., alluvium, weathered rock) and therefore it is difficult to determine whether dewatering or post-closure drainage will reduce groundwater throughflow to the northwest, or whether the aquifer posed for dewatering underlies the Yule borefield.	The hydrostratigraphy that has been developed from the mineral resource and groundwater bores installed to date is provided in Section 8.3.1 of the RSD (Figure 8-2) (reproduced below) and presented in Section 7.3.1 of Appendix 2. It shows the different aquifer zones based upon their fundamental lithological type and comprise from shallowest to deepest: • Upper Alluvium – laterally extensive aquifer system with low to moderate permeability and saturated thickness. The saturated extent includes the Yule, but not the Turner River. • Lower Alluvium (Palaeochannel) – basal palaeochannel sands and gravels with high permeability and storage values. This Palaeochannel is generally 1 km to 2 km wide and drains northwards towards the coast. • Saprolite Zone – uppermost sections of weathered bedrock with limited permeability. • Saprock Zone – lower section of weathered profile consisting of moderately to slightly weathered rock. Low to moderate fractured rock permeability in the igneous intrusives.

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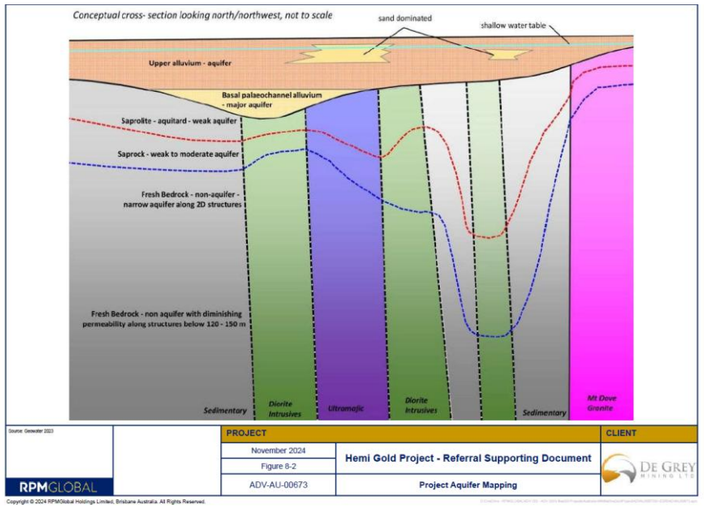
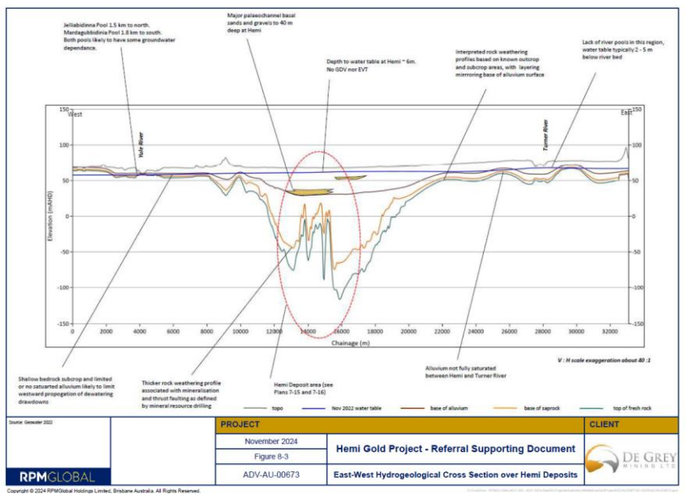
- Fresh bedrock – unweathered rock with limited permeability, particularly below 150m depth. Does not form aquifer zones at or near the Hemi Deposit.



Considering the hydrogeological cross-section presented in Figure 8-3 of the RSD (reproduced below), the following key aspects of Hemi's groundwater system are interpreted:

- Saprolite and saprock generally do not hold significant amounts of groundwater. This layer acts as a weak barrier to water flow (aquitard) and is unlikely to be a major water source during mining activities.
- Groundwater at Hemi is more likely to be found in fractured zones within igneous rock intrusions and near the contact zones between different rock types. These fractures provide pathways for water movement but have limited storage capacity. These fractures also become tighter and less permeable with depth.
- Bedrock permeability is very limited, likely becoming impermeable with no storage of water below approximately 150 m.



Based upon the above, most of the dewatering will occur in the upper and lower alluvium will minimal dewatering within the saprolite, saprock and bedrock profiles.

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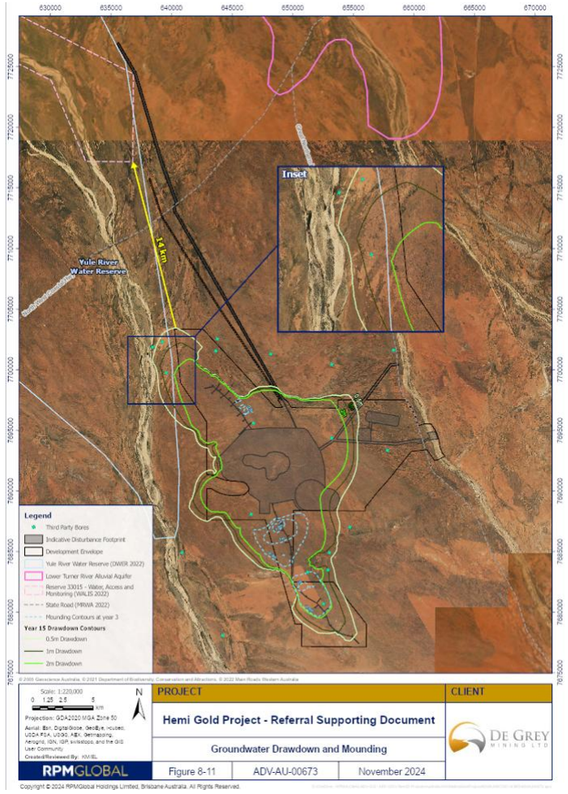
			The predicted impact to the upper and lower alluvium aquifers at the end of mining (year 15) is shown in revised Figures 8-12 of the RSD (reproduced below). Figures 8-12 show that the maximum drawdown (0.5 m) extends about 14 km to the northwest of the Proposal and that Yule River Borefield is located a further 14 km away. The predicted groundwater levels confirm the lack of potential for 'interference' or cumulative impacts between the two borefields. This is consistent with expectations, as the Yule River Borefield is configured and operated such that most of the groundwater it abstracts is low-salinity water that is replenished by large, albeit irregular river flow events adjacent to the borefield.  The Yule River Water Reserve occurs closer to Proposal than the actual Yule River Borefield and the groundwater modelling indicates that drawdowns of up to almost two metres may occur within a small area of the water reserve. The limited magnitude and area of the predicted drawdown would not materially alter the amounts of groundwater through flow and river recharge the alluvial aquifer relies on to sustain the current ecosystems and Water Corporation abstractions within the reserve. Based upon De Greys's approach to mitigation and managing impacts associated with the Proposal, as well as the rigorous monitoring regime provided for in the EMP to ensure impacts are not greater than predicted and to validate the model, De Grey does not anticipate its activities will result in a significant impact to any current or future water uses in the area. Additional information relating to the above has been included in new Sections 8.3.7 and 8.4.5 of the RSD.
17.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-P	The proponent has not adequately described the potential long-term impacts from the proposed groundwater drawdown and closure strategy, including impacts to groundwater dependent vegetation (GDV), cultural values, other groundwater users, and permanent changes to the groundwater system.	De Grey has revised the RSD to include the 1 m long-term drawdown contour at year 200 in Section 8.4.1 of the RSD. As can be seen from this contour no additional impacts are expected to GDVs, cultural values, other groundwater users or the groundwater system. As the Proposal is a Greenfields operation the information presented to date is based upon data available and is inherently predictive not definitive. De Grey considers it appropriate to present the 1 m long-term drawdown contour as this is the most realistic contour to show over this timeframe.

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18.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-P	The proponent has not considered the potential cumulative impacts from the adjacent proposals, such as cumulative drawdown impacts associated with the proposed Kariyarra Water Scheme (KWS).	De Grey has amended the RSD to include 'Potential for Drawdown to Affect Other Users' (Section 8.4.6). In summary and based upon the 0.5 m drawdown contour at the end of mining and the 1 m long-term drawdown contour at year 200: • There is potential for drawdown to impact upon five pastoral bores which De Grey will either replace or deepen. • It is unlikely that the Proposal will have a significant impact upon the Atlas Iron borefield (currently in care and maintenance). • Groundwater abstraction would not have an adverse or cumulative impact upon the Yule River Borefield
19.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-P	The submitter considered that the proposal's assumptions regarding reinjection, such as the proposed reinjection of 50% of abstracted water, have not been validated as injection testing has not been performed. Further, the proponent has not provided an alternative if reinjection is not viable.	De Grey have undertaken a short-term reinjection trial for the Proposal, results of which have been included in section 8.4.5 of the RSD and appended in Appendix X. In summary the trial concluded that: • The reinjection was successful despite apparent reduced capacity, probably due to a small, screened interval. This will be rectified by increasing the length of slotted screen intervals in the injection bores. • There was no apparent increase in As level despite the large As concentration difference between the production and injection bore. This will be managed by dedicated monitoring bore installation for sampling and analysis of As during injection. • Results from the trial are consistent with the modelled amounts of mounding. Further trials are planned, and additional information will be provided during the 5C and DWER licencing approvals as is applicable under the *Rights in Water and Irrigation Act 1914* and Part V of the *Environmental Protection Act 1986*.
20.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-K	Submitters considered that the requested abstraction limit of 30 GL/a over 15 years (as indicated in section 2.2 of the RSD) is not representative of the proposal's water demand and modelling conducted.	The key characteristics of the Proposal as per the Proposal Content document is for the dewatering of up to 30 GL/a. The groundwater model (appendix 2) is based upon the current mine plan, which includes abstraction decreasing over time. As the Proposal is a Greenfields operation, the information presented to date is based upon data available and is inherently predictive not definitive. Noting the above, De Grey has proposed the following additional constraints on dewatering to ensure the predicted environmental outcomes will be met in Section 8.5 of the RSD: Limit the Proposals groundwater abstraction to up to: • 30 GL/a for years 1 – 4 • 18 GL/a for years 5 – 7 • 11 GL/a for years 8 – 15 Until such time as De Grey submits an updated groundwater model inclusive of additional abstraction (up to 30 GL/a) to the satisfaction of the CEO of the EPA.
21.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-K	Submitters considered that the modelled wetting front (from SWS 2022b) associated with discharge into the Turner River is not representative of the requested discharge amounts. I.e., the modelled wetting front was based on a total discharge of 16.6 GL over a 3-year period, rather than 30 GL over the first 3 years, 12 GL over the next 3 years, and 2 GL/a thereafter. As such, the surface water impact assessment and conclusions reached in the revised RSD and Appendix 2 should be revisited after considering the revised water modelling.	The key characteristics of the Proposal as per the Proposal Content document is for the surplus water discharge of up to: • 10 GL/a for the first three years. • 4 GL/a for years 4 – 6 • 2 GL/a for years 7 - 15 The discharge model was for 16.9 GL over a three-year period, based on the current mine plan. As the Proposal is a Greenfields operation, the information presented to date is based upon data available and is inherently predictive not definitive. Noting the above De Grey has proposed the following additional constraints on surplus water discharge to ensure the predicted environmental outcomes will be met in Section 8.5 of the RSD: Limit the Proposals groundwater abstraction to up to: • 8 GL/a for years 1 - 2 • 4 GL/a for years 3 – 6 • 2 GL/a for years 7 - 15

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			Until such time as De Grey submits an updated model inclusive of additional surface water discharge (up to 10 GL/a for years 1 - 3) to the satisfaction of the CEO of the EPA.
22.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-K ANON-G4BN-BAQ4-P	Submitters considered that the simulated groundwater model is insufficient as it does not extend beyond the end of mine life (i.e., until equilibrium is reached), and therefore, post-closure impacts have not been adequately considered. Further, the model is not sophisticated enough to overcome the uncertainty in groundwater drawdown, and therefore the potential impacts to cultural, heritage, and environmental values are unclear. After updated modelling, the proponent should provide further information on the expected: • post-closure groundwater quality, • pit lake water quality, • pit lake recharge rate, • pit lake evaporation rate, • total reduction in volume of the paleochannel aquifer, • post-closure impacts on pools along the Yule River, and • post-closure impacts to the Port Hedland Drinking Water Supply. Appendix 2 should also be revised to consider the above.	**Groundwater Model** Hydrogeological data collection and analysis was conducted through an extensive groundwater monitoring network within and around the Proposal. This data was used to develop the Definitive Feasibility Study Conceptual and Numeric Groundwater Modelling (Appendix 2) that identified groundwater locations and flow patterns, as well as how geological structures may impede flow and how this relates to key environmental and social receptors. The conceptual model was then used to create a numerical representation of the natural system. This numerical model was calibrated with historical and recent groundwater level data. Once calibrated, the model simulated the proposed water abstraction activities for the Proposal to quantify their influence on groundwater levels. The results were used to refine the conceptual model, forming the basis for groundwater management plans. De Grey has revised the RSD to include the 1 m long-term drawdown contour at year 200 in Section 8.4.1 of the RSD. As can be seen from this contour no additional impacts are expected to GDVs, cultural values, other groundwater users or the groundwater system in the long term. As the Proposal is a Greenfields operation the information presented to date is based upon data available and is inherently predictive not definitive. De Grey considers it appropriate to present the 1 m long-term drawdown contour as this is the most realistic contour to show over this timeframe. De Grey has also undertaken a peer review of the Groundwater Model (Appendix 3), the peer review identified that the methodology of the report was in line with the requirements of the Western Australian Operational Policy no. 5.12 - Hydrogeological Reporting Associated with a Groundwater Well Licence (DWER 2009) as a detailed hydrogeological assessment including drilling, test pumping and a groundwater model, and is consistent with the Australian Groundwater Modelling Guidelines issued by the National Water Commission of the Australian Government (Barnett et al 2012). **Post Closure and Pit Lake Modelling** Hydrogeological modelling indicates that due to low groundwater flow and high evaporation rates, the hydraulic gradient will remain post-closure. Thus, the pit lakes will act as a groundwater sink, continually drawing in groundwater as it evaporates from lake surfaces. Similarly pit lake modelling predicts that water salinity will slowly climb in both voids due to evapo-concentration effects, reaching up to 2,000 – 15,000 mg/L after 866 years. De Grey have included a new appendix (Appendix X) that details the pit lake modelling. In addition to the above particle tracking analysis has shown that particles from both the RBS and TSF will report to the pit, thus no contamination of groundwater is anticipated post closure. **Total Volumetric Reduction of Aquifer** The volume of the alluvial aquifer within the confines of the model area is estimated at 9,113 million m³ based on the November 2022 water table surface. At the conclusion of mining and processing, the aquifer is predicted to have a remaining volume of 8,486 million m³, which represents a reduction of approximately 627 million m³ or about 7% of the pre-dewatering volume. **Post Closure Impacts on Pools and Drinking Water** Groundwater drawdown modelling indicates that the post-closure groundwater drawdown depression will not adversely affect the Yule River, or its permanent pools that are potentially groundwater-fed, the Turner River or semi-permanent pools near the Port Hedland Drinking Water supply.
23.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-P	The particle tracking analysis of groundwater flow is inadequate as it only considers the first 8 years of operational life and does not consider potential cumulative drawdown. Further, Appendix 2 does not consider the current proposed reinjection volume, and has been prepared under the assumption that all reinjected water will recirculate to the mine pits. However, the particle tracking indicates that some reinjected water will not recirculate to the mine pits.	De Grey has revised the particle tracking analysis for the Reinjection Borefield South and extended this out to 200 years. Revised information is presented in Figure 8-13 of the RSD. Results show that post closure all particles are modelled to report to the mine pits, reinforcing the role of the pit lakes as long-term hydraulic sinks.

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24.	ANON-G4BN-BAQ4-F	It is unclear what the total volume of the paleochannel aquifer is, and how much a 7% reduction at the end of mine life would represent.	The following details are provided based on the most recent modelling and data available, as outlined in "Appendix 2 – DFS Hydrogeology" of the RSD: • The volume of the alluvial aquifer within the confines of the model area is estimated at 9,113 million m³ based on the November 2022 water table surface. At the conclusion of mining and processing, the aquifer is predicted to have a remaining volume of 8,486 million m³, which represents a reduction of approximately 627 million m³ or about 7% of the pre-dewatering volume. • It is important to note that these estimates are based on the modelled area and do not account for the full extent of the paleochannel aquifer, which extends beyond the modelled area. Further refinement of the model and monitoring during mining will continue to ensure an accurate understanding of potential impacts.
25.	ANON-G4BN-BAQ4-F	The submitter considered that the designated clay permeability of $<10^{-8}$ m/s does not align with the Water Quality Protection Guidelines No. 3 ($<10^{-9}$ m/s).	The permeability value used in the TSF design is based on onsite test results, including hydrogeological site investigations, laboratory characterisation of construction materials, and tailings testing. These values were chosen to reflect the local soil conditions and provide a conservative estimate to ensure the design adequately protects environmental values. De Grey considers this approach to be appropriate for local conditions. Any further changes or refinements to the design will be addressed during the Part V EP Act and Mining Act approvals.
26.	ANON-G4BN-BAQ4-F	Further information should be provided on the baseline water quality of abstracted water, such as Arsenic concentration, across the life of the proposal.	Information relating to baseline water quality of abstracted water (groundwater) is provided for in Section 8.3.2 of the RSD and Appendix 2. In summary: • Bedrock samples are from the ore zone only and present the highest arsenic levels. • Arsenic in alluvium downgradient of known ore zones is higher than in alluvium up-gradient of ore zones. This indicates that the gold deposit (which mining will remove) is a contributing source of naturally occurring arsenic in groundwater. • Arsenic levels in the bedrock are 2 to 3 orders of magnitude higher than those in the upper geological gradients. Until bedrock levels are reached, arsenic levels in the water to be abstracted are expected to be at the same levels as those in the Turner River. There are a few exceptions in the alluvium at up and down-gradient locations that will be characterised and managed according to their arsenic concentration. • Alluvium bores with higher chromium levels are typically found upgradient and laterally distant from the Hemi ore zones. This suggests the elevated chromium is not directly related to the Hemi gold deposit. • Groundwater near the Turner River typically has lower arsenic levels than the bedrock, lower vanadium and chromium levels than groundwater in the region of the Hemi deposits, and similar levels (same order of magnitude) of uranium compared to the regions of the Hemi deposits. • Uranium and vanadium levels are similar in bedrock zones and up-gradient and down-gradient alluvium, suggesting that the distribution of these metals is not specifically related to the gold deposit. The presence of these metals may be due to the Proposal being downgradient from a large granodiorite dome located to the southeast.
27.	ANON-G4BN-BAQ4-F	Further information should be provided on the potential impacts from discharge to the Turner River, including the potential impacts to the Moorambine Pool and change from seasonal to continual flow.	De Grey has included a new section (Section 8.4.4 – Surface Discharge) to assess the potential impacts that discharge may have upon the Turner River, including impacts to semi-permanent pools known to occur.
28.	ANON-G4BN-BAQ4-F	There is insufficient detail on what the site specific water quality criteria will be for the discharge into Turner River. Further, the submitter considered that site-specific criteria may not be appropriate, and that the Australian and New Zealand Guidelines for Fresh and Marine Water Quality should be used as a minimum.	De Grey has revised the EMP to include site specific water quality criteria for a suite of analytes. Site specific criteria have been used as these criteria are based upon the most representative baseline conditions of the Turner River.
29.	ANON-G4BN-BAQ4-F	The submitter considered that the proponent has not adequately considered various future climate scenarios in the drawdown model.	The assessment of future Pilbara climate conditions by CSIRO (2015) only predicted rainfall and evaporation changes to 2050 and concluded that on balance, projections indicate that the Pilbara may become slightly drier by 2030 and 2050, although wetter projections cannot be discounted. There is not sufficient confidence in the projections to allow quantification of the probabilities of wet or dry scenarios occurring in the future.

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30.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-K ANON-G4BN-BAQ4-P	Submitters considered that there is insufficient information regarding the potential impacts to groundwater quality associated with seepage from the landfill, TSF, and wastewater treatment plant. Figures should be provided to provide greater understanding on the anticipated post-closure groundwater flows, tailings seepage, and pit lakes.	De Grey has designed the Tailings Storage Facility (TSF), landfill, and wastewater treatment plant (WWTP) with multiple controls to limit seepage and minimise potential impacts on groundwater quality. The assessment of potential groundwater impacts has been undertaken as part of the RSD and supporting technical studies. Groundwater monitoring and compliance requirements will be further refined through the Part V Works Approval and Operating Licence process, ensuring robust environmental outcomes. **Landfill** The landfill will be designed and managed in accordance with a Works Approval and Operating Licence under Part V of the *Environmental Protection Act 1986* and the *Mining Act 1978* to ensure potential impacts on groundwater quality are minimised. Key measures include: • All waste disposal will occur above the water table to prevent direct interaction with groundwater. • Only approved waste types will be accepted, with strict controls to prevent the disposal of hazardous or unauthorised materials. • Waste will be progressively covered to reduce exposure, prevent windblown litter, and limit water infiltration. • Once landfill cells are filled, they will be completely backfilled and shaped into mounded, water-shedding structures to prevent surface water infiltration and minimise the risk of leachate generation. • A groundwater monitoring program will be implemented to track key water quality parameters around the landfill perimeter, ensuring early detection of any potential impacts. These management measures will be further detailed and refined as part of the Part V Works Approval, Operating Licence, Mining Proposal and Mine Closure Plan process, ensuring groundwater quality remains protected throughout the Proposal's lifespan. Additional information has been provided for in Table 8-5 of the RSD. **TSF** The TSF has been engineered following the Australian National Committee on Large Dams (ANCOLD) guidelines and was appended as Appendix 4 to the RSD. The design incorporates several seepage mitigation measures, including: • Compacted low-permeability liner: A 0.5 m thick clay liner with a permeability of $<10^{-8}$ m/s extends 300 m from the decant area to reduce seepage. • Underdrainage system: Collects seepage water at the base of the TSF for reuse in processing. This system has a capacity of approximately 544 L/min. • Cut-off trench: Installed at the base of the embankment to reduce horizontal seepage movement. • Supernatant water recovery: Designed to recover 100% of process water discharged to the TSF, significantly limiting seepage. • Seepage monitoring: Vibrating Wire Piezometers (VWPs) will be installed along embankments to track groundwater levels and detect seepage movement. Potential impacts associated with the TSF will be managed throughout a secondary approval under Part V of the EP Act. **Wastewater Treatment Plant** The WWTP will be designed and managed in accordance with a Works Approval and Operating Licence under Part V of the *Environmental Protection Act 1986* and the *Mining Act 1978* to ensure potential impacts on groundwater quality are minimised. Key measures include: • Treated effluent will be discharged via sprayfields, designed based on site-specific soil properties and phosphorus loading capacity. • The sprayfields will be maintained to avoid pooling, minimising the risk of excessive percolation into groundwater. • A groundwater monitoring program will track key water quality parameters around the wastewater treatment plant to ensure early detection of any potential changes. • The WWTP will use membrane bioreactor treatment to remove nutrients, organic matter, and pathogens before effluent discharge.

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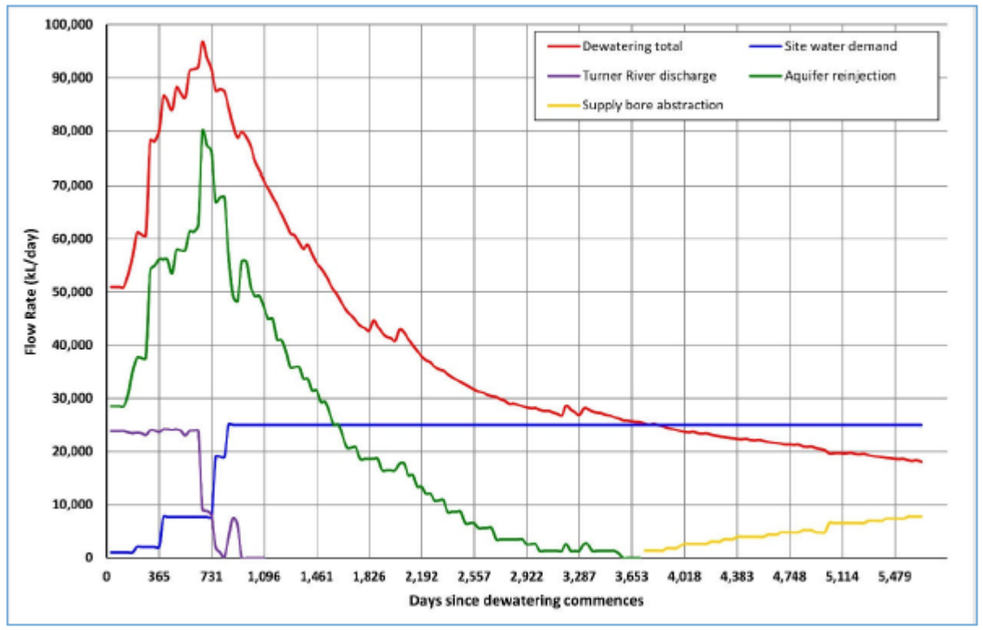
			• All sludge will be collected by a licensed contractor and disposed of at the onsite putrescible landfill, preventing potential leachate formation. • A 2 m high fence will enclose the wastewater treatment plant and sprayfield to prevent fauna access, reducing disturbance and limiting secondary impacts on water quality. These management measures will be further detailed and refined as part of the Part V Works Approval, Operating Licence, Mining Proposal and Mine Closure Plan process, ensuring groundwater quality remains protected throughout the project's lifespan. Additional information has been provided for in Table 8-5 of the RSD.
31.	ANON-G4BN-BAQ4-F	A water balance (mass balance) model should be provided for transient model runs.	De Grey note that a water balance (mass balance) was included in Appendix 2 for the transient model run. This information is presented on page 56 and reproduce below. 
32.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-P	The proponent has not considered sufficient alternatives for the management of inland waters values. This includes consideration for altering the volume of surplus waste reinjected, the water quality of reinjected water, the number and size of pit lakes at closure, and providing surplus dewater for third-party use.	De Grey has considered alternatives for the management of Inland Waters in Section 3.3 and 3.4 of the RSD. Matters pertaining to co-management of water have specifically been addressed by De Grey in consultation with stakeholders as early as August 2023. In summary **Surplus water Discharge** De Grey originally considered disposing a portion of the surplus water into the Yule River. This option was ultimately rejected as: • The YRWR is important to Port Hedland's water supply. • There are permanent groundwater fed pools of Aboriginal cultural heritage significance along the section of the Yule River that would be affected by any discharge. • Typically, better quality (lower salinity) water is associated with the Yule River compared to the Turner River. • Aquatic ecology surveys concluded that the Yule River is of higher ecological value than the Turner River. • The volume of water requiring discharge significantly decreases in the third year of the Proposal, limiting the benefits of using both rivers.

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			• The Turner River is already subject to sand mining operations where sand from the riverbed is progressively extracted for construction purposes and naturally replaced during flood events. The granting of clearing permits, as recently as 2021, and Mining Proposals for these operations, which permit the clearing of riparian vegetation and some Priority species, without the need of offsetting, indicates that these impacts to the river have been considered manageable. **Groundwater Reinjection** De Grey during early design works assessed two options for reinjection into the borefield being 30% of total abstracted water or 50% of total abstracted water. It was determined that there were significant design and cost benefits associated with the 30% option including but not limited to: • Reduced energy use associated with the operation of the reinjection infrastructure. • The construction and maintenance of ~20 instead of ~40 reinjection bores. • Lower abstraction requirements due to less water being recirculated back to the pits. Despite this, the 30% option was rejected as it required more than double the surplus water discharge into the Turner River, which would result in an extended wetting front and a longer temporary disruption to the river's hydroperiod. In addition, the 50% option reduces the cumulative loss of groundwater as more water is returned to the aquifers.
33.	ANON-G4BN-BAQ4-F	The proponent's proposed management measures are insufficient to ensure there is no groundwater contamination, adverse impacts on other water users, and adverse impacts on groundwater dependent vegetation.	**Contamination of Groundwater** De Grey have provided a number of mitigation measures related to the contamination of groundwater from several sources in Table 8-5 of the RSD. In addition to these mitigation measure De Grey will also be required to obtain approval for the construction (Works Approval) and operation (Operating Licence) for any prescribed premise (e.g. Landfill, TSF, Waste Water Treatment Plants, Aquifer Reinjection, Surface Water Discharge, etc) which have the potential to result in an emission (noise, odour, waste discharge etc) to the environment under Part V of the *Environmental Protection Act 1986*. Works Approvals and Operating Licences will contain appropriate conditions to prevent, control, abate, mitigate or manage pollution or environmental harm during the construction, environmental commissioning and operational phase of the Proposal. De Grey considers these management measures are appropriate in the circumstances of the Proposal. **Adverse Impact on Other Users** De Grey has included two new sections to the RSD, Section 8.3.7 Existing Groundwater Use and Section 8.4.6 Potential for Drawdown to Affect other Users. The assessment undertaken considered: • All publicly available information with regards to other groundwater users within the predicted area of drawdown. At the time of revising the RSD, no publicly accessible groundwater models and/or reports were available to support a combined drawdown or cumulative impact assessment. • Potential impacts on adjacent pastoral bores. It is anticipated that five Indee Station pastoral bores may be impacted by dewatering activities. De Grey has committed to replacing these bores in consultation with the pastoral leaseholder to ensure continued water access. • Potential impacts on the adjacent Mt Dove borefield. Whilst some Atlas Iron production bores may experience a drawdown of up to 1 m. This level of drawdown is unlikely to affect bore yields. Although the Atlas Iron site is currently in care and maintenance with limited borefield use, the assessment conservatively assumed full-capacity operation of its borefield to provide a worst-case scenario analysis. **Groundwater Dependent Vegetation** De Grey has: • Revised the RSD to include an assessment of the 0.5 m contour as presented in Plan 10-7 of Appendix 2. By year 15 the model shows that the 0.5 m drawdown will approach close to but not impact upon the Yule River Channel. Furthermore, there is no predicted impact to the riparian vegetation and/or groundwater dependent vegetation within the Yule River.

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			• Considered the 2 m drawdown contour, which accounts for the observed natural variation in groundwater levels, drawdown is expected to remain at 1.5 km from the Yule River and 6.2 km from the Turner River, ensuring that no riparian vegetation or groundwater dependent vegetation within these water systems will be impacted. Therefore, no impacts are expected on riparian vegetation, GDVs or riverine pools. • Proposed a robust monitoring regime in the environmental management plan to ensure groundwater drawdown is not greater than predicted, consisting of early warning, trigger and threshold monitoring bores with appropriate management measures.
34.	ANON-G4BN-BAQ4-F	Further information is required on how other regulatory processes can assist in mitigating potential impacts. The submitter considered that the proponent should not defer the assessment of inland waters values to other regulatory approvals, such as to DWER's assessment of groundwater values under the *Rights in Water Irrigation Act 1914* or to DEMIRS's assessment of the post-mining land use under the *Mining Act 1978*.	Below is a summary of the key secondary approval processes that will apply to implementation of the Proposal. De Grey has assessed groundwater values and post land use in the RSD, without deferring to other regulatory processes. ***Environmental Protection Act 1986* – Part V** In addition to approval under Part IV of the *Environmental Protection Act 1986,* De Grey will also be required to obtain approval for the construction (Works Approval) and operation (Operating Licence) for any prescribed premises associate with the Proposal (e.g. Landfill, TSF, Waste Water Treatment Plants, Aquifer Reinjection, Surface Water Discharge, etc) which have the potential to result in an emission (noise, odour, waste discharge etc) to the environment under Part V of the *Environmental Protection Act 1986*. Works Approvals and Operating Licences will contain appropriate conditions to prevent, control, abate, mitigate or manage pollution or environmental harm during the construction, environmental commissioning and operational phase of the Proposal. ***Rights in Water and Irrigation Act 1914*** Hydrogeological data collection and analysis was conducted through an extensive groundwater monitoring network within and around the Proposal. This data was used to develop the Definitive Feasibility Study Conceptual and Numeric Groundwater Modelling (Appendix 2) that identified groundwater locations and flow patterns, as well as how geological structures may impede flow and how this relates to key environmental and social receptors. This has informed the assessment of the Proposal presented in the RSD. The conceptual model was then used to create a numerical representation of the natural system. This numerical model was calibrated with historical and recent groundwater level data. Once calibrated, the model simulated the proposed water abstraction activities for the Proposal to quantify their influence on groundwater levels. The results were used to refine the conceptual model, forming the basis for groundwater management plans. Before any groundwater abstraction for the Proposal, a groundwater licence is required. The application process requires an impact assessment (H3 Report) and an associated Groundwater Operating Strategy (GWOS) to be submitted to DWER to meet the requirements of the *Rights in Water and Irrigation Act 1914* (RIWI Act). The report will detail the conceptual model, proposed activities, required groundwater abstraction, and predicted impacts on groundwater. It will also specify the monitoring locations for groundwater levels to validate the conceptual model and ensure impacts remain within approved limits. The GWOS is a comprehensive plan that outlines how the conditions of the groundwater licence will be monitored and enforced. It will include monitoring requirements, water allocation limits, groundwater receptor considerations, and contingency plans to address potential risks. Once the H3 and GWOS are approved, an Annual Aquifer Review (AAR) will be submitted to DWER annually. This review evaluates the aquifer's condition and performance over the past year, analysing data on groundwater levels, water quality, extraction volumes, recharge rates, and overall aquifer health. The review helps identify trends and assesses the effectiveness of current management practices. ***Mining Act 1978*** In accordance with applicable tenement conditions and the *Mining Act 1978*, the Proposal will require a Mining Proposal and Mine Closure Plan. As per the Statutory Guidelines for Mining Proposals (2020), the Mining Proposal must describe the existing environment in which the site is located, including any natural (biological/physical) values and sensitivities and heritage areas that may be affected by the activities. This section must include a description of the baseline data covering the below environmental aspects as well as analysis and interpretation of the baseline data: • Climate • Landscape • Materials characterisation • Biodiversity • Hydrology (including surface water and groundwater)

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			• Heritage The Mining Proposal must also include an environmental risk assessment that: • Identifies all the environmental risk pathways affecting DEMIRS Environmental Factors across all phases of the mine life and that may arise from unexpected or emergency conditions. • Includes an analysis of these risks to derive an inherent risk rating, prior to the application of treatments. • Identifies appropriate risk treatments. • Include an evaluation of the risk pathways to derive a residual risk rating • Demonstrates that all residual risks are as low as reasonably practicable (ALARP). The Mining Proposal must provide information on the processes and methodologies undertaken to identify the environmental risk pathways and their potential environmental impacts, including a description of the risk assessment criteria and risk evaluation techniques. Finally, the Mining Proposal must also include a table of site-specific outcomes that the mining operation will achieve, along with performance criteria for each outcome. The proposal must also include a description of the monitoring that will be undertaken to measure each performance criteria. As per the Statutory Guidelines for Mine Closure Plans (2020), the Mine Closure Plan (MCP) must include the post-mining land use(s) that has been proposed or agreed with key stakeholders, including regulators. The MCP must describe how the post-mining land use(s) is: • Relevant to the environment in which the mine will operate or is operating. • Achievable in the context of post-mining land capability. • Acceptable to the key stakeholders. • Ecologically sustainable in the context of the local and regional environment. The MCP must also include: • Site-specific closure outcomes consistent with the post-mining land use(s) that are realistic and achievable based on the closure risk assessment. • Completion criteria that are specific, measurable, achievable, relevant and time-bound, and will demonstrate the achievement of the closure outcomes and monitoring.
35.	ANON-G4BN-BAQ4-F	The groundwater quality model, which will dictate whether water will be reinjected, treated, or discharged, has not been provided for review. Further, it does not appear that this management approach will account for changes in water quality over time.	The Proposal defines two surplus water discharge streams based on dissolved arsenic (As) concentrations: • Type I: <24 µg/L of dissolved As - suitable for discharge to the Turner River, reinjection into RBN and RBS, and potable use (after treatment via soil -based ponds). • Type II: >24 µg/L of dissolved As - (naturally elevated in arsenic) will be suitable for reinjection into RBS and will become available for re-abstraction after 2–10 years for use in the processing plant, prioritised for use in the processing plant once operational. This classification is based on the analysis of over 350 water quality samples and aligns with the ANZG 2018 guidelines for protecting 95% of aquatic species. As new boreholes are drilled, developed, and pump-tested, water quality sampling will determine whether the water falls under Type I or Type II classification. No adaptive management is required because: • Once a borehole's water quality is classified as Type I or Type II, its designation remains fixed based on inherent groundwater chemistry. • Type II reinjected water will be contained within RBS and, while it will eventually be re-abstracted, this process is controlled and does not alter the overall water management strategy.
36.	ANON-G4BN-BAQ4-F	The submitter considered the proposed mitigation hierarchy does not adequately reduce the potential impacts to inland waters values, such that there will be no significant residual impacts. For example, it is	De Grey has applied the mitigation hierarchy to protect the hydrological regime, water quality and ecological function of the key Inland Water features (Yule and Turner River) and potential GDVs as well as existing groundwater users within and surrounding

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		unclear how the extent of groundwater drawdown will be limited post-closure.	the Development Envelope. Potential impacts and mitigation measures (avoid, reduce, manage and rehabilitate) are presented in Section 8.4. In addition to the above, De Grey has proposed the following Environmental Outcomes for the Inland Waters Factor for the Proposal to ensure impacts are not greater than predicted. De Grey considers that the mitigation hierarchy has been appropriate applied in the circumstances of the Proposal. **Groundwater Abstraction** Limit the Proposals groundwater abstraction to up to: • 30 GL/a for years 1 – 4 • 18 GL/a for years 5 – 7 • 11 GL/a for years 8 – 15 Until such time as De Grey submits an updated groundwater model inclusive of additional abstraction (up to 30 GL/a) to the satisfaction of the CEO of the EPA. **Groundwater Reinjection** Limit the Proposal's reinjection of groundwater to up to 50% of groundwater abstracted until such time as De Grey submits an updated groundwater model inclusive of additional reinjection (up to 100%) to the satisfaction of the CEO of the EPA. **Surplus Water Discharge** Limit the Proposal's surface water discharge to up to: • 8 GL/a for years 1 - 2 • 4 GL/a for years 3 – 6 • 2 GL/a for years 7 – 15 Until such time as De Grey submits an updated model inclusive of additional surface water discharge (up to 10 GL/a for years 1 - 3) to the satisfaction of the CEO of the EPA. **Yule River** The following environmental outcomes are proposed in relation to the Yule River and Public Drinking Water Reserve: • No direct impact from groundwater drawdown upon identified permanent and semi-permanent pools located along the Yule River, or the Yule River itself, attributable to the Proposal. • No indirect impact to groundwater quality greater than site specific criteria upon identified permanent and semi-permanent pools located along the Yule River, or the Yule River itself, attributable to the Proposal. • No indirect impact to groundwater quality greater than site specific criteria within the Yule Public Drinking Water Reserve attributable to the Proposal. To meet the above environmental outcomes, De Grey will implement the EMP as per Appendix 1. **Turner River** The following environmental outcomes are proposed in relation to the Turner River: • Discharge of surface water to the Turner River will be limited to: - 8 GL/a for years 1 - 2 - 4 GL/a for years 3 – 6 - 2 GL/a for years 7 – 15 • During periods of no natural flow, the discharge "wetting front" (affected area) in the Turner River will not extend more than 50 km downstream of the discharge point for the first three years, followed by a reduction in subsequent years. • The discharge water quality will meet site-specific water quality criteria established for the Turner River. To meet the above environmental outcomes, De Grey will implement the EMP as per Appendix 1. **Public Drinking Water Reserve**

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			The following environmental outcomes are proposed in relation to Reserve 33015 (Water Corporation borefield): • Groundwater drawdown will be limited to no closer than 15 km from Reserve 33015 (Water Corporation borefield). To meet the above environmental outcomes, De Grey will implement the EMP as per Appendix 1. **Conclusion** By ensuring groundwater drawdown is reacting as, or better than predicted during operations De Grey is confident that the extent of drawdown post closure will be limited. To verify this De Grey have proposed a supporting/complimentary provision within the EMP of Groundwater levels within the drawdown extent remain consistent with modelled predictions. Monitoring for this will be through a triannual recalibration of the groundwater model with results to be provided for in that year's Annual Compliance Report. The groundwater and surface water assessments, combined with De Grey's proposed management measures, demonstrate that potential impacts to the hydrological and hydrogeological regimes of the Yule and Turner Rivers can be effectively managed, ensuring that the EPA's Inland Waters factor objective is met. The results indicate that: • The Yule and Turner Rivers are outside of the modelled drawdown zones. • Mounding caused by reinjection of mine dewater into the upper and lower alluvium/palaeochannel aquifers is not predicted to significantly impact the Yule or Turner Rivers or YRWR. • Reinjection and dewatering activities will not significantly impact GDEs. • There will be no significant impacts to the pastoral leaseholder's access to groundwater. • The quality of the water discharged into the Turner River is not predicted to alter the environmental value of the Turner River ecosystem. • No contamination to groundwater or surface water from landform leachates is predicted. De Grey concludes that impacts, when considered both individually and cumulatively, associated with changes to the hydrological and hydrogeological regimes are able to be managed (as described in RSD) such that the EPA's Inland Waters factor objective can be met for the Proposal during and post mining.
37.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-P	The management measures proposed in the EMP are insufficient. The EMP should: • consider cumulative groundwater drawdown impacts, • consider changes to post-closure hydrogeological flow, • include outcomes-based provisions for water quality beyond just arsenic and vanadium, • include outcomes-based provisions for potential impacts associated with pit lakes, • include upper water quality limits for Type II reinjection water.	De Grey has included an objective-based provision for monitoring groundwater levels within the drawdown extent. This provision aims to verify that the drawdown behaves as predicted by the model and includes a commitment to update and recalibrate the groundwater model every three years. Furthermore, De Grey has undertaken a review of the early response, trigger and threshold bore locations and criteria and amended the EMP to ensure that: • Bore locations are established based on predicted drawdown contours over time (i.e. time series data). • Criteria are based upon predicted drawdown less natural variation. • Water level data (natural variation of 2 m) is provided as an Appendix to the EMP to support the chosen criteria. • Management actions are implemented following a single exceedance. Details of the updated monitoring network and criteria are outlined in Section 2 of the EMP. De Grey has also revised the EMP to include: • Site specific criteria developed from baseline site water quality of the Turner River, ensuring this reflects natural background conditions rather than ANZG 2018 guidelines. • A wider range of contaminants. It should be noted that the criteria are adaptive, meaning they will be updated as new data from ongoing monitoring becomes available. This ensures that site-specific conditions continue to be accurately reflected in the management framework. De Grey is not proposing upper water quality limits for Type II reinjection water. De Grey considers the management measures incorporated in the EMP are appropriate in the circumstances of the Proposal.

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38.	ANON-G4BN-BAQ4-F ANON-G4BN-BAQ4-K ANON-G4BN-BAQ4-P	Submitters considered the proposed monitoring of groundwater drawdown and discharge to the Turner River is insufficient. Additional monitoring bores should be included, such as to the north, adjacent to the TSF and landfill, and near pools 1286, 1287, and 1289. The discharge monitoring program should be expanded to monitor potential impacts to the Turner River, Yule River, and associated vegetation and pools.	De Grey has included an objective-based provision for monitoring groundwater levels within the drawdown extent. This provision aims to verify that the drawdown behaves as predicted by the model and includes a commitment to update and recalibrate the groundwater model every three years. Furthermore, De Grey has undertaken a review of the early response, trigger and threshold bore locations and criteria and amended the EMP to ensure that: • Bore locations are established based on predicted drawdown contours over time (i.e. time series data). • Criteria are based upon predicted drawdown less natural variation. • Water level data (natural variation of 2 m) is provided as an Appendix to the EMP to support the chosen criteria. • Management actions are implemented following a single exceedance. Details of the updated monitoring network and criteria are outlined in Section 2 of the EMP De Grey has also revised the EMP to include: • Site specific criteria developed from baseline site water quality of the Turner River, ensuring this reflects natural background conditions rather than ANZG 2018 guidelines. • A wider range of contaminants. It should be noted that the criteria are adaptive, meaning they will be updated as new data from ongoing monitoring becomes available. This ensures that site-specific conditions continue to be accurately reflected in the management framework. De Grey is not proposing to monitor the GDV or pools associated with the Yule River as no impact is predicted to these and a robust groundwater monitoring regime is proposed to ensure impacts are not greater than predicted.
39.	ANON-G4BN-BAQ4-P	No baseline monitoring has been proposed for GDV species, aquatic fauna, or pools associated with the Yule River. Baseline monitoring of these values will be important should groundwater drawdown exceed the modelled extent.	The environmental impact assessment undertaken has not predicted an impact to GDV species, aquatic fauna or pools associated with the Yule River based upon the drawdown extent. On this basis, De Grey does not consider baseline monitoring of these values is necessary. De Grey has included an objective-based provision for monitoring groundwater levels within the drawdown extent, that is fit for purpose in the circumstances of the Proposal. This provision aims to verify that the drawdown behaves as predicted by the model and includes a commitment to update and recalibrate the groundwater model every three years. Furthermore, De Grey has undertaken a review of the early response, trigger and threshold bore locations and criteria and amended the EMP to ensure that: • Bore locations are established based on predicted drawdown contours over time (i.e. time series data). • Criteria are based upon predicted drawdown less natural variation. • Water level data (natural variation of 2 m) is provided as an Appendix to the EMP to support the chosen criteria. • Management actions are implemented following a single exceedance. Details of the updated monitoring network and criteria are outlined in Section 2 of the EMP.
40.	ANON-G4BN-BAQ4-P	The submitter considered that the proposed discharge to the Turner River does not meet the ANZG (2018) guidelines for uranium, vanadium, and arsenic, and that further management measures should be included to lower contaminate loads. Further, the proponent's decision to not include monitoring of elevated uranium has not been justified.	A Tier 2 Ecological Risk Assessment (ERA) has been undertaken by MBS (2024) to evaluate the potential impacts on the Turner River ecosystem from the discharge of surplus water and is presented as Appendix 9. This assessment considered the existing surface water quality of the Turner River, potential ecological receptors and the quality of groundwater that will be discharged. The key findings were: • Raw groundwater proposed to be discharged into the Turner River was found to contain naturally elevated dissolved concentrations of uranium (28–31 µg/L) and vanadium (28–30 µg/L). • These concentrations were considerably higher than the ANZG (2018) low reliability freshwater species protection guidelines for uranium (0.5 µg/L) and vanadium (6 µg/L). • Selected raw groundwater arsenic concentrations (6–36 µg/L) were also elevated with respect to ANZG (2018) freshwater species protection guidelines (13 µg/L). • The Turner River is naturally enriched in uranium, with a mean concentration of 5.3 µg/L, far above the ANZG (2018) guideline value of 0.5 µg/L for species protection. • Average vanadium concentrations of 4.1 µg/L in the Turner River are comparable to the ANZG (2018) low-reliability (limited toxicity data) freshwater species protection value of 6 µg/L.

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			• Given the low reliability of ANZG (2018) freshwater species protection guidelines for uranium and vanadium and the elevated concentrations of uranium and to a lesser extent vanadium and arsenic present in the Turner River, a series of site-specific trigger values were generated. • Modelling and laboratory tests indicate that soil-based holding ponds (with a residency time of three hours) and/or iron oxide treatments effectively reduce vanadium and arsenic concentrations to below trigger levels, while uranium remains largely unaffected. Based on these results, a Tier 3 ERA was undertaken on representative discharge water (direct toxicity assessment) to further understand the potential impacts of the proposed discharge on aquatic biota in the Turner River ecosystem (Appendix 10). The result of this assessment concluded that: • Discharge of representative water treated via soil-based holding ponds showed no deleterious effects on a range of Pilbara based biota within the Turner River system, even at uranium concentrations of 33 µg/L. Tested species included freshwater cladoceran, rainbowfish, freshwater hydra, duckweed, and green algae, with results indicating that the planned discharge would not have significant adverse acute or chronic effects on these organisms. Therefore, the establishment of provisional trigger values for naturally occurring uranium, suggested prior to conducting this ecotoxicological test, is deemed unnecessary, as the planned discharge is not expected to have significant adverse effects on the biota of the Turner River. • Radiological risks from untreated discharge water are minimal at the population level for organisms residing in or utilising the Turner River, even under conservative scenarios. • The impact on Turner River sediments and hydrology due to surplus water discharge was considered low, with the 50-km wetting front predicted to inundate less than 6% of the river width, posing minimal ecological risk over the three-year discharge period.
41.	ANON-G4BN-BAQ4-P	The EMP is not clear as to whether there will be monitoring of water quality aside from the discharge point. Further, the EMP does not explain what methodologies will be used to monitor against outcome-based provisions, nor how the outcome-based provisions were determined.	De Grey is proposing to only monitor water quality at the discharge location as beyond this point De Grey does not have control over other activities which are approved to occur both in the river channel and along its banks which may impact the quality of the surplus water as it makes it way downstream. De Grey has further refined the EMP to provide further clarity on how criteria and provisions have been chosen and how these will be monitored and reported on.

Subterranean fauna

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42.	ANON-G4BN-BAQ4-P ANON-G4BN-BAQ4-F	The potential impacts to stygofauna from groundwater contamination, such as from elevated concentrations of arsenic, have not been addressed. This includes a potential for contaminants to adversely impact groundwater quality where reinjected mine water is not circulated back into mine pits.	As discussed in Section 8.4.5 of the RSD the water quality of dewatering discharge would be similar to the native water quality of the alluvial aquifer in the proposed aquifer reinjection years. Notwithstanding the expected low average trace metal content of dewatering discharge proposed for aquifer reinjection, any individual dewatering bores that abstract exceptionally high levels of dissolved arsenic would be designated and managed as 'Type II' water for reinjection into the RBS. Once the ore processing and TSF circuit is commissioned, any Type II dewatering discharge would be preferentially directed to the ore processing water stream. To consider the fate of any reinjected Type II water, the groundwater model applied particle tracking to the alluvial aquifer model layers, with particles 'released' in RBS and tracked for 200 years. Figure 8-14 shows the particle tracking paths from each reinjection bore and confirms that all injected water from the RBS will ultimately discharge into the pit void post-closure. Based upon the above any "contaminants" are expected to be localised and/or captured by any pits being dewatered during operations or by any pit-lakes that form post-mining. Therefore, it is unlikely that there will be a significant impact to stygofauna from the Proposal. This information has been included in Section 11.4.3 of the RSD.
43.	ANON-G4BN-BAQ4-P	Sampling for subterranean fauna is limited and does not provide certainty on the scale of potential impacts. For example, stygofauna sampling is limited to the main mining area, and the troglofaunal	Sampling for subterranean fauna was conducted in accordance with EPA Technical Guidance (EPA, 2021). Surveys consisted of three rounds of sampling for stygofauna (October 2021, December 2021, March 2022) and one round of sampling for troglofauna (October 2021). No troglofauna were recorded during the survey, therefore Bennelongia (2023a) considered the troglofauna community depauperate and recommended additional sampling was not required. The two troglofauna identified

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		taxon Parajapygidae `BDP208` has not been found outside the proposed mining footprint.	were recorded as by catch during subsequent stygofauna sampling rounds. In each round, 40 bores and drill holes were sampled for stygofauna, while 20 holes were sampled once for troglofauna. A targeted survey for stygofauna was also completed in early 2024, which sampled 33 sites. Sampling for stygofauna focused on the stygofauna impact area, defined as the zone where dewatering drawdown is expected to be 1 m or more as well as suitable reference sites outside of this zone. Sampling for troglofauna focused on the mine impact area as well as suitable reference sites. A map of sampling locations and the impact areas is provided in Figure 11-6 of the RSD. In recognition of the challenges of fully characterising the distribution and abundance of subterranean fauna through sampling alone, De Grey completed 3D habitat modelling in Leapfrog Geo™ v 2023.2.3 (a leading 3D geological modelling software suite) of prospective above and below water table subterranean habitats to inform the impact assessment. This work was done to confirm the availability of habitats in the region, and the potential for subterranean fauna to move between them.

Social surroundings

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44.	ANON-G4BN-BAQ4-P	The proponent has not adequately described the tangible and intangible elements associated with social, spiritual, historical, scientific, or aesthetic values that are important to the Traditional Owners. This includes values such as cultural flows, culturally significant flora and fauna, and the importance of water to the Kariyarra people.	De Grey has included an additional Section (Section 12.4.3 – Social Surroundings) within the RSD that summarises Social Surroundings consultation undertaken to date and the key aspects that have been discussed with knowledge holders. Impacts to cultural values are discussed throughout the RSD, including avoidance of impact to the Sand Dune and Yule River as well as minimisation of impacts to the Turner River and ground and surface water values. De Grey notes that Social Surrounding consultation is an ongoing process and are committed to continuing to work with the KAC/Implementation committee throughout the life of the Proposal, including closure.
45.	ANON-G4BN-BAQ4-P ANON-G4BN-BAQ4-F	Stakeholders, such as the Indee Station and KAC, do not appear to have been adequately consulted on the development of the proposal and the potential long-term impacts. This included concern for the amount and quality of the water discharged to the Turner River, formation of pit lakes, and the potential contamination from ex-pit tailings dams and waste rock landforms.	De Grey has conducted a significant amount of stakeholder consultation in support of the Proposal as summarised in Section 5 of the RSD and further detailed in the stakeholder consultation register attached as Appendix 10. De Grey considers its approach is appropriate and aligned with leading best practice. This approach has involved the following: • Identification and mapping of stakeholders. - De Grey has thoroughly identified all stakeholders who could be affected by or have an interest in the Proposal. - Mapped stakeholders based upon their influence interest and potential impact • Setting clear goals and expectations. - Defined the purpose and objectives of the consultation process. - Communicated these goals clearly to all stakeholders. • Building relationships and trust. - Established open and honest communication channels. - Demonstrated respect for stakeholder perspectives and expertise. - Actively listened to stakeholder concerns and feedback • Planning and implementing effective consultation strategies. - Chosen appropriate consultation methods (e.g., workshops, surveys, interviews) based on the specific context and stakeholder needs. - Developed a comprehensive consultation plan that outlines the process, timelines, and resources. - Ensured accessibility and inclusivity. for all stakeholder • Ensuring transparency and openness - Provided clear and timely information to stakeholders. - Been transparent about decision-making processes and outcomes. • Documentation and reporting - Thoroughly documented all consultation activities and outcomes. - Provided regular updates and reports to stakeholder.
46.	ANON-G4BN-BAQ4-P	Further information is required on the potential impacts on cultural values from the discharge of mine dewater into the Turner River, including an updated discharge model and impact assessment on the potential impacts to the Moorambine Pool	De Grey has included this information in a new section (Section 8.4.4 – Surplus Water Discharge) of the RSD.

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		and riparian vegetation which may be inundated for extended periods of time.	
47.	ANON-G4BN-BAQ4-P	The submitter considered that it is unclear as to whether any unregistered Aboriginal heritage sites will be disturbed, beyond the two sites containing artifact scatters as referenced in the revised RSD.	De Grey has no current plans to impact other heritage places, outside of those for which consultation has been undertaken and Section 18 Consent under the *Aboriginal Heritage Act 1972* has been granted. De Grey will, in the first instance, avoid all other identified heritage places, and where this is not possible will manage any proposed impacts in consultation with Kariyarra Aboriginal Corporation and the Minister of Aboriginal Affairs.

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