



Sanjiv Ridge BWT GDV Risk Assessment

Report to Atlas Iron Pty Ltd

24 September 2025



| Document Status | | | | |
|-----------------|---------------|-----------------------------|----------------------------------|------------|
| Revision No. | Author | Review / Approved for Issue | Approved for Issue to Name | Date |
| 1 | Robyn Chesney | Carmel Winton | Larissa Byrne | 16/09/2025 |
| 2 | Robyn Chesney | Carmel Winton | Larissa Byrne, Michael Pezzaniti | 24/09/2025 |
| 3 | | | | |

“IMPORTANT NOTE”

Biologic Environmental Survey Pty Ltd (“Biologic”) has prepared this report for Atlas Iron Pty Ltd (“Client”), in accordance with the Client’s specific instructions and solely for the purposes for which it is required by the Client (“Purpose”). This report and its content are only pertinent to the Purpose and any matters, facts or results contained in this report are not to be used for any purpose other than the Purpose.

The information contained in this report is not financial advice and Biologic is not licenced to provide financial advice. The report does not take into account the investment objectives, financial situation or specific investment needs of the Client and should not form the basis of an investment decision by the Client.

In preparing this report Biologic has assumed the accuracy and completeness of all the information and documents received or obtained from the Client and all information and documents received or obtained as a result of any request or enquiry made to a government department, authority, government register or database. Biologic has not independently verified any such assumptions.

Apart from fair dealing for the purposes of private study, research, criticism, or review as permitted under the Copyright Act, no part of this report, its attachments or appendices may be reproduced by any process, released, or distributed without the written consent of Biologic. All enquiries should be directed to Biologic.

This report is presented without the assumption of a duty of care to any other person (other than the Client) (“Third Party”). The report may not contain sufficient information for the purposes of a Third Party or for other uses and may not be relied on by a Third Party without Biologic’s prior written consent.

Biologic will not be liable to a Third Party for any loss, damage, liability, or claim arising out of or incidental to a Third-Party publishing, using or relying on the facts, content, opinions or subject matter contained in this report.

If a Third Party uses or relies on the facts, content, opinions, or subject matter contained in this report with or without the consent of Biologic, Biologic disclaims all risk, and the Third Party assumes all risk and releases and indemnifies and agrees to keep Biologic indemnified from any Loss, Damage, claim or liability arising directly or indirectly from the use of or reliance on this report.

For the purpose of this document, a reference to “Loss” and “Damage” includes past and prospective economic loss, loss of profits, damage to property, injury to any person (including death) costs and expenses incurred in taking measures to prevent, mitigate or rectify any harm, loss of opportunity, legal costs, compensation, interest and any other direct, indirect, consequential, or financial or other loss.

Table of Contents

| | | |
|----------|---------------------------------------|-----------|
| 1 | Background | 3 |
| 1.1 | Summary of Previous Surveys..... | 3 |
| 1.2 | Groundwater Dependent Vegetation..... | 5 |
| 2 | GDV Risk Assessment | 10 |
| 2.1 | Methods..... | 10 |
| 2.2 | Results and Discussion | 11 |
| 3 | Conclusion | 14 |
| 4 | References | 15 |

Tables

| | | |
|------------|---|----|
| Table 2.1: | Preliminary drawdown risk assessment | 10 |
| Table 2.2: | Risk of impact for vegetation with Moderate – High GDV rating | 11 |

Figures

| | | |
|-------------|---|----|
| Figure 1.1: | Project Area and regional context..... | 4 |
| Figure 1.2: | Riparian vegetation types in the Survey Area | 7 |
| Figure 1.3: | Depth to groundwater potentially used by GDV | 8 |
| Figure 1.4: | Predicted drawdown contours..... | 9 |
| Figure 2.1: | GDV vegetation at Moderate and High risk of impact..... | 13 |

Appendices

| | | |
|-------------|---|----|
| Appendix A: | Riparian vegetation types recorded within the Survey Area | 19 |
|-------------|---|----|

1 Background

Atlas Iron Pty Ltd (Atlas Iron) is currently in the process of developing the Sanjiv Ridge Project (formerly the Corunna Downs Project; hereafter referred to as the Study Area in this report), located approximately 33 kilometres (km) south of Marble Bar in the Pilbara region of Western Australia (Figure 1.1). Project development plans involve extending below the water table (BWT) within the Study Area. The Coongan River flows adjacent to the Project, various pools are known to occur within and surrounding the Project area, with several known to support groundwater dependent vegetation (GDV) (Biologic, 2025; Woodman Environmental, 2019). As such, drawdown resulting from the BWT development may impact GDV in the surrounding systems. Discharge of excess groundwater may also be required, which has the potential to alter the hydrological regime and water quality in the receiving environment. Atlas have undertaken work to model the groundwater drawdown across the area and assess hydrological changes to surface waters in the adjacent river systems. With this information now available, Atlas require a preliminary assessment of the risks to GDV from drawdown and other hydrological change/s. The risk assessment will use data from the GDV survey undertaken by Biologic in 2024 (Biologic, 2025).

1.1 Summary of Previous Surveys

An assessment of groundwater drawdown impacts to vegetation in the Study Area was undertaken by Woodman (2018) to assess the likelihood of GDV being present in the vicinity of the Study Area, the potential for groundwater abstraction to impact this vegetation and assess the risk of any impacts occurring. Woodman (2018) assessed five vegetation types as having potential dependence on groundwater, but acknowledged that as obligate and facultative phreatophytes did not occur consistently across the vegetation types extent, that each of these were only GDV in certain areas. Nonetheless, these vegetation types were used for a GDV risk assessment together with groundwater contours, and abstraction contours to identify areas of high and moderate risk.

An assessment of surface water (e.g. pools, flowing water or seepage areas) was also conducted by Stantec (2018), including their permanence (perennial or ephemeral) and likelihood of being dependent on groundwater (unlikely or likely).

770000

777000

784000

7644000

7644000

7637000

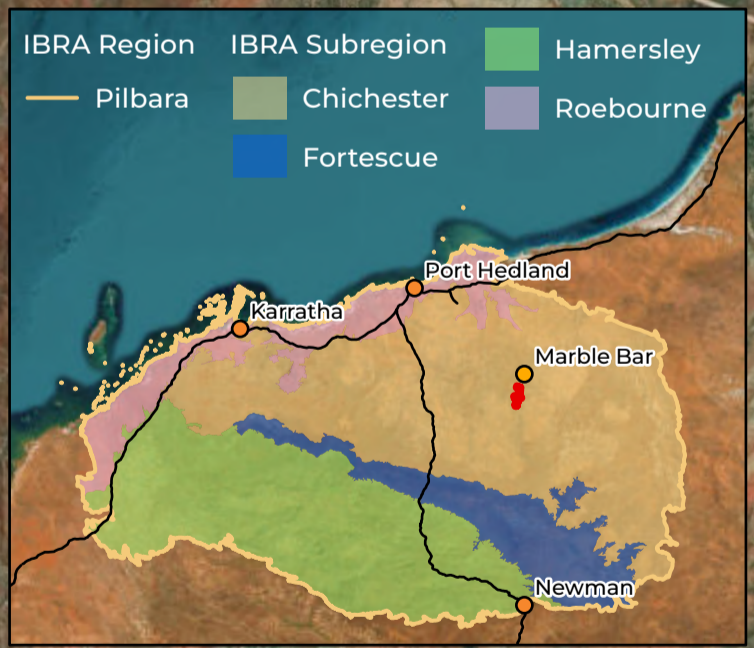
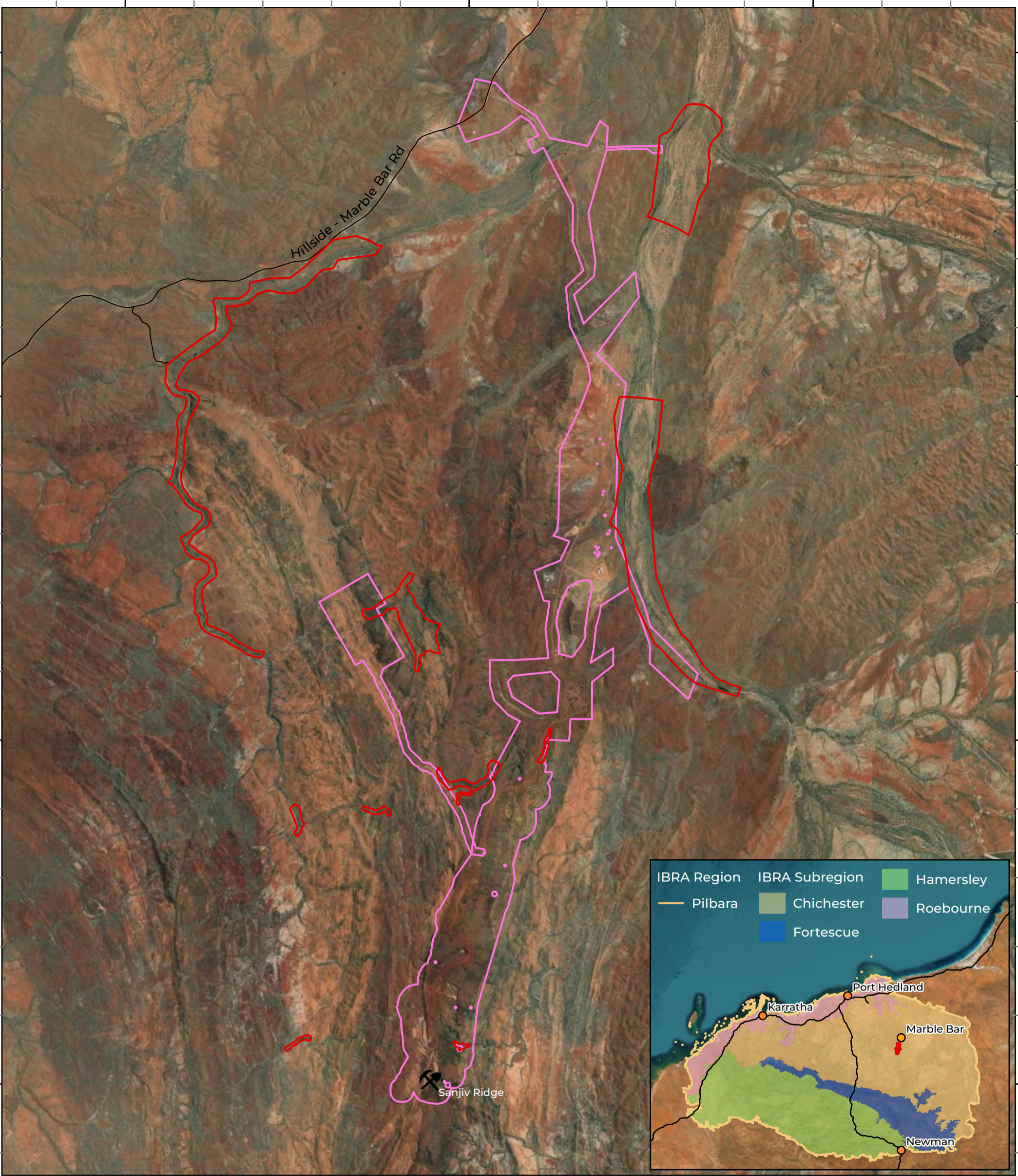
7637000

7630000

7630000

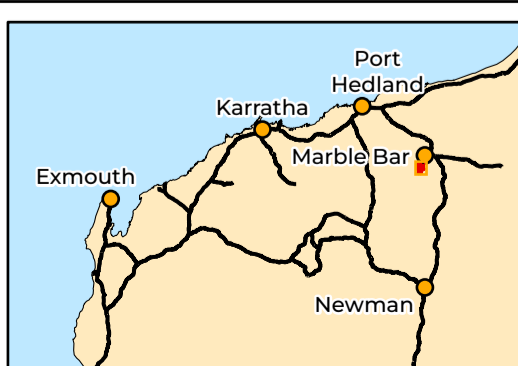
7623000

7623000



- LEGEND**
- Study Area
 - Development Envelope
 - Operating Mine
 - Local Road

Scale 1:75,000
0 1 2 3 Km
Coordinate System: GDA 1994 MGA Zone 50
Transverse Mercator Created: 03/09/2025



ATLAS IRON PTY LTD
Sanjiv Ridge BWT
GDV Risk Assessment

Figure 1.1: Survey Area and regional context

Riparian vegetation types and their level of groundwater dependence were subsequently mapped by Biologic (2025), within select priority areas where there is potential for drawdown impacts to vegetation and/or where GDV was already known to occur (Figure 1.2). This survey concentrated specifically on the pools that are considered to be permanent or semi-permanent, and the area of riparian vegetation categorised as Moderate – High risk from groundwater drawdown impacts based on GDV risk mapping by Woodman (2018). Surface water features mapped by Stantec (2018), as well as any water features encountered during the Biologic (2025) field survey, were incorporated into the groundwater dependence assessment. Biologic mapping was more detailed than the mapping provided prior to mobilisation (Woodman, 2016), and created new sub-types of riparian vegetation based on locations and density of key indicator species as per Biologic’s GDV assessment framework (Appendix A). Level of groundwater dependence was defined according to the GDV indicator taxa present, their density, and presence of surface water and its permanence. Levels are thus a continuum of potential sensitivity to groundwater abstraction/ drawdown, from a low rating (not likely to experience substantial negative impacts) to a high rating (very likely to experience negative impacts from changes in groundwater and surface hydrology).

1.2 Groundwater Dependent Vegetation

Aboveground terrestrial GDE are typically characterised by the presence of flora species that rely on groundwater, i.e., phreatophytes. Phreatophytes may be classified as either obligate or facultative phreatophytes depending on their reliance on groundwater (Eamus *et al.*, 2016):

- Obligate phreatophytes are flora species confined to habitats with access to groundwater;
- Facultative phreatophytes are flora species that can utilise groundwater to satisfy a proportion of their ecological water requirement (EWR) when it is available. However, some individuals may also satisfy their EWR by relying solely on uptake from upper unsaturated soils layers where groundwater is inaccessible.

Obligate phreatophytes are flora species completely or highly dependent on groundwater and are therefore confined to habitats with continual, seasonal, or episodic access to groundwater. As they rely on groundwater to satisfy at least some proportion of their ecological water requirement (EWR) (Eamus *et al.*, 2016), obligate phreatophytes are highly sensitive to changes in groundwater regime and respond negatively to rapid groundwater drawdown. As such, obligate phreatophytes are often the best indicator of consistently shallow groundwater tables, or permanent surface water presence in the Pilbara. Not all phreatophytic species display the same degree of dependency on groundwater and the dependency within species has been shown to vary both spatially and temporally (Eamus *et al.*, 2016), with the hydrological regime of a particular catchment, creek, or river system, a key factor in presence and dependency of a phreatophyte on groundwater.

Previous studies in the Northern Perth Basin indicate that plant roots are unlikely to access moisture beyond a depth of 10 m. If moisture is accessed beyond this depth, it is not likely to form a significant proportion of the plant's water requirements. A study by Loomes (2010) found that no Pilbara riparian species occurred in areas where the groundwater was at a depth greater than 10 m.

Figure 1.3 illustrates areas where depth to groundwater is <10m in association with riparian vegetation mapped by Biologic (2025), while Figure 1.4 illustrates projected groundwater drawdown contours.

770000

777000

784000

7644000

7644000

7637000

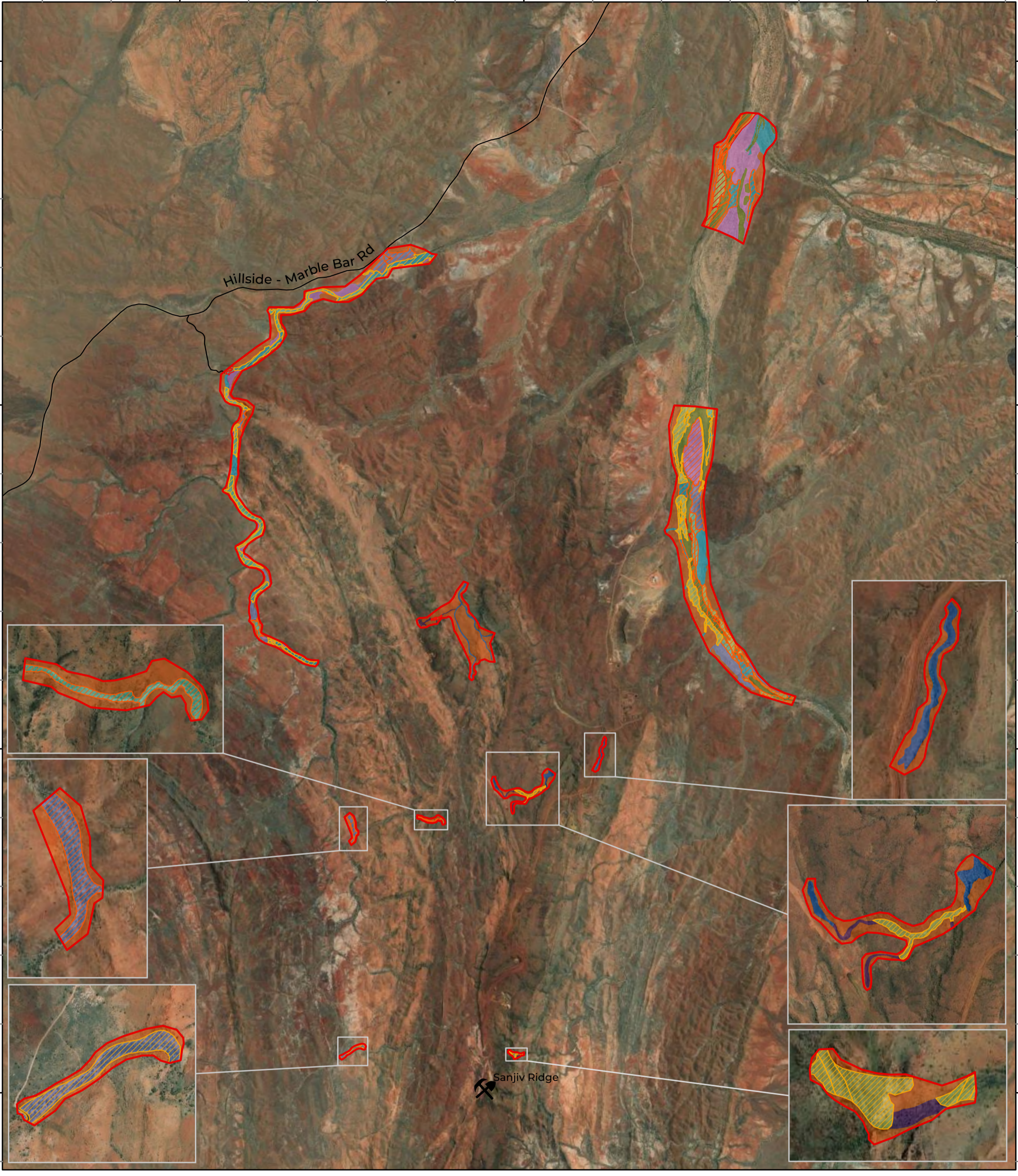
7637000

7630000

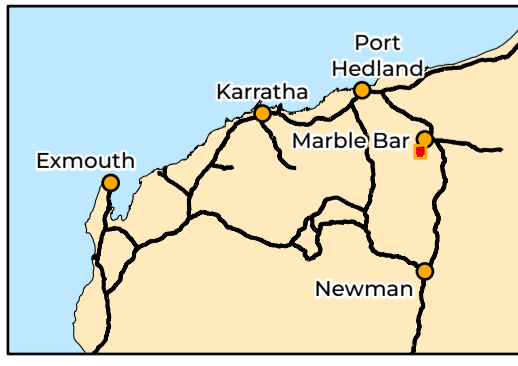
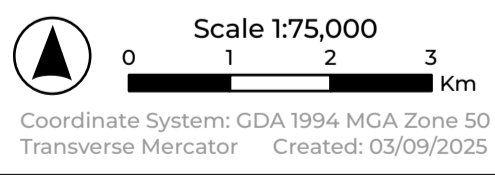
7630000

7623000

7623000



| LEGEND | | |
|----------------|----------------------------|---------|
| Study Area | GDV Rating (Biologic 2025) | MapCode |
| Operating Mine | High | D1 |
| Local Road | Moderate | D2 |
| | Moderate to High | D3 |
| | | D4 |
| | | D5 |
| | | D6 |
| | | D7 |
| | | D8 |



ATLAS IRON PTY LTD
Sanjiv Ridge BWT
GDV Risk Assessment

Figure 1.2: Riparian
 vegetation types in the
 Survey Area

770000

777000

784000

7637000

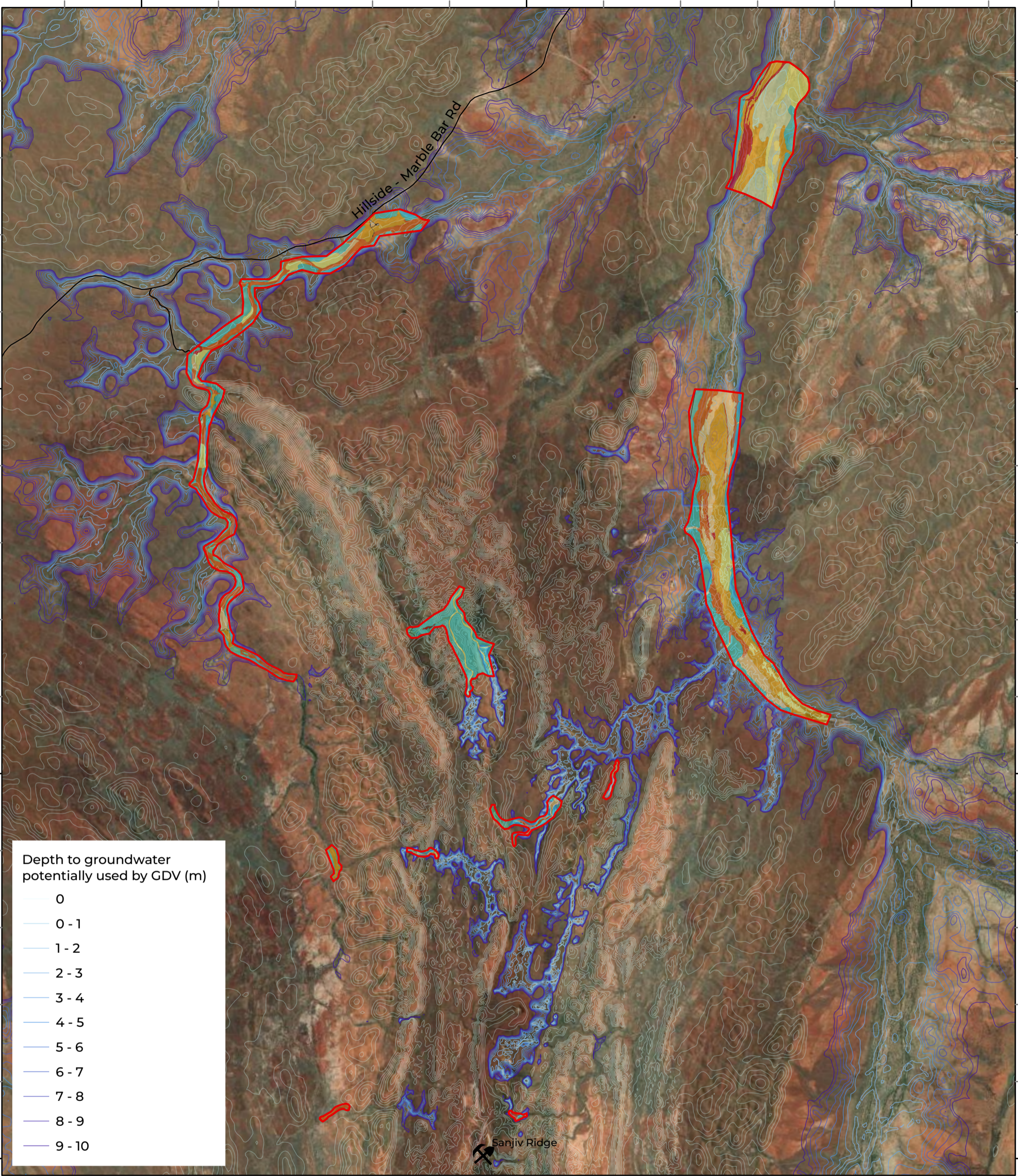
7637000

7630000

7630000

7623000

7623000



Depth to groundwater potentially used by GDV (m)

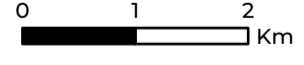
| |
|--------|
| 0 |
| 0 - 1 |
| 1 - 2 |
| 2 - 3 |
| 3 - 4 |
| 4 - 5 |
| 5 - 6 |
| 6 - 7 |
| 7 - 8 |
| 8 - 9 |
| 9 - 10 |

LEGEND

| | | |
|----------------|---------------------|------------|
| Study Area | GDV Category | Negligible |
| Operating Mine | High | None |
| Local Road | Moderate to High | Cleared |
| | Moderate | |
| | Low to Moderate | |
| | Low | |
| | Negligible to Low | |



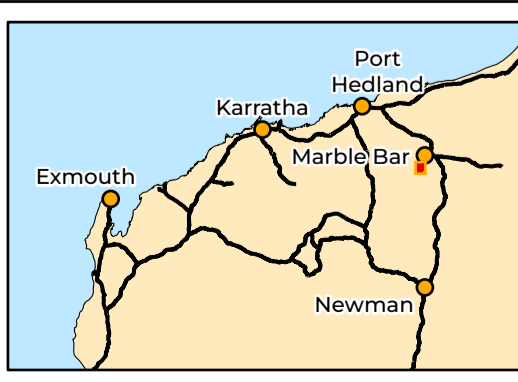
Scale 1:67,000



Coordinate System: GDA 1994 MGA Zone 50 Transverse Mercator Created: 03/09/2025



Biologic



ATLAS IRON PTY LTD
 Sanjiv Ridge BWT
 Groundwater Dependent
 Vegetation Assessment

Figure 1.3: Depth to groundwater potentially used by GDV

770000

777000

784000

7644000

7644000

7637000

7637000

7630000

7630000

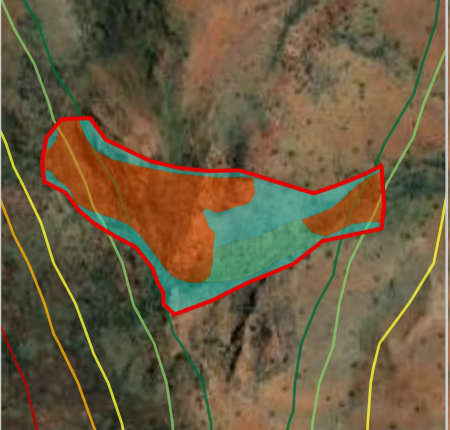
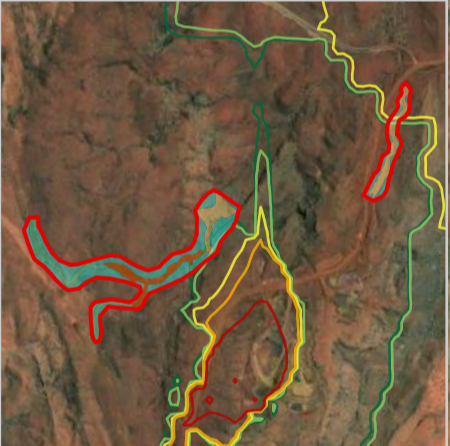
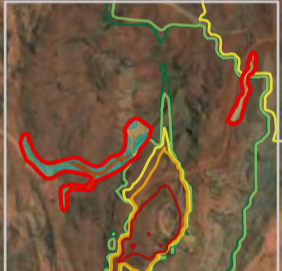
7623000

7623000



Hillside - Marble Bar Rd

Sanjiv Ridge

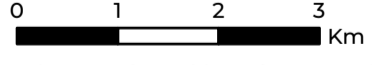


LEGEND

- Study Area
- Operating Mine
- Local Road
- Drawdown Contour**
- 0.5
- 1
- 5
- 10
- 30



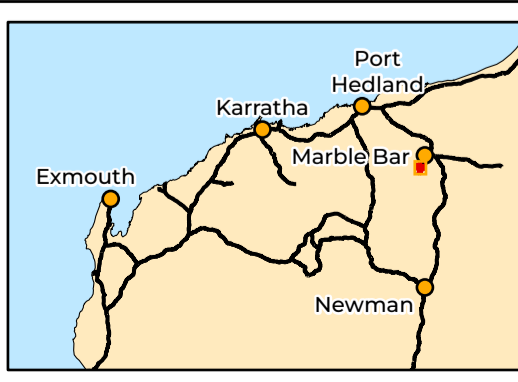
Scale 1:75,000



Coordinate System: GDA 1994 MGA Zone 50
 Transverse Mercator Created: 11/09/2025



Biologic



ATLAS IRON PTY LTD
Sanjiv Ridge BWT
Groundwater Dependent
Vegetation Assessment

Figure 1.4: Predicted drawdown contours

2 GDV Risk Assessment

2.1 Methods

Vegetation mapped by Biologic (2025) was analysed against projected groundwater drawdown contours provided by Atlas. A preliminary risk assessment was undertaken on vegetation polygons with a Moderate to High GDV rating (Biologic, 2025), using a modified version of the rapid risk assessment methods used by Woodman (2018) and Stantec (2018) (Table 2.1). Biologic (2025) assessed the GDV category of both the overall vegetation types and individual vegetation polygons (derived from sampling sites therein); the latter have been used in this GDV risk assessment for increased accuracy. The rapid risk assessment as detailed by these authors was not suitable for the current analysis as detailed drawdown data (i.e. to 0.1 m) is required. The total area (ha) of each GDV vegetation type assessed at each risk level outlined in Table 2.1.

Table 2.1: Preliminary drawdown risk assessment

| Risk of Impact | Projected drawdown |
|----------------|--------------------|
| Low risk | <0.5 m |
| Moderate Risk | 0.5 – 1 m |
| High Risk | 1 – 10 m |
| Extreme Risk | 10 m+ |

The rapid risk assessment described by Woodman (2018) and Stantec (2018) states that areas assessed at moderate risk of impact, where the vegetation does not need to be considered under the EPA factor guidelines, can be considered an acceptable risk. Vegetation that does need to be considered under the EPA factor guidelines is described below (EPA 2016):

- being identified as threatened or priority ecological communities;
- restricted distribution;
- degree of historical impact from threatening processes;
- a role as a refuge; and
- providing an important function required to maintain ecological integrity of a significant ecosystem.

One vegetation type, D3, had affinities with the Pilbara Pools PEC (Biologic, 2025). The Pilbara Pools PEC is listed as Priority 2 and occurs sporadically throughout the Pilbara, with several occurrences in Karijini National Park and other springs and river pools with high water permanence of the Pilbara. The presence of phreatophytic flora, permanent to semi-permanent pools, as well as several of the key relictual/ indicator understorey species suggests that portions of the Survey Area may represent the PEC, but particularly this vegetation type.

Additionally, many pools occurring in the Survey Area are in a gorge, gully or valley wetland landform that is coupled with significant shading, in line with the description of this PEC.

2.2 Results and Discussion

The majority of vegetation assigned a Moderate to High GDV rating was assessed as being at Low risk of impact from drawdown, predominantly due to 99.9% of the vegetation rated as Moderate to High GDV vegetation occurring in areas with <0.5 m projected drawdown (Table 2.2). A total of 0.4 ha was assessed as having moderate risk of impact (0.5 – 1 m projected drawdown) and 0.2 ha assessed as High risk of impact (1 – 10 m projected drawdown). Results of the risk assessment are shown in Table 2.2 and Figure 2.1. It should be noted that the areas stated in Table 2.2 only relate to the parts of each vegetation type given a Moderate to High GDV rating. Vegetation type D7 has not been included in Table 2.2 as none of this vegetation type was rated Moderate to High.

Vegetation type D3 (Pilbara Pools PEC) was assessed as being at low risk of impact from drawdown. None of the other vegetation types assessed at Moderate or High risk of impact needed to be considered under the EPA factor guidelines as per Section 2.1.

Table 2.2: Risk of impact for vegetation with Moderate – High GDV rating

| GDV rating (Biologic, 2025) | Vegetation code type | Risk of drawdown impact | Area at Risk of Impact (ha) |
|-----------------------------|---|-------------------------|-----------------------------|
| High | D1 Ma MI Cv Melaleuca argentea low woodland over Melaleuca linophylla tall sparse shrubland over Cyperus vaginatus mid sparse sedgeland | Low | 2.0 |
| Moderate – High | D2 EcMa(±Ev) MIMgAcpAh CvSs(±Td) <i>Eucalyptus camaldulensis</i> , <i>Melaleuca argentea</i> (± <i>Eucalyptus victrix</i>) mid open woodland to open forest over <i>Melaleuca linophylla</i> , <i>Melaleuca glomerata</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> , <i>Atalaya hemiglauca</i> tall open shrubland over <i>Cyperus vaginatus</i> , <i>Schoenoplectus subulatus</i> (± <i>Typha domingensis</i>) mid sparse sedgeland | Low | 113.9 |
| | | Moderate | 0.4 |
| | | High | 0.2 |
| High | D3 MaEc(±Fb) AciAtp(±AtFv) Ic TdEg <i>Melaleuca argentea</i> , <i>Eucalyptus camaldulensis</i> (± <i>Ficus brachypoda</i>) low-mid open woodland over <i>Acacia coleii</i> var. <i>ileocarpa</i> , <i>Acacia tumida</i> var. <i>pilbarensis</i> (± <i>Adriana tomentosa</i> , <i>Flueggea virosa</i>) tall shrubland over <i>Imperata cylindrica</i> mid tussock grassland over <i>Typha domingensis</i> , <i>Eleocharis geniculata</i> low-mid isolated sedges | Low | 0.2 |

| GDV rating (Biologic, 2025) | Vegetation code type | Risk of drawdown impact | Area at Risk of Impact (ha) |
|-----------------------------|---|-------------------------|-----------------------------|
| Low – Moderate | D4 MaEc MgMI Cv(±Ss) <i>Melaleuca argentea</i> , <i>Eucalyptus camaldulensis</i> low isolated trees to clumps of trees over <i>Melaleuca glomerata</i> , <i>Melaleuca linophylla</i> mid isolated shrubs over <i>Cyperus vaginatus</i> (± <i>Schoenoplectus subulatus</i>) low isolated clumps of sedges | Low | 45.9 |
| Moderate – High | D5 Ec MgAhMI(±Aa) CvSs EbCc <i>Eucalyptus camaldulensis</i> mid open woodland to open forest over <i>Melaleuca glomerata</i> , <i>Atalaya hemiglauca</i> , <i>Melaleuca linophylla</i> (± <i>Acacia ampliceps</i>) mid open shrubland over <i>Cyperus vaginatus</i> , <i>Schoenoplectus subulatus</i> mid sparse sedgeland over <i>Eriachne benthamii</i> , * <i>Cenchrus ciliaris</i> low open tussock grassland | Low | 74.0 |
| Moderate – High | D6 EcEv MgMIAh(±At) CvSs CcEbEm <i>Eucalyptus camaldulensis</i> , <i>Eucalyptus victrix</i> mid open woodland to forest over <i>Melaleuca glomerata</i> , <i>Melaleuca linophylla</i> , <i>Atalaya hemiglauca</i> (± <i>Acacia trachycarpa</i>) tall open shrubland over <i>Cyperus vaginatus</i> , <i>Schoenoplectus subulatus</i> mid isolated sedges over * <i>Cenchrus ciliaris</i> , <i>Eriachne benthamii</i> , <i>Eriachne mucronata</i> low sparse tussock grassland | Low | 77.9 |
| Moderate – High | D8 Ev MgMI(AcpAa) Cv Cc <i>Eucalyptus victrix</i> low open woodland to isolated trees over <i>Melaleuca glomerata</i> , <i>Melaleuca linophylla</i> , (± <i>Acacia coriacea</i> subsp. <i>pendens</i> , <i>Acacia ampliceps</i>) tall shrubland over <i>Cyperus vaginatus</i> mid sparse sedgeland over * <i>Cenchrus ciliaris</i> low sparse tussock grassland | Low | 53.9 |
| Moderate | D9 AtAHPi Te Cc <i>Acacia trachycarpa</i> , <i>Atalaya hemiglauca</i> , <i>Petalostylis labicheoides</i> tall sparse shrubland over <i>Triodia epactia</i> mid sparse hummock grassland over * <i>Cenchrus ciliaris</i> low isolated clumps of tussock grasses | Low | 38.4 |

770000

780000

790000

7640000

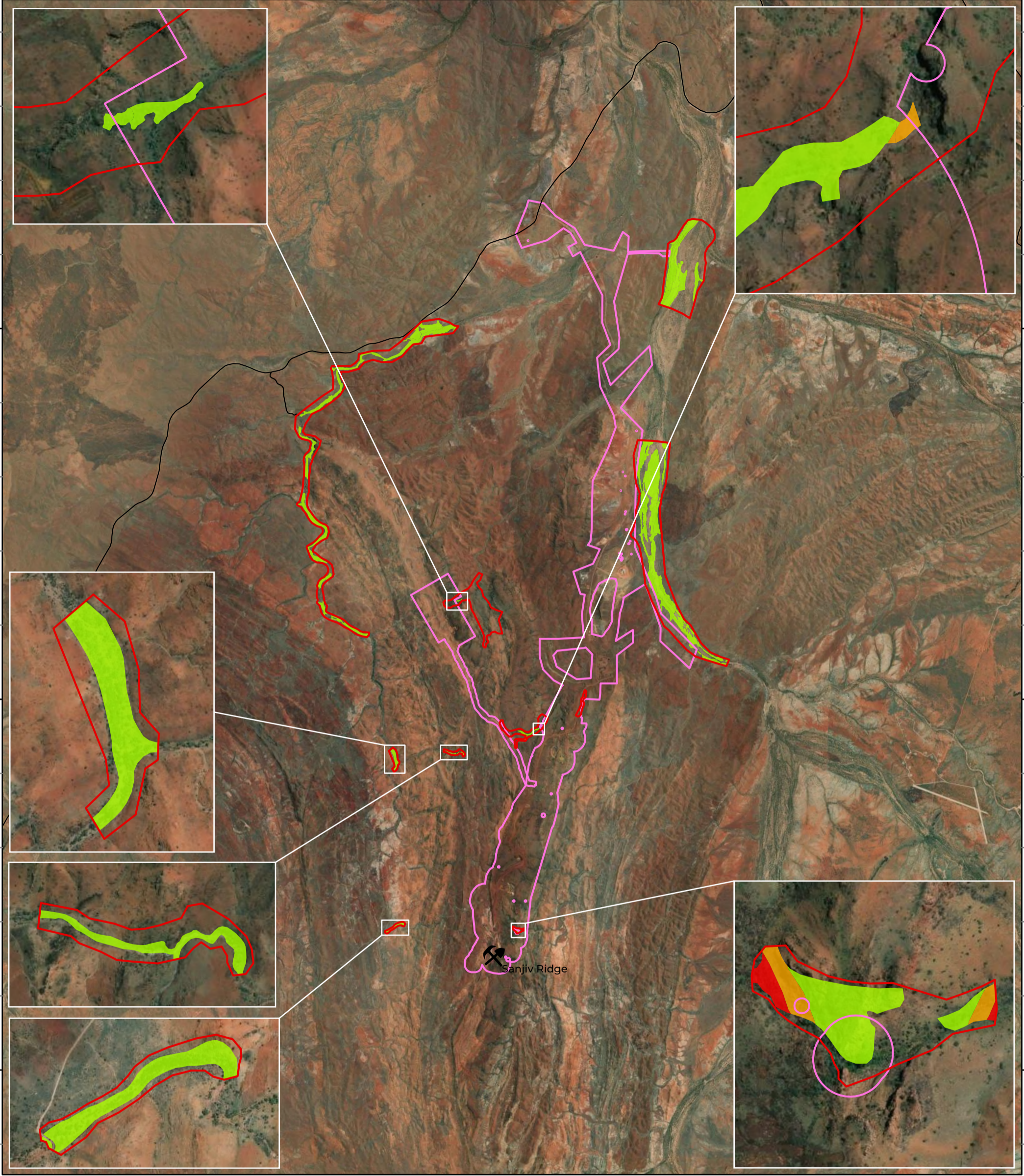
7640000

7630000

7630000

7620000

7620000



LEGEND

- Study Area
- Development Envelope
- Operating Mine
- Local Road

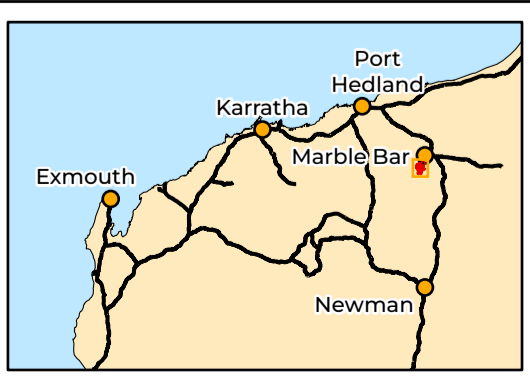
Potential GDV - Risk From Drawdown Impact

- Low Risk of Impact
- Moderate Risk of Impact
- High Risk of Impact

Scale 1:100,000

0 2 4 Km

Coordinate System: GDA 1994 MGA Zone 50
Transverse Mercator Created: 09/09/2025



ATLAS IRON PTY LTD
Sanjiv Ridge BWT
Groundwater Dependent
Vegetation Assessment

Figure 2.1: GDVs at Moderate and High risk of impact

3 Conclusion

This analysis evaluated the risk of projected groundwater drawdown impacts to areas of vegetation with a Moderate to High GDV rating (Biologic, 2025). Areas of vegetation types D1, D2, D3, D4, D5, D6, D8 and D9 with a Moderate to High GDV rating were assessed as low risk of impact from groundwater drawdown due to their occurrence in areas of <0.5 m proposed drawdown. A total of 0.4 ha of D2 was assessed at Moderate risk of impact (0.5 – 1 m projected drawdown), representing 0.1% of all vegetation assigned a GDV rating of Moderate – High. A further 0.2 ha of D2 was assessed at High risk of impact (1 – 10 m projected drawdown; <0.1% of all vegetation assigned a GDV rating of Moderate – High.

None of the vegetation types were identified as being at Extreme risk of impact. Vegetation of the Pilbara Pools PEC was assessed at Low risk of impact.

Ongoing monitoring is recommended within these vegetation types representing GDV to assess impact of groundwater drawdown.

4 References

- Biologic. (2025). *Sanjiv Ridge: BWT groundwater dependent vegetation assessment*. Unpublished report prepared for Atlas Iron Pty Ltd. Biologic Environmental Survey, East Perth, WA.
- Eamus, D., Fu, B., Springer, A. E., & Stevens, L. E. (2016). Groundwater dependent ecosystems: Classification, identification techniques and threats. In A. J. Jakeman, O. Barreteau, R. J. Hunt, J. D. Rinaudo, & A. Ross (Eds.), *Integrated Groundwater Management: Concepts, Approaches and Challenges* (pp. 313-346). Cham: Springer International Publishing.
- Loomes, R. (2010). *Determining water level ranges of Pilbara riparian species* (G. o. W. Australia Ed.). Perth, Western Australia: Government of Western Australia.
- Stantec. (2018). *Corunna Downs Project Hydrogeological Investigation*. Unpublished report prepared for Atlas Iron. Stantec Australia, Jolimont, WA.
- Woodman. (2016). *Corunna Downs project level 2 flora and vegetation assessment*. Unpublished report prepared for Atlas Iron Ltd. Woodman Environmental Consulting, Applecross, WA.
- Woodman. (2018). *Corunna Downs Project: Assessment of Groundwater Drawdown Impacts to Vegetation*. Unpublished report prepared for Atlas Iron Ltd. Woodman Environmental Consulting, Applecross, WA.
- Woodman Environmental. (2019). *Corunna Downs Project: Assessment of Groundwater Drawdown Impacts to Vegetation*. Unpublished report prepared for Atlas Iron. Woodman Environmental, Applecross, WA.




Appendix A: Biologic GDV assessment framework




| Rating | General site features | Key/most common indicator species and density | | |
|----------|--|---|---|---|
| | | Phreatophytic/Riparian | Mesophytic | Hydrophytic |
| High | <p>Presence of mature obligate phreatophytes (i.e., <i>Melaleuca argentea</i>) with permanent to semi-permanent water bodies present.</p> <p>A high diversity and density of mesophytic and hydrophytic taxa.</p> <p>Pooling present; evidence of seepage</p> | <p>Abundant:</p> <ul style="list-style-type: none"> <i>Eucalyptus camaldulensis</i> <i>Melaleuca argentea</i> <p>Present:</p> <ul style="list-style-type: none"> <i>Sesbania formosa</i> | <p>Abundant to Common:</p> <ul style="list-style-type: none"> <i>Melaleuca</i> species <i>Ficus aculeata</i> <p>Present:</p> <ul style="list-style-type: none"> <i>Acacia ampliceps</i> <i>Cullen leucanthum</i> <i>Ficus virens</i> <i>Imperata cylindrica</i> <i>Myoporum monatanum</i> <i>Samolus</i> species | <p>Abundant to Common:</p> <ul style="list-style-type: none"> <i>Potamogeton</i> species <i>Sonchus hydrophyllus</i> <p>Present:</p> <ul style="list-style-type: none"> <i>Juncus krausii</i> <i>Livistona alfredii</i> <i>Lobelia arnhemiaca</i> <i>Samolus</i> sp. Millstream |
| Moderate | <p>Presence of mature facultative phreatophytes (with potential for semi-mature to young obligate phreatophytes).</p> <p>Semi-permanent water bodies may be present. A moderate diversity and density of mesophytic and hydrophytic taxa.</p> <p>+/- Pooling present or evidence of pools; +/- evidence of seepage</p> | <p>Abundant:</p> <ul style="list-style-type: none"> <i>Eucalyptus victrix</i> <i>Sesbania cannabina</i> <p>Common:</p> <ul style="list-style-type: none"> <i>Eucalyptus camaldulensis</i> <i>Melaleuca argentea</i> | <p>Abundant:</p> <ul style="list-style-type: none"> <i>Melaleuca glomerata</i> <p>Common to Present:</p> <ul style="list-style-type: none"> <i>Melaleuca</i> species <i>Ficus aculeata</i> <i>Plumbago zeylanica</i> <i>Atalaya hemiglauc</i> <i>Dodonaea lanceolata</i> <i>Gymnanthera cunninghamii</i> <i>Adriana tomentosa</i> <i>Tinospora smilacina</i> | <p>Abundant:</p> <ul style="list-style-type: none"> <i>Ammannia baccifera</i> <i>Chara</i> species <i>Najas</i> species <i>Typha domingensis</i> <p>Present:</p> <ul style="list-style-type: none"> <i>Cyperus</i> species <i>Potamogeton</i> species <i>Samolus repens</i> <i>Schenkia</i> species <i>Schoenoplectus subulatus</i> <i>Sonchus hydrophyllus</i> |




| Rating | General site features | Key/most common indicator species and density | | |
|------------|--|---|--|--|
| | | Phreatophytic/Riparian | Mesophytic | Hydrophytic |
| Low | <p>Scattered presence of facultative and/or presence of mature vadophytic (i.e., <i>Eucalyptus victrix</i>).</p> <p>Ephemeral to semi-permanent water bodies may be present. Low diversity and density of mesophytic and hydrophytic taxa.</p> | <p>Abundant to Common:</p> <ul style="list-style-type: none"> <i>Acacia citrinoviridis</i> <i>Acacia coriacea</i> subsp. <i>pendens</i> <i>Eucalyptus victrix</i> <i>Stylobasium spathulatum</i> <p>Present:</p> <ul style="list-style-type: none"> <i>Acacia sclerosperma</i> <i>Eucalyptus camaldulensis</i> <i>Eucalyptus xerothermica</i> <i>Melaleuca argentea</i> <i>Sesbania cannabina</i> <i>Terminalia circumalata</i> | <p>Abundant to Common:</p> <ul style="list-style-type: none"> <i>Cyprus vaginatus</i> <i>Eulalia aurea</i> <i>Stemodia grossa</i> <p>Present:</p> <ul style="list-style-type: none"> <i>Abutilion amplum</i> <i>Melaleuca glomerata</i> <i>Plumbago zeylanica</i> <i>Atalaya hemiglauca</i> | <p>Present:</p> <ul style="list-style-type: none"> <i>Ammannia baccifera</i> <i>Chara</i> species <i>Fimbristylis microcarya</i> <i>Marsilea exarata</i> <i>Marsilea hirsuta</i> <i>Myriophyllum</i> species <i>Najas</i> species <i>Schoenoplectiella laevis</i> <i>Typha domingensis</i> <i>Wahlenbergia tumidifructa</i> |
| Negligible | <p>Minor to medium flowlines and drainage areas. Mostly inflow dependent species. Riparian species (i.e., <i>Acacia tumida</i> var. <i>pilbarensis</i>) are prevalent and dominant.</p> | <p>No groundwater indicator species present or not present at the density that would indicate presence of soil moisture. Mostly mature vadophytic taxa, with riparian tree species (i.e., <i>Eucalyptus xerothermica</i>, <i>Corymbia hamersleyana</i>). High diversity of Riparian species abundant and common.</p> | | |
| None | <p>Minor flowlines. Occurs on upland habitats (i.e., hummock grassland on stony hills and slopes) that are highly unlikely to have to access to or be reliant on groundwater presence.</p> | <p>None present. Riparian species may be abundant, common and present.</p> | | |

Please Note: 'Present' refers to any cover density, though is usually 0.1%; 'Common' is cover density from 0.2% to 10%; 'Abundant' is 11% cover density and higher.

Appendix B: Riparian vegetation types (Biologic, 2025)

| Vegetation Code & Description | Key GDV species | Representative Photo (s) | |
|---|---|---|--|
| GDV Rating: High | | | |
| <p>D1 Ma MI Cv <i>Melaleuca argentea</i> low woodland over <i>Melaleuca linophylla</i> tall sparse shrubland over <i>Cyperus vaginatus</i> mid sparse sedgeland</p> | <ul style="list-style-type: none"> • <i>Melaleuca argentea</i> (High) • <i>Melaleuca linophylla</i> (Moderate) • <i>Cyperus vaginatus</i> (Low) |  | |
| <p>D3 MaEc(±Fb) AciAtp(±AtFv) Ic TdEg <i>Melaleuca argentea</i>, <i>Eucalyptus camaldulensis</i> (±<i>Ficus brachypoda</i>) low-mid open woodland over <i>Acacia colei</i> var. <i>ileocarpa</i>, <i>Acacia tumida</i> var. <i>pilbarensis</i> (±<i>Adriana tomentosa</i>, <i>Flueggea virosa</i>) tall shrubland over <i>Imperata cylindrica</i> mid tussock grassland over <i>Typha domingensis</i>, <i>Eleocharis geniculata</i> low-mid isolated sedges</p> | <ul style="list-style-type: none"> • <i>Imperata cylindrica</i> (High) • <i>Adriana tomentosa</i> (Moderate) • <i>Eleocharis geniculata</i> (Moderate) • <i>Eucalyptus camaldulensis</i> (Moderate) • <i>Flueggea virosa</i> (Moderate) • <i>Melaleuca argentea</i> (Moderate) • <i>Typha domingensis</i> (Low) |  | |
| GDV Rating: Moderate to High | | | |
| <p>D2 EcMa(±Ev) MIMgAcpAh CvSs(±Td) <i>Eucalyptus camaldulensis</i>, <i>Melaleuca argentea</i> (±<i>Eucalyptus victrix</i>) mid open woodland to open forest over <i>Melaleuca linophylla</i>, <i>Melaleuca glomerata</i>, <i>Acacia coriacea</i> subsp. <i>pendens</i>, <i>Atalaya hemiglauca</i> tall open shrubland over <i>Cyperus vaginatus</i>, <i>Schoenoplectus subulatus</i> (±<i>Typha domingensis</i>) mid sparse sedgeland</p> | <ul style="list-style-type: none"> • <i>Eucalyptus camaldulensis</i> (Moderate to High) • <i>Melaleuca argentea</i> (Moderate to High) • <i>Atalaya hemiglauca</i> (Moderate) • <i>Eucalyptus victrix</i> (Low to Moderate) • <i>Melaleuca linophylla</i> (Moderate) • <i>Schoenoplectus subulatus</i> (Moderate) • <i>Acacia coriacea</i> subsp. <i>pendens</i> (Low) • <i>Cyperus vaginatus</i> (Low) • <i>Melaleuca glomerata</i> (Low) • <i>Typha domingensis</i> (Low) |  | |

| Vegetation Code & Description | Key GDV species | Representative Photo (s) | |
|--|---|---|--|
| <p>D5 Ec MgAhMI(±Aa) CvSs EbCc</p> <p><i>Eucalyptus camaldulensis</i> mid open woodland to open forest over <i>Melaleuca glomerata</i>, <i>Atalaya hemiglauca</i>, <i>Melaleuca linophylla</i> (±<i>Acacia ampliceps</i>) mid open shrubland over <i>Cyperus vaginatus</i>, <i>Schoenoplectus subulatus</i> mid sparse sedgeland over <i>Eriachne benthamii</i>, *<i>Cenchrus ciliaris</i> low open tussock grassland</p> | <ul style="list-style-type: none"> • <i>Acacia ampliceps</i> (High) • <i>Eucalyptus camaldulensis</i> (Moderate to High) • <i>Atalaya hemiglauca</i> (Moderate) • <i>Melaleuca glomerata</i> (Moderate) • <i>Melaleuca linophylla</i> (Moderate) • <i>Schoenoplectus subulatus</i> (Moderate) • <i>Cyperus vaginatus</i> (Low) |  | |
| GDV Rating: Low to Moderate | | | |
| <p>D4 MaEc MgMI Cv(±Ss)</p> <p><i>Melaleuca argentea</i>, <i>Eucalyptus camaldulensis</i> low isolated trees to clumps of trees over <i>Melaleuca glomerata</i>, <i>Melaleuca linophylla</i> mid isolated shrubs over <i>Cyperus vaginatus</i> (±<i>Schoenoplectus subulatus</i>) low isolated clumps of sedges</p> | <ul style="list-style-type: none"> • <i>Melaleuca linophylla</i> (Moderate) • <i>Schoenoplectus subulatus</i> (Moderate) • <i>Cyperus vaginatus</i> (Low) • <i>Eucalyptus camaldulensis</i> (Low) • <i>Melaleuca argentea</i> (Low) • <i>Melaleuca glomerata</i> (Low) |  | |
| <p>D6 EcEv MgMIAh(±At) CvSs CcEbEm</p> <p><i>Eucalyptus camaldulensis</i>, <i>Eucalyptus victrix</i> mid open woodland to forest over <i>Melaleuca glomerata</i>, <i>Melaleuca linophylla</i>, <i>Atalaya hemiglauca</i> (±<i>Acacia trachycarpa</i>) tall open shrubland over <i>Cyperus vaginatus</i>, <i>Schoenoplectus subulatus</i> mid isolated sedges over *<i>Cenchrus ciliaris</i>, <i>Eriachne benthamii</i>, <i>Eriachne mucronata</i> low sparse tussock grassland</p> | <ul style="list-style-type: none"> • <i>Eucalyptus camaldulensis</i> (High) • <i>Atalaya hemiglauca</i> (Moderate) • <i>Eucalyptus victrix</i> (Moderate) • <i>Melaleuca glomerata</i> (Moderate) • <i>Melaleuca linophylla</i> (Moderate) • <i>Schoenoplectus subulatus</i> (Moderate) • <i>Cyperus vaginatus</i> (Low) |  | |

| Vegetation Code & Description | Key GDV species | Representative Photo (s) | |
|--|--|---|--|
| <p>D8 Ev MgMI(AcpAa) Cv Cc</p> <p><i>Eucalyptus victrix</i> low open woodland to isolated trees over <i>Melaleuca glomerata</i>, <i>Melaleuca linophylla</i>, (\pm<i>Acacia coriacea</i> subsp. <i>pendens</i>, <i>Acacia ampliceps</i>) tall shrubland over <i>Cyperus vaginatus</i> mid sparse sedgeland over *<i>Cenchrus ciliaris</i> low sparse tussock grassland</p> | <ul style="list-style-type: none"> • <i>Acacia ampliceps</i> (High) • <i>Melaleuca glomerata</i> (Moderate) • <i>Melaleuca linophylla</i> (Moderate) • <i>Acacia coriacea</i> subsp. <i>pendens</i> (Low) • <i>Eucalyptus victrix</i> (Low) • <i>Cyperus vaginatus</i> (Low) |  | |
| GDV Rating: Low | | | |
| <p>D7 TcEv(\pmEc) MgAhFb Cv EmTspCa Te</p> <p><i>Terminalia circumalata</i>, <i>Eucalyptus victrix</i> (\pm<i>Eucalyptus camaldulensis</i>) low open woodland over <i>Melaleuca glomerata</i>, <i>Atalaya hemiglauca</i>, <i>Ficus brachypoda</i> tall open shrubland over <i>Cyperus vaginatus</i> mid isolated sedges over <i>Eriachne mucronata</i>, <i>Themeda</i> sp. indet, <i>Cymbopogon ambiguus</i> low sparse tussock grassland over <i>Triodia epactia</i> low isolated hummock grasses</p> | <ul style="list-style-type: none"> • <i>Atalaya hemiglauca</i> (Moderate) • <i>Eucalyptus camaldulensis</i>(Moderate) • <i>Cyperus vaginatus</i> (Low) • <i>Eucalyptus victrix</i> (Low) • <i>Melaleuca glomerata</i> (Low) • <i>Terminalia circumalata</i> (Low) |  | |
| GDV Rating: Negligible | | | |
| <p>D9 AtAhPI Te Cc</p> <p><i>Acacia trachycarpa</i>, <i>Atalaya hemiglauca</i>, <i>Petalostylis labicheoides</i> tall sparse shrubland over <i>Triodia epactia</i> mid sparse hummock grassland over *<i>Cenchrus ciliaris</i> low isolated clumps of tussock grasses</p> | <ul style="list-style-type: none"> • <i>Atalaya hemiglauca</i> (Low) |  | |

| Vegetation Code & Description | Key GDV species | Representative Photo (s) |
|---|--|---|
| <p>D10 El AtpAcEs Em Te <i>Eucalyptus leucophloia</i> low isolated trees over <i>Acacia tumida</i> var. <i>pilbarensis</i>, <i>Acacia citrinoviridis</i>, <i>Ehretia saligna</i> tall sparse shrubland over <i>Eriachne mucronata</i> low isolated tussock grasses over <i>Triodia epactia</i> low isolated hummock grasses</p> | <ul style="list-style-type: none"> <i>Acacia citrinoviridis</i> (Negligible to Low) |  |