GLEVAN CONSULTING

Phytophthora Dieback Desktop Assessment for the Katanning Gold Project and Outer Survey Area

Prepared for Western Environmental Approvals Pty Ltd

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26 Forrest Street, Pinjarra WA 6208

P: 1300 453 826

E: mail@glevan.com.au

W: www.glevan.com.au

This report has been prepared in accordance with the scope of work agreed between Western Environmental Approvals Pty Ltd and Glevan Consulting and contains results and recommendations specific to the agreement. Results and recommendations in this report should not be referenced for other projects without the written consent of Glevan Consulting.

Procedures and guidelines stipulated in various manuals, particularly Phytophthora Dieback Interpreters Manual for lands managed by the Department (DBCA), are applied as the base methodology used by Glevan Consulting in the delivery of the services and products required by this scope of work. These guidelines, along with overarching peer review and quality standards ensure that all results are presented to the highest standard.

Executive Summary

Glevan Consulting was commissioned by Western Environmental Approvals Pty Ltd, on behalf of Ausgold, to undertake a Phytophthora Dieback Desktop Assessment for the Katanning Gold Project (KGP) and surrounding Outer Survey Area. Collectively, these two areas of interest are referred to as the Project Area. The KGP covers 27.91 km² and the Outer Survey Area covers 286.44 km², with both areas occurring within a predominantly cleared agricultural landscape containing scattered pockets of remnant native vegetation. The assessment was based on a review of existing environmental and spatial datasets and did not include field verification.

The Desktop Assessment identified that susceptible vegetation is present within and surrounding the Project Area, including *Banksia* species, *Petrophile seminuda, Xanthorrhoea drummondii* and *Verticordia huegelii* var. *tridens*. However, the limited extent of remnant vegetation, reduced abundance of susceptible taxa, lower rainfall conditions and extensive historical clearing and agricultural land use are likely to reduce the reliability of vegetation condition as an indicator of Phytophthora Dieback presence or absence.

A review of the DBCA-082 dataset, Vegetation Health Services sample database and Glevan Consulting records did not identify any known Phytophthora Dieback records within the Project Area. The nearest known recovery of *Phytophthora cinnamomi* is approximately 53 km from the Project Area, indicating that natural disease dispersal from a pre-existing infestation is unlikely. The Project Area occurs within the lower end of the vulnerable rainfall zone, with average annual rainfall of 426.5 mm recorded at Katanning Station, meaning widespread active infestation across upland areas is considered unlikely.

The overall likelihood of Phytophthora Dieback being present and active within the Project Area is assessed as low. Localised risk remains higher in water-gaining environments, including drainage lines and waterways associated with Datatine Gully, and where vehicles, machinery or basic raw materials are introduced from Infested or Unknown Dieback status areas. Based on the reviewed data, Glevan Consulting does not consider in-field Phytophthora Dieback assessment to be required at this stage. Precautionary hygiene measures are recommended, including maintaining a Raw Material Register, applying brushing or washdown procedures where required, and ensuring vehicles and machinery remain clean and free of soil and plant material.

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Glossary

Assessment Area	The portion of the Project Area where Phytophthora occurrence assessment is possible or will be possible after vegetation recovery.
Biomass	The total quantity or weight (density) of organisms in a given area.
Buffer	The area between the edge of visible disease symptoms and demarcation.
Clean On Entry	A requirement at a defined, signposted point where entering machinery and vehicles are to be free of soil, plant, and other material to minimise the risk of spreading weeds, pests and diseases.
DBCA	Department of Biodiversity, Conservation and Attractions.
Demarcation	The physical installation and representation of boundaries between hygiene categories after interpretation.
Phytophthora Dieback	The disease of plants caused by infection by the soil-borne organisms of the genus *Phytophthora*, of which *P. cinnamomi* is the most widespread and destructive.
Disease Impact	The degree of harm caused by Phytophthora Dieback (high, moderate, low).
Excluded Area	An area of high disturbance where natural vegetation is unlikely to recover.
Host	A plant species that may be Infested with the pathogen but not cause disease.
Indicator Species	Plant species susceptible to Phytophthora disease and reliably show early symptoms.
Infection	The invasion of the disease to an individual plant and not the population.
Infestation	The invasion of the disease into a population of plants.
Infested	An area that a registered interpreter has determined is expressing disease symptoms that indicate the presence of the pathogen *P. cinnamomi*.
Incipient Disease	A disease that is not visibly symptomatic.
Interpretation	Determining disease presence or absence in natural ecosystems using observable factors.
Not Yet Resolved	Phytophthora occurrence diagnosis cannot be made because of inconsistent evidence.
Pathogen	Phytophthora species.
Phytophthora Occurrence Assessment	The entire scope of work that relates to the delivery of a Phytophthora occurrence map and report.
Permanently Uninterpretable	A natural area with inadequate visible symptoms present to make a diagnosis.
Project Area (Study Area)	The proponent's area of interest, including the area where disturbance activities could occur, including access and egress to activity areas.
Protectable Area	Portions of the Project Area over which hygiene management rules for the plant pathogen *Phytophthora*, including clean on entry, will apply. These areas are generally free of disease.
Susceptible	Likely or liable to be harmed by Phytophthora pathogen.
Uninfested	An area that a registered interpreter has determined may be free of plant disease symptoms that indicate the presence of the pathogen *P. cinnamomi*.
Temporarily Uninterpretable	A naturally vegetated area that has had disturbance and is likely to recover from that disturbance in the short term.
Unprotectable	A disease-free area that is likely to become infested within a given time.
Vector	Any agent that acts as a carrier or transporter.

1. Introduction

Ausgold Limited (Ausgold) is currently in the early planning stages of a gold mine within the Shire of Katanning and the Shire of Kent, referred to as the Katanning Gold Project. As part of the preliminary environmental due diligence process, Glevan Consulting was commissioned by W Western Environmental Approvals Pty Ltd, on the behalf of Ausgold, to prepare a Desktop Assessment for Phytophthora Dieback across the proposed mining envelope.

This Desktop Assessment provides details for two focus areas. The first focus area, Katanning Gold Project (KGP), which reflects the freehold land owned by Ausgold covers a total of 27.91 km², comprised of mainly farmland with small pockets of vegetation and the Woorgabup Nature Reserve in the centre. Due to the limited amount of vegetation and the expected reduced interpretability of the area, a second focus area has been included to encompass a 10-kilometre radius around the initial assessment area to provide a more detailed review of the area and its surrounds (Outer Survey Area). The Outer Survey Area covers a total of 286.44 km² of farmland with sporadic bushland pockets. Collectively, these two areas of interest are referred to as the Project Area. The Project Area is situated 26 – 36 km northeast of the Katanning township. The Project Area resides within the Shire of Katanning and the Shire of Kent, with the Outer Survey Area crossing over into the Shire of Dumbleyung (Figure 1).

This Desktop Assessment provides a spatial overview of the native vegetation types and susceptibility within the Project Area, climatic factors relevant to the risk of *Phytophthora cinnamomi* establishment and spread of Phytophthora Dieback and known Phytophthora Dieback occurrences. The outcomes are intended to guide future field survey design, management planning, and on-ground hygiene measures to minimise the risk of introducing or spreading the pathogen during exploration activities.

1.1. Scope

This Desktop Assessment was undertaken to identify and evaluate factors relevant to Phytophthora Dieback within the Project Area. This report aims to:

- Identify vegetation communities within the Project Area that are susceptible to Phytophthora Dieback,
- Assess the likelihood and potential extent of Phytophthora Dieback presence within the project boundaries based on environmental and spatial datasets,

- Assess the likelihood and potential for introduction and dispersal of Phytophthora Dieback within the Project Area based on proposed activities, and environmental and spatial datasets,
- Provide recommendations for field assessments and hygiene management to support planning for future on-ground surveys.

This assessment is based solely on existing environmental and spatial datasets and does not include field verification.

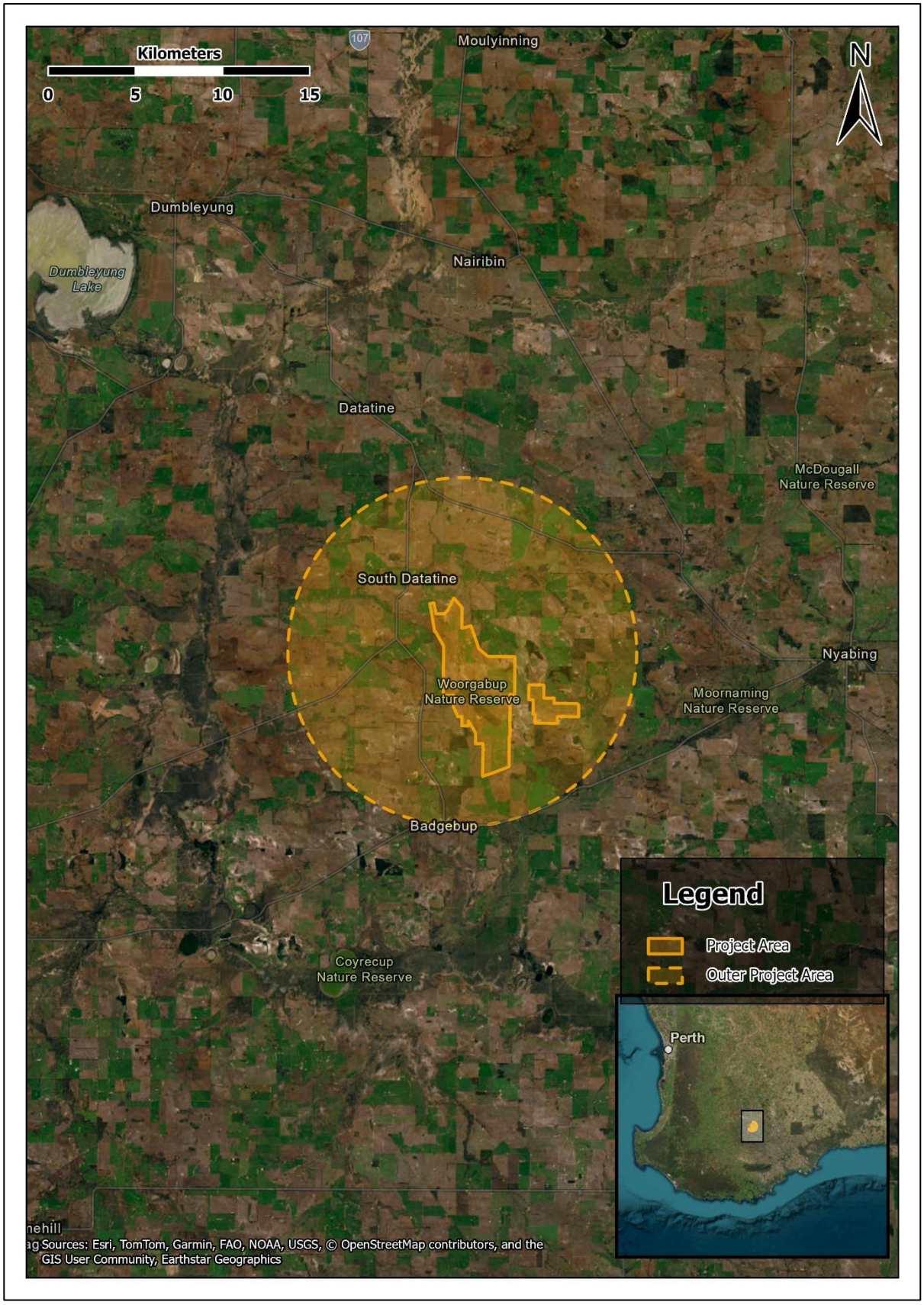

Figure 1 – Project Area location.

2. Background – Phytophthora Species and Dieback Disease

Thousands of Australian native plant species are susceptible to Phytophthora Dieback (Dieback), a disease caused by the pathogen *P. cinnamomi* and other *Phytophthora* species. Whilst many root pathogens that cause disease are present within the Australian landscape, *P. cinnamomi* has caused the most significant impact to date and poses the biggest threat (Commonwealth of Australia, 2018). This disease is a significant threat to Australia's biodiversity, placing important plant species at risk of death, local extirpation or even extinction. Its impact on plant communities can also result in major declines in some insect, bird and animal species due to the loss of shelter, nesting sites and food sources. Phytophthora Dieback can cause permanent damage to ecosystems. Once an area is Infested with the pathogen, eradication is usually impossible. Awareness that human activity can easily spread the pathogen will help prevent an increase in the extent of this disease (Commonwealth of Australia, 2018).

P. cinnamomi is one of at least 32 *Phytophthora* species that exist in Australia. Whilst *P. cinnamomi* has to date had the largest impact on the Western Australia vulnerable zone, other destructive *Phytophthora* species are emerging in Australia such as *P. arenaria, P. constricta, P. cryptogea, P. elongata, P. gregata, P. megasperma* and *P. multivora. P. multivora* is notable in having been linked to declines in vegetation within the Western Australian vulnerable zone (Commonwealth of Australia, 2018).

P. cinnamomi is a microscopic water mould that belongs to the class Oomycetes. Oomycetes organisms are filamentous and absorptive and reproduce both sexually and asexually. *Phytophthora* species are considered parasitic, behaving largely as a necrotrophic pathogen causing damage to the host plant's root tissues because of infection and invasion (Department of Parks and Wildlife, 2015). The pathogen infects a host when it enters at a cellular level and damages the cell structure.

Phytophthora Dieback is the result of interaction between three physical components forming a 'disease triangle': the pathogen (*Phytophthora* species), the environment and the host. All three components are needed for the disease to develop over time. A population of hosts is made up of susceptible, infected and immune or resistant individuals.

The relationship between the presence of *Phytophthora* and the development of Dieback disease is variable based on the susceptibility of native plant species and the different environmental characteristics, landform types and rainfall zones across bioregions.

The plant host is a highly variable part of the disease triangle. Assessment sites may range from having no susceptible hosts present through to almost all plants present in the environment demonstrating high levels of susceptibility to *P. cinnamomi*. Over 2000 potential host species for the *P. cinnamomi* pathogen exist in Western Australia alone (Commonwealth of Australia, 2018). Skilled Dieback Interpreters are able to observe and interpret disease presence using hundreds of different susceptible plant species (referred to as indicator species) across multiple vegetation communities. Interpreters are able to recognise when disease detection is not possible due to insufficient hosts being present within an area.

Within the vulnerable zone of Western Australia, three main family groups are regarded as highly susceptible to Phytophthora Dieback disease:

1. *Proteaceae*
2. *Ericaceae*
3. *Xanthorrhoeaceae.*

The Proteaceae plant family demonstrates a high level of susceptibility to the *P. cinnamomi* pathogen. Genera such as *Banksia*, *Isopogon*, *Adenanthos, Persoonia, Petrophile* and *Xylomelum* demonstrate high susceptibility, providing reliable indicators through much of the vulnerable zone of Western Australia. *Andersonia, Astroloma* and *Leucopogon* species from the Ericaceae family also demonstrate high levels of susceptibility, whilst other species within the family do not demonstrate the same level of vulnerability to the pathogen. All species contained in the Xanthorrhoeaceae family are considered to be reliable indicator species.

Not all species within the vulnerable zone of Western Australia are susceptible to Dieback, with some species demonstrating a resistance to the pathogen. Resistance to the pathogen is recognised within genera such as *Acacia, Calothamnus, Eucalyptus* (excluding *Eucalyptus marginata*), *Lepidosperma* and *Melaleuca*, among others. Resistance to *P. cinnamomi* is dependent on a multitude of factors such as the ability for a species to compartmentalise the infected part of a root or the plants ability to quickly regrow new roots in order to replace those infected by the pathogen (Commonwealth of Australia, 2018). It has been recognised under field conditions that herbaceous perennials, annuals and

geophytes demonstrate greater resistance to Phytophthora Dieback compared to woody perennials (Commonwealth of Australia, 2018).

Where species considered to be resistant to the *P. cinnamomi* pathogen are observed to be dying suddenly, Armillaria Rot Disease (ARD) may be considered to be the cause of death. ARD is caused by the *Armillaria luteobubalina* fungus. Drought conditions are another contributing cause of death other than ARD to Phytophthora resistant species.

Temperature, rainfall and soil type all affect the impact that Dieback has on an area. *P. cinnamomi* does not generally cause significant vegetation declines in areas that receive less than 400 millimetres of rain annually and occur north of latitude 30° (O'Gara et al., 2005 as cited in Commonwealth of Australia, 2018). Within Western Australia, the vulnerable zone exists in areas of Mediterranean climate (warm to hot, dry summers and mild to cool, wet winters) where annual rainfall exceeds 400 millimetres in the southwest of Western Australia. The most significant impact of the pathogen is observed in areas receiving an annual rainfall of above 800 to 1000 millimetres.

Soil characteristics also play a significant role in the occurrence of Dieback. Moisture is essential for the survival of the *Phytophthora* pathogen and for sporangia production, with wet soil conditions and warm temperatures favouring the release of motile zoospores from the sporangia. Optimal temperatures for the survival and reproduction of the pathogen are between 21°c to 30°c, a temperature range that is common through the vulnerable zone of Western Australia (Department of Parks and Wildlife, 2015). The growth and reproduction of the pathogen is also affected by soil pH, with a favourable pH range of between five and six (mildly acidic). Strong host resistance is observed in areas with a high level of soil fertility, creating a less favourable soil environment for the pathogen.

Whilst autonomous (active) spread of the disease does occur, *P. cinnamomi* is passively spread (or vectored) by animals and human activity via the movement of soils, allowing the rapid infestation of a new area by the pathogen. The movement of even small pieces of vegetation or soil containing viable inoculum (zoospores, chlamydospores, oospores) can result in the spread of the pathogen. Passive spread by a vector can occur both overland and in subsurface water flow (Commonwealth of Australia, 2018). Human induced spread of the *P. cinnamomi* pathogen is a significant risk in the Western Australian landscape. Activities such as road construction and maintenance, commercial activities (timber harvesting and mining), off-road vehicle movement and bush walking activities can result in the spread of the disease should movement of Infested soil occur.

3. Methods

The Desktop Assessment involved reviewing environmental and spatial datasets relevant to known vegetation and flora values within the Project Area. The review was conducted using the following information sources:

- DBCA Legislated Lands and Waters (DBCA-011)
- Mining Tenements (DMIRS-003)
- Generalised Agricultural Land Use of Western Australia (DPIRD-003)
- Native Vegetation Extent (DPIRD-005)
- Pre-European Vegetation (DPIRD-006)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Hydrography, Linear (Hierarchy)(DWER-031)
- Forest Products Commission Plantations (FPC-001)
- Roads (Simplified) (LGATE-195)

4. Desktop Assessment

4.1. Location and Land Tenure

The Project Area (Figure 1) is located 26 – 36 km northeast of the Katanning township, in the mid-southeast region of Western Australia. Both areas of interest reside within the Shire of Katanning and the Shire of Kent, with the Outer Survey Area crossing over into the Shire of Dumbleyung in the north. The Project Area resides within the Wheatbelt Region of the state and is comprised predominantly of cleared agricultural landscapes with scattered rural landholdings and pockets of remnant vegetation. The KGP covers a total of 27.91 km², while the Outer Survey Area covers 286.44 km².

The *DBCA Legislated Lands and Waters (DBCA-011)* dataset (Department of Biodiversity, Conservation and Attractions, 2026) indicates that 4.74 km² (1.5 %) of the Project Area is designated as legislated lands and waters (Figure 2). Within the Project Area resides Woorgabup Nature Reserve and two unnamed Nature Reserves, managed for the Conservation of Flora and Fauna under Section 5(1)(d) of the CALM Act 1984 (Government of Western Australia Department of Justice Parliamentary Councsel's Office, 2025). West Nyabing Conservation Park, a Conservation Park managed under Section 5(1) (ca) and an unnamed Reserve managed under Section 5(1)(g) also reside within the project boundaries.

The Mining Tenements (DMIRS-003) dataset (Department of Energy, Mines, Industry Regulation and Safety, 2026) indicates that 253.28 km² (80.57 %) of the Project Area is managed by Ausgold Exploration Pty Ltd through a combination of Exploration Licenses, and General Purpose, Miscellaneous, and Mining Leases (Figure 3).

The *Generalised Agricultural Land Use of Western Australia (DPIRD-003)* dataset (Department of Primary Industries and Regional Development, 2026) indicates that the Project Area is utilised for the agricultural practice of Cropping – cereals and legumes (Figure 4).

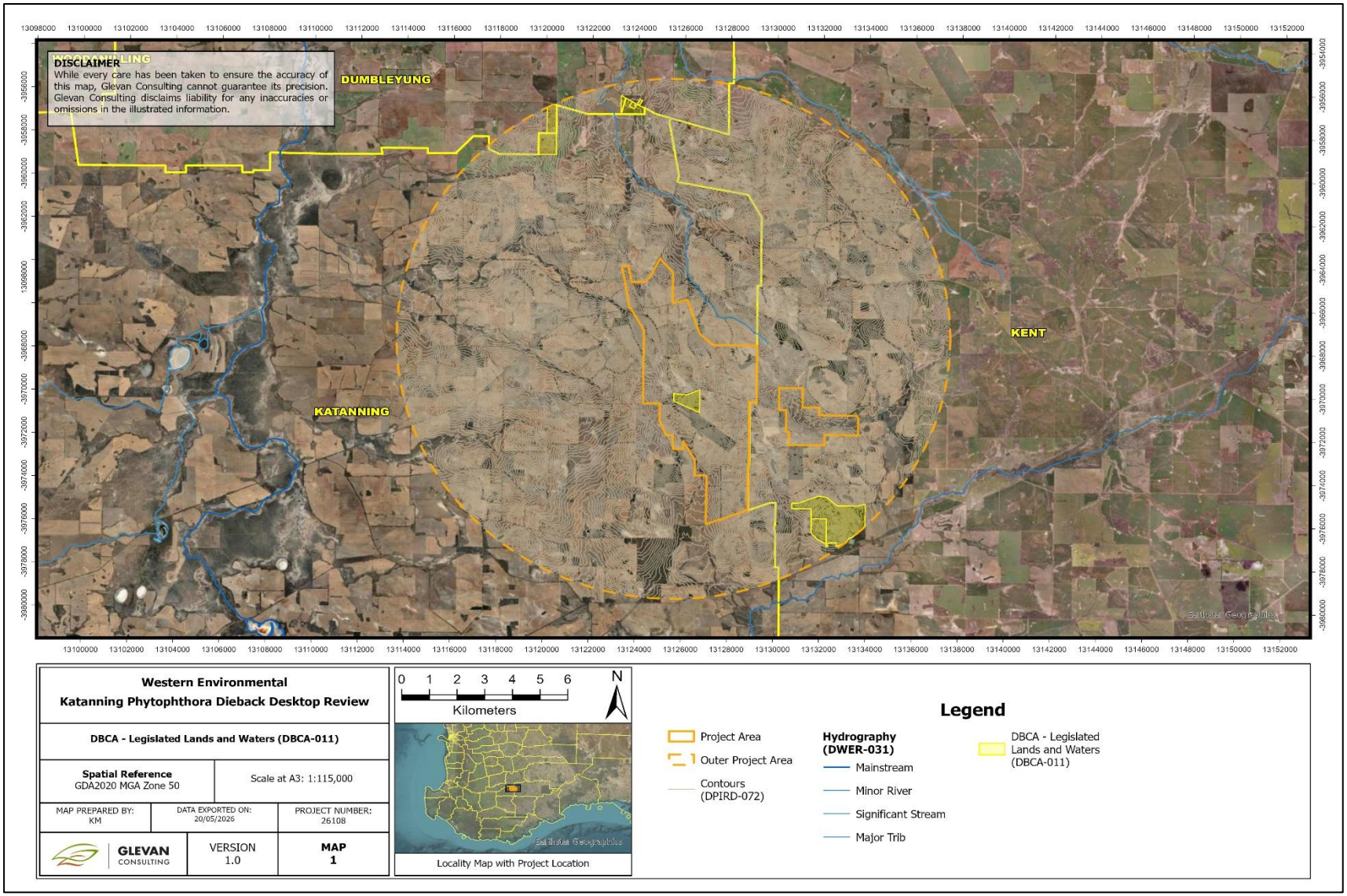

Figure 2 – Katanning Gold Project and Outer Survey Area DBCA Legislated Lands and Waters (DBCA-011) Map.

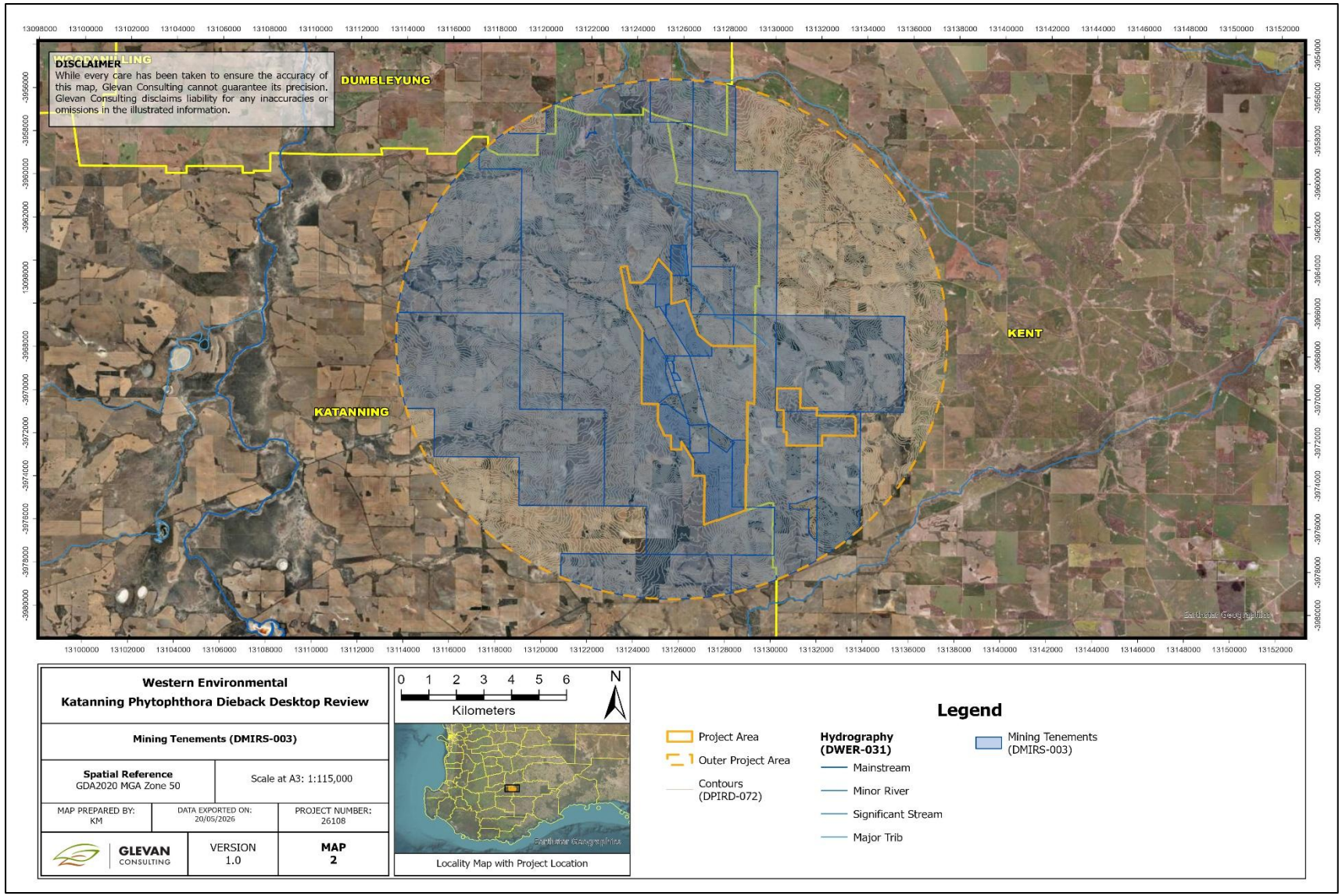

Figure 3 – Katanning Gold Project and Outer Survey Area Mining Tenements (DMIRS-003) Map.

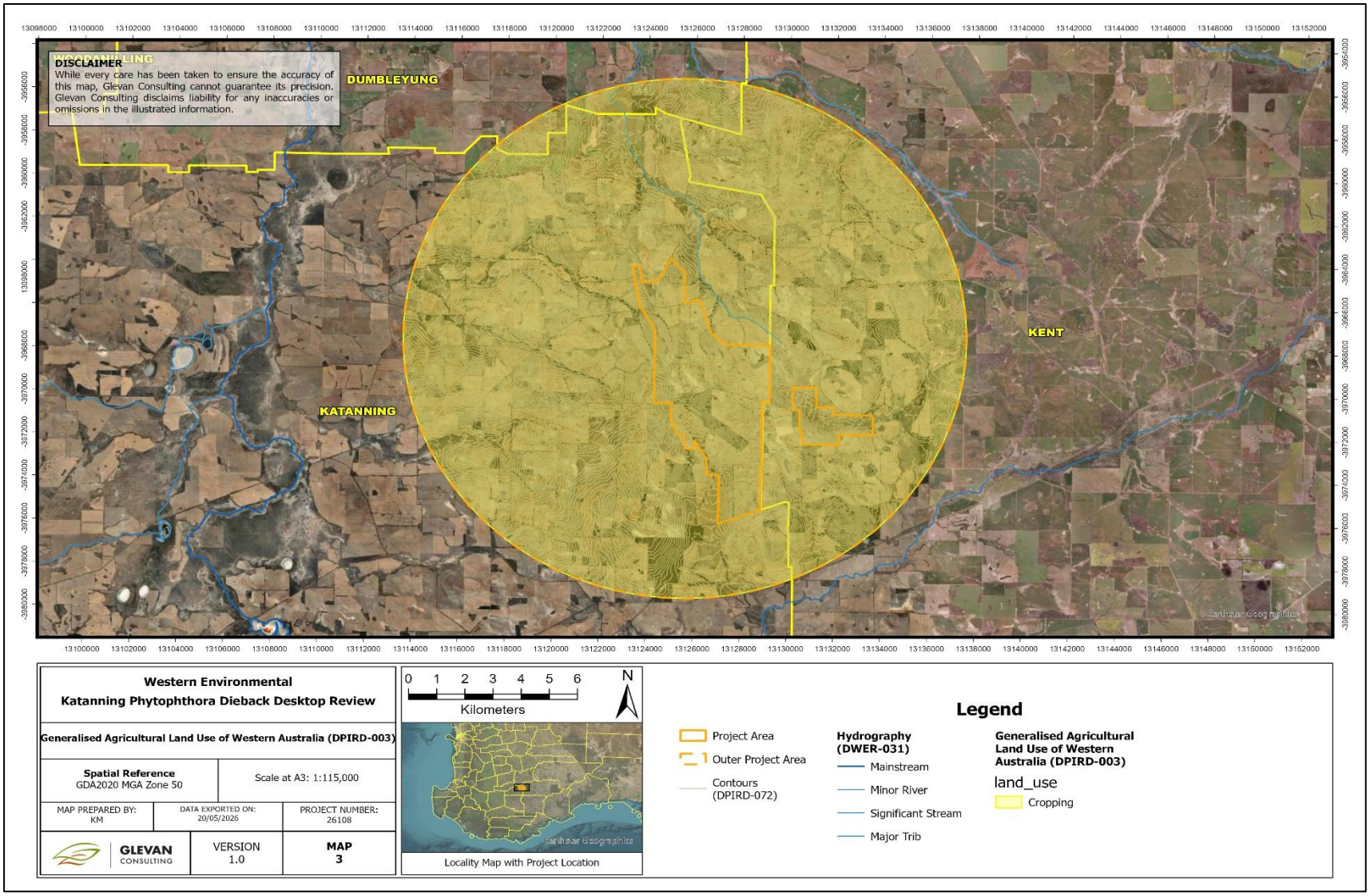

Figure 4 – Katanning Gold Project and Outer Area Survey Generalised Agricultural Land Use of Western Australia (DPIRD-003) Map.

4.2. Climate

The Project Area resides within the Wheatbelt portion of the southwest bioregion of Western Australia. The area experiences a Mediterranean climate, characterised by hot, dry summers from December to February and cool, wet winters from June to August.

The following climate data has sourced from the Bureau of Meteorology's Katanning Station (No. 010916), which has been recording weather observations since 1999. The station is located within the Katanning township which is approximately 26 km northeast of the outer edge of the Project Area.

In 2025, the total annual rainfall recorded at the station was 375 mm, 51.5 mm lower than the average rainfall recorded between 1999 to 2026 (426.5 mm) (Bureau of Meteorology, 2026). Annual rainfall from 1999 to 2025 is displayed in Figure 5, with the annual rainfall coverage across the assessment site depicted in Figure 7.

Temperature patterns are typical of the region, with daytime maximums frequently exceeding 20°c during summer and early autumn. The highest mean temperature of 33.1°c was experienced in December between 1999 to 2025 (Figure 6) (Bureau of Meteorology, 2026). Minimum temperatures commonly sitting around 20°c, with the mean minimum temperature recorded in June being 13.8°c, based on figures from 1999 to 2026 (Bureau of Meteorology, 2026).

Given these climatic conditions, the likelihood of Phytophthora Dieback being present or active within the Project Area is considered Low. Areas receiving less than 800 mm of annual rainfall typically do not support widespread infestations across upland zones due to the limited soil moisture and shorter periods of conducive temperature and humidity (Department of Parks and Wildlife, 2015). However, localised risk cannot be ruled out, particularly in low-lying or compacted areas where water may collect or artificial wetting occurs, such as along roadsides, tracks, or drainage lines. There is also a low risk of Phytophthora Dieback introduction into development areas with the use of foreign raw materials. Within the 400 – 600 mm rainfall zone, active infestation in upland environments is generally unlikely, though isolated infestations may persist temporarily following above-average seasonal rainfall events (Department of Parks and Wildlife, 2015).

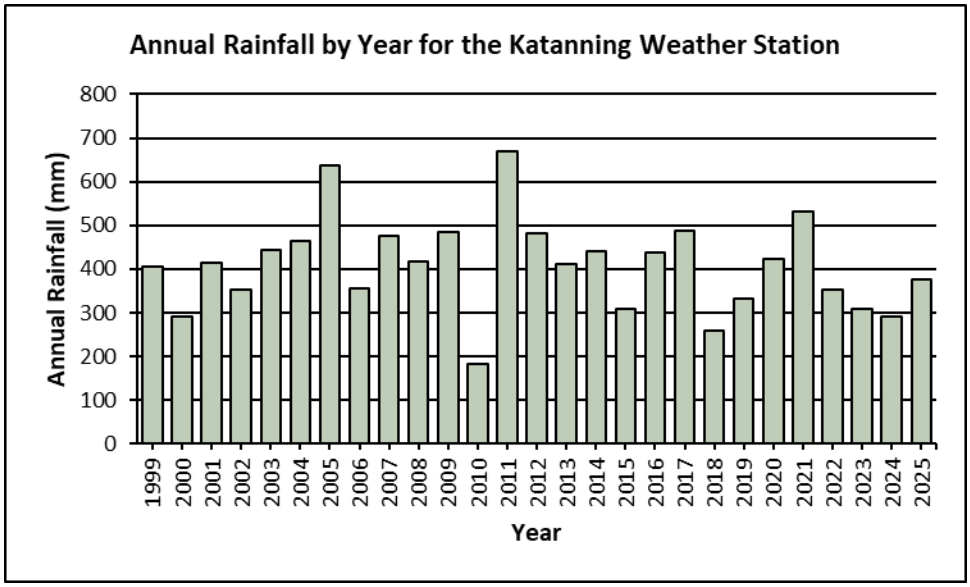

Figure 5 – Annual Rainfall (mm) from 1999 to 2025 recorded at the Katanning Station (No. 010916).

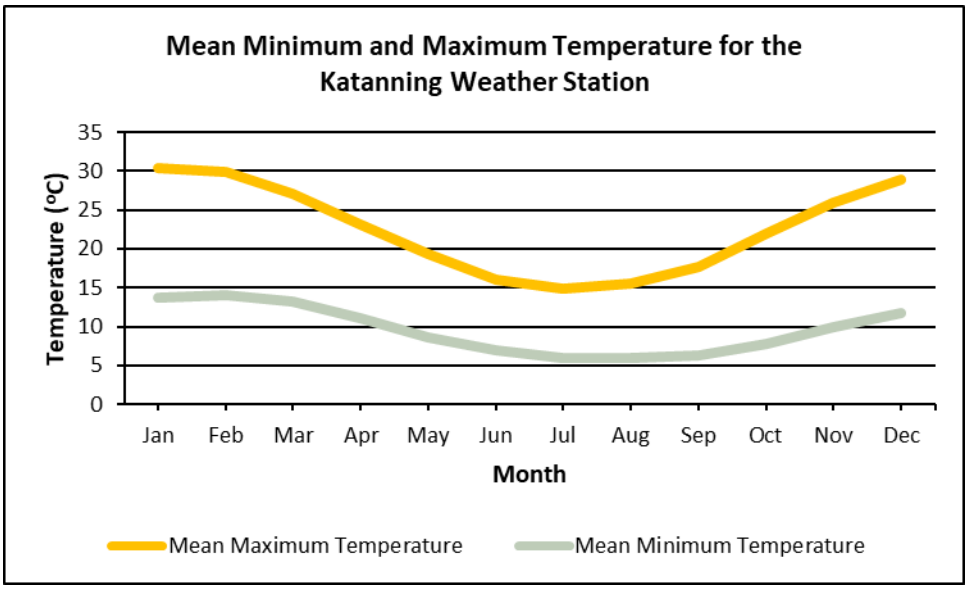

Figure 6 – Mean minimum and maximum temperature (°C) recorded at the Katanning Station (No.010916) between 1999 to 2025.

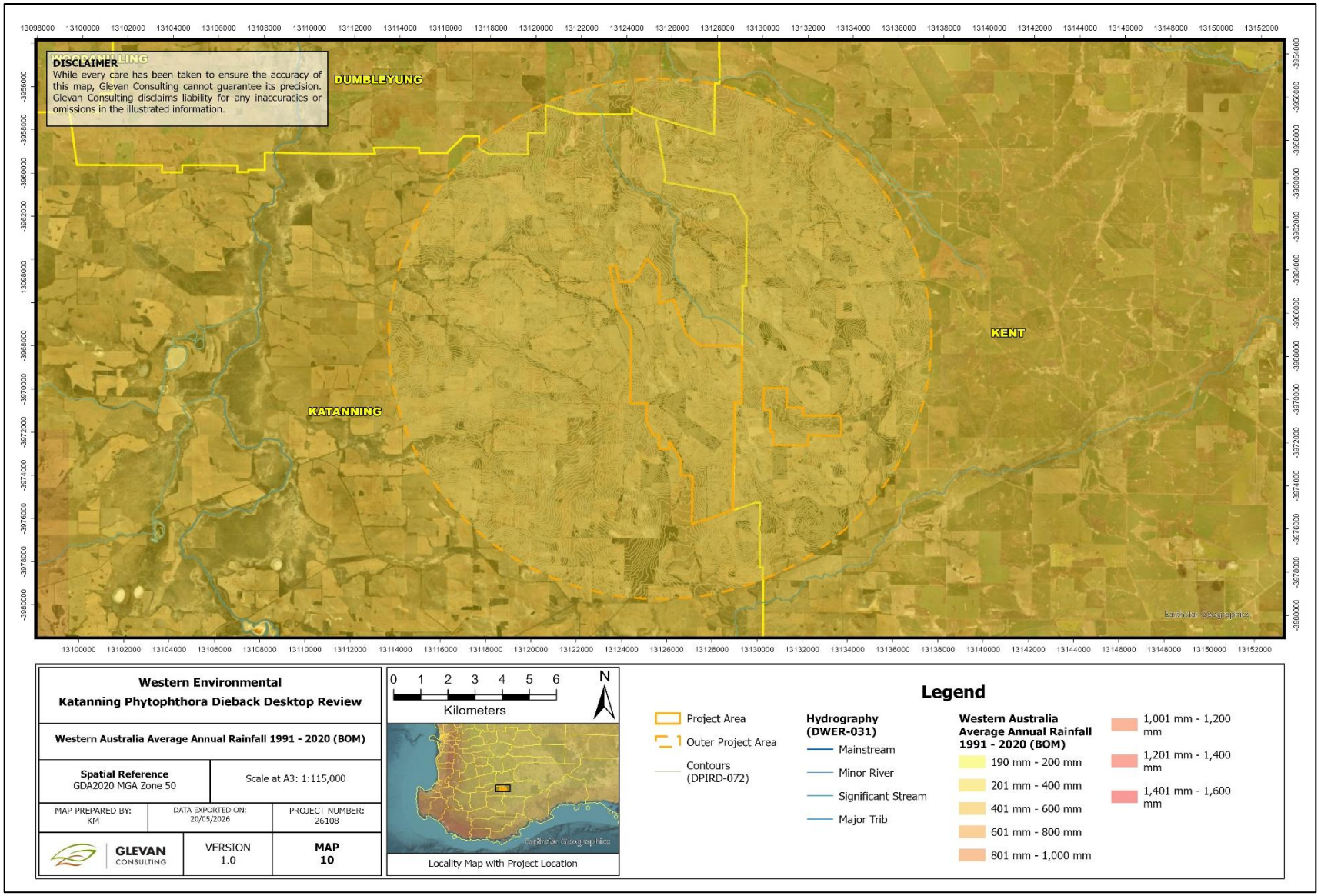

Figure 7 – Katanning Gold Project and Outer Survey Area Observed Average Rainfall from 1991 to 2020 (BOM).

4.3. Native Vegetation Extent

The Native Vegetation Extent (DPIRD-005) dataset (Department of Primary Industries and Regional Development, 2025) was used to quantify the extent of remnant native vegetation within the Project Area (Figure 8). The Project Area is comprised of approximately 34.22 km² of remnant native vegetation, representing 10.89 % of the total area.

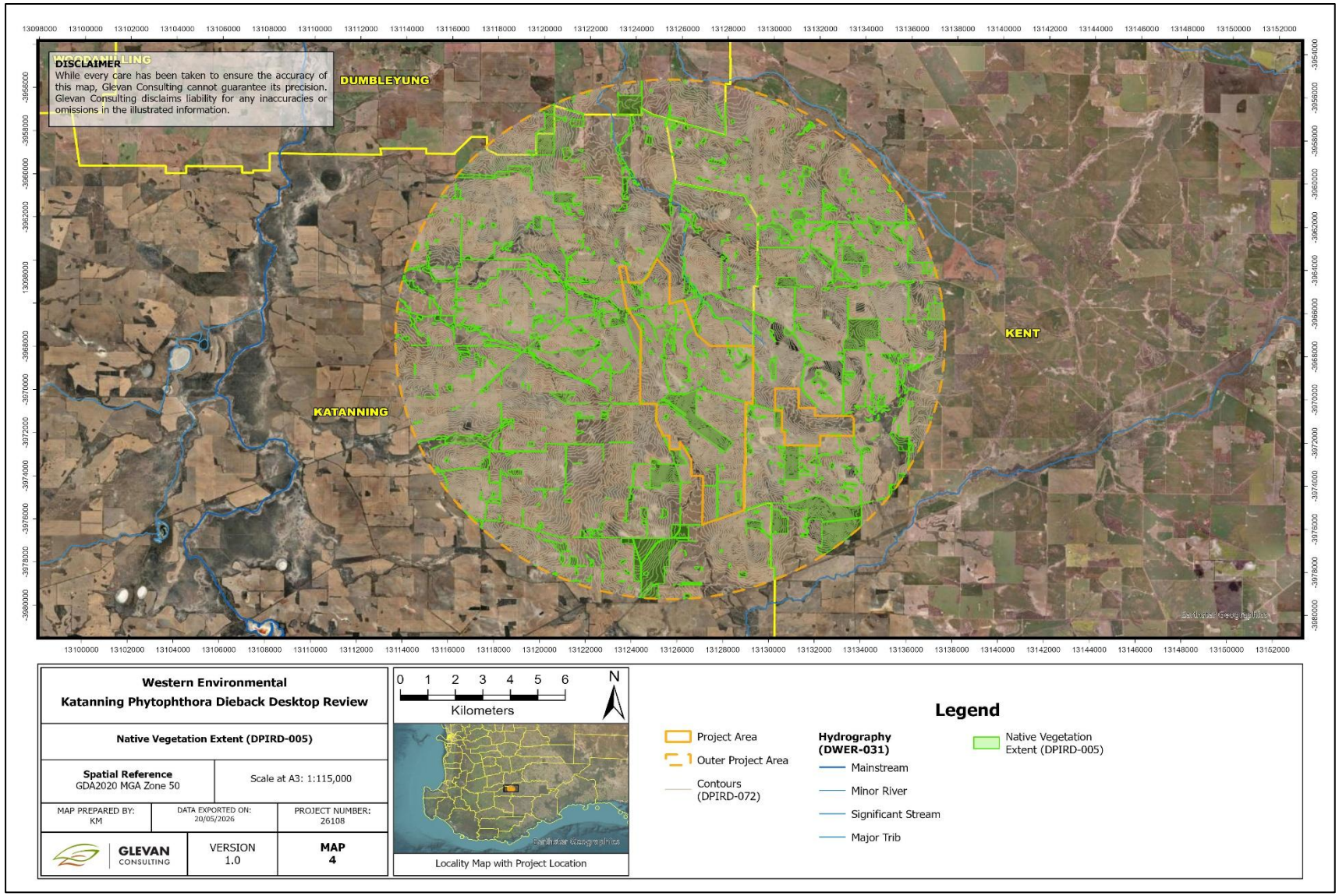

Figure 8 – Katanning Gold Project and Outer Survey Area Native Vegetation Extent (DPIRD-005) Map.

4.4. Vegetation Types & Susceptibility

The *Pre-European Vegetation (DPIRD-OO6)* dataset (Department of Primary Industries and Regional Development, 2019) identifies three Vegetation Associations across the Project Area. All three Vegetation Associations occur within the Outer Survey Area, while just one occurs within the KGP (Table 1), as illustrated in Figure 9.

Table 1 – Pre-European Vegetation Associations within Katanning Gold Project and Outer Survey Area as per Department of Primary Industries and Regional Development (2019).

Katanning Gold Project and Outer Survey Area			
Vegetation Association	**Flora Description**	**Structure Description**	**Area (km²)**
952	Low shrubs of mixed composition.	Heath	3.69
1075	Eucalypt shrubland *Eucalyptus eremophila*, *E. redunca, E.* spp.	Mallee	25.96
1092	Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia.* Goldfields; gimlet, redwood etc. *E. salubris, E. oleosa*. Riverine; rivergum *E. camaldulensis.* Tropical; messmate, woolybutt	Woodland other	284.70

Mattiske Consulting Pty Ltd has undertaken six targeted and detailed flora assessments within the Ausgold Project Area between 2018 to 2025. Their 2025 report, *Flora & Vegetation Assessment For Ausgold Exploration Pty Ltd, Katanning Gold Project, Katanning,* documents six threatened or priority flora species near but outside of the Development Envelope that are susceptible to *P. cinnamomi* (Mattiske Consulting Pty Ltd, 2025). These species are *Banksia acanthopoda* (P2), *Banksia meganotia* (P3), *Banksia acuminata* (P4), *Banksia parva* (formerly *Banksia densa* var. *parva*) (P4), *Banksia porrecta* (P4) and *Verticordia huegelii* var. *tridens* (P3). The report additionally lists the following susceptible species as being present within the Project Area: *Banksia sphaerocarpa* var. *caesia*, *Banksia armata* var. *ignicida*, *Petrophile seminuda* and *Xanthorrhoea drummondii*.

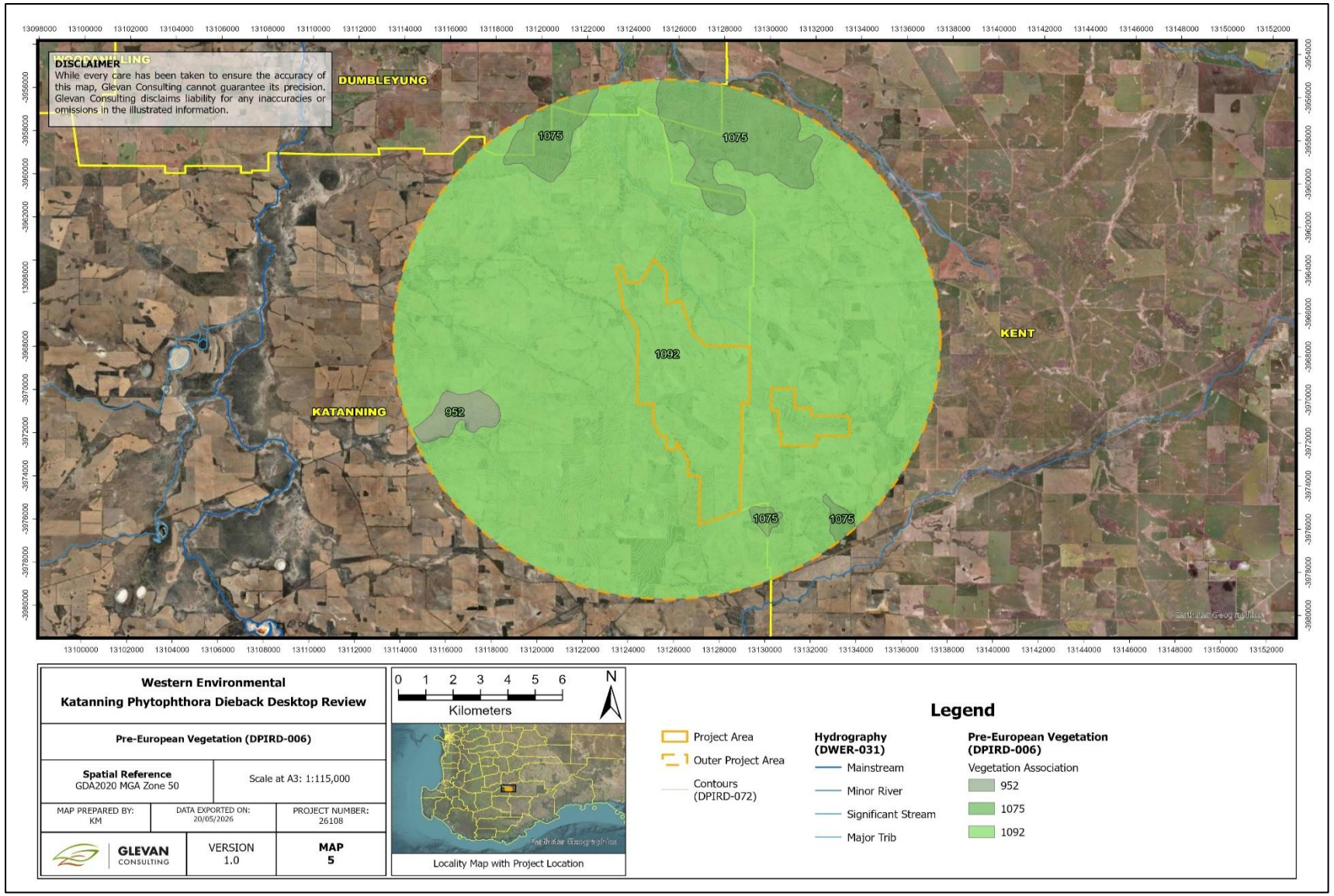

Figure 9 – Katanning Gold Project and Outer Survey Area Pre-European Vegetation (DPIRD) Map.

4.5. Soils

Soil properties play a critical role in determining the likelihood of *P. cinnamomi* establishment, persistence, and expression. Key influencing factors include soil texture, drainage characteristics, presence of perching layers, and soil pH, all of which directly affect soil moisture retention and pathogen mobility (Department of Parks and Wildlife, 2015).

The Soil Landscape Mapping – Best Available (DPIRD-027) dataset (Department of Primary Industries and Regional Development, 2025) documents ten soil-landscape zones across the entirety of the Project Area. The descriptions of the soil-landscape zones are tabulated in Table 2 and displayed in Figure 10.

Table 2 – Soil Landscape Mapping - Best Available (DPIRD-027) (Department of Primary Industries and Regional Development, 2025) Soil – Landscape Zone Descriptions as per the Soil-landscape in south Western Australian overview of methodology and outputs reports (Schoknecht, Tille, & Purdie, 2004).

Region	Province	Soil-Landscape Zone	Map Unit Name	Map Unit Description
Western	Avon	South-eastern Zone of Ancient Drainage (250)	Nyabing 1 subsystem (Ny1)	Crests, summit surfaces and upper slopes, less commonly lower to mid slopes. Duplex sandy gravels, shallow gravels, deep sandy gravels and loamy gravels with minor sandy duplex soils and pale deep sands
		South-western Zone of Ancient Drainage (259)	Coblinine 2 subsystem (Cb2)	Broad valley floors and alluvial plains with significant areas of saline wet soils (30-40%) as well as alkaline grey shallow sandy duplex soils and grey deep sandy duplex soils
			Coblinine 3 subsystem (Cb3)	Saline broad alluvial plains. Mainly saline wet soils with small areas of alkaline grey shallow sandy, and less commonly loamy, duplex soils and hard cracking clays
			Dt1	
			Datatine 2 subsystem (Dt2)	Lower to upper slopes and crests. Red calcareous loamy earths, alkaline red and grey shallow loamy duplex soils and grey sandy duplex soils, frequently with

Region	Province	Soil-Landscape Zone	Map Unit Name	Map Unit Description
				alkaline subsoils formed on weathered gneiss, dolerite and granite
			East Katanning 1 subsystem (Ek1)	Gravelly crests and mid to upper slopes. Mainly deep sandy gravels and shallow gravels with minor areas of duplex sandy gravels, loamy gravels and gravelly pale deep sands
			East Katanning 1 sandy phase (Ek1s)	Sandy mid to upper slopes in the East Katanning 1 Subsystem with pale deep and shallow sands and gravelly pale deep sands, often with an easterly aspect
			East Katanning 2 subsystem (Ek2)	Lower to upper slopes and broad hill crests with grey shallow and deep sandy duplex soils, alkaline grey shallow sandy duplex soils and duplex sandy gravels
			East Katanning 3 subsystem (Ek3)	Mainly lower and mid slopes with hardsetting grey shallow loamy and sandy duplex soils, often with alkaline subsoils, alkaline grey loamy earths and calcareous loamy earths
			East Katanning 4 subsystem (Ek4)	Valley flats (200-500m wide) with mainly saline soils and grey deep, and less commonly shallow, sandy duplex soils

The soil types within the Project Area indicate that soil conditions are likely to influence both the potential presence of *P. cinnamomi* and expression of Phytophthora Dieback disease if the pathogen was present. The Project Area contains a mix of gravelly uplands, sandy and loamy duplex soils, alkaline subsoils, valley flats, alluvial plains and saline wet soils. These soil types are likely to create variable conditions for pathogen establishment, persistence and spread.

The sandy and gravelly crests, upper slopes and mid-slopes, including the Nyabing and East Katanning units, may provide relatively favourable pathways for pathogen movement where soils are coarse textured and seasonally moist. Coarse-textured soils have larger pore spaces, which can assist zoospore movement when moisture is available (Department of Parks and Wildlife, 2015). Where these soils overlie duplex profiles, clay, lateritic material or other less permeable layers, perched soil

moisture may develop. These conditions can increase the risk of pathogen persistence and downslope movement, particularly following significant rainfall events (Department of Parks and Wildlife, 2015).

In contrast, the valley floors, broad alluvial plains and saline wet soils mapped in the Coblinine and East Katanning valley-flat units may be less consistently favourable for typical *P. cinnamomi* expression. Although these areas may retain moisture, prolonged saturation can create anaerobic conditions that are less favourable for sporangia production. Salinity, alkalinity and heavier-textured soils may also reduce pathogen activity or limit zoospore movement (Department of Parks and Wildlife, 2015). As a result, disease expression in these areas may be subdued, irregular, or difficult to interpret, even where soil moisture is high.

Several mapped units also contain alkaline, calcareous or compacted duplex soils, particularly within the Datatine and East Katanning subsystems. These soils may be less favourable than mildly acidic sandy soils, as *P. cinnamomi* generally favours moist, aerobic soils with mildly acidic pH. However, impeded drainage, perched moisture above clay or hardpan layers, and seasonal subsurface flow may still increase localised risk, particularly where susceptible host species are present.

Overall, the soil mapping suggests that Phytophthora Dieback risk and expression are unlikely to be uniform across the Project Area. Higher risk and clearer expression would be expected in seasonally moist, coarse-textured sandy or gravelly soils, especially where perched water or lateral seepage occurs. Lower or less predictable expression may occur in saline, alkaline, saturated, compacted or fine-textured soils.

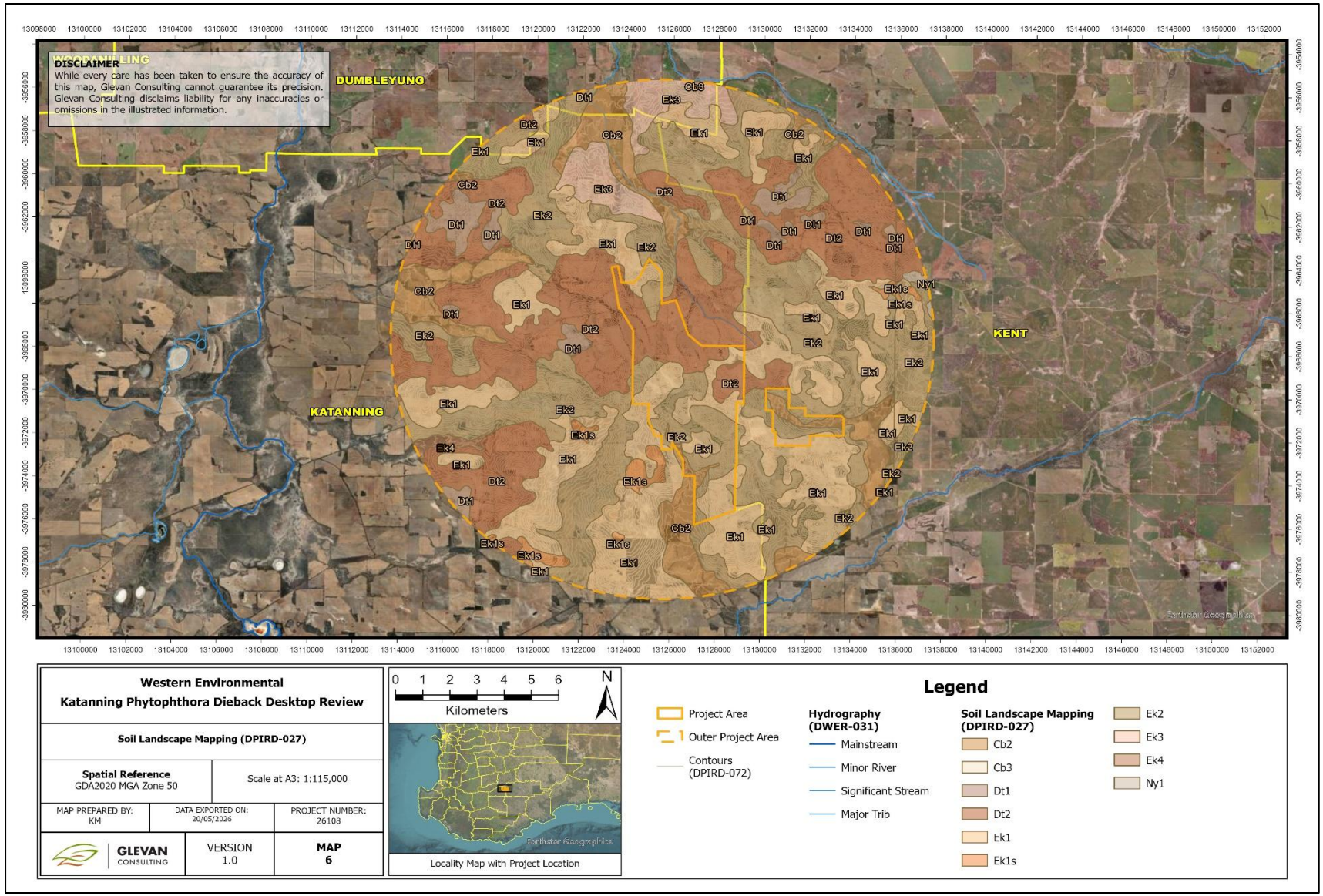

Figure 10 – Katanning Gold Project and Outer Survey Area Soil Landscape Mapping (DPIRD-027) Map.

4.6. Fire History

A review of the *DBCA Fire History (DBCA-060)* dataset (Department of Biodiversity, Conservation and Attractions, 2025) does not show any records of fire evidence within the Project Area within the last 15 years. It is expected that no decline or reduced interpretability of the remnant vegetation will be a result of fire activity.

4.7. Known Phytophthora Dieback Distribution

A review of *Phytophthora Dieback Occurrence – Infested Only (DBCA-082)* dataset (Department of Biodiversity, Conservation and Attractions, 2025), the Vegetation Health Services (VHS) sample database, and Glevan Consulting's records, there have been no recoveries of *P. cinnamomi* within the Project Area.

Across the three reviewed sources, the nearest recorded recovery of *P. cinnamomi* was located approximately 53 km southwest of the Project Area, along Great Southern Highway near Tambellup. An additional *Phytophthora* species was recorded near this *P. cinnamomi* recovery, while a separate *Phytophthora* species was recorded near Wagin, approximately 49 km northwest of the Project Area.

4.8. High Risk Disease Vectors

A review of potential disease vectors has been undertaken to provide contextual information on pathways that may facilitate future pathogen introduction or spread within the proposed development areas. A disease vector is defined as an agent, or moving component, capable of transporting contaminated soil or plant material (Department of Parks and Wildlife, 2015). Common potential vectors within similar landscapes include roads, drainage lines, waterways, wetlands, gravel pits, plantations, and active or historical mining leases. Additional risk may be associated with newly constructed roads and tracks, as well as formal and informal trails used for walking, horse riding, and recreational motorbike access. While the presence of these features does not confirm Phytophthora Dieback occurrence, they do represent key risk pathways that warrants consideration during future field surveys and management planning.

Three mapped waterway segments span across the Project Area, as recorded in the *Hydrography, Linear (Hierarchy) (DWER-031)* dataset (Department of Water and Environmental Regulation, 2018).

All three waterways are classed as Significant Streams and all stem from the Datatine Gully (Figure 11). A waterway is a potential vector for *P. cinnamomi* because flowing water can transport contaminated soil, plant material and spores downstream, allowing the pathogen to spread into previously unaffected areas.

Within the east of the Project Area resides the Nyabing 3 plantation, managed by the Forest Products Commission Plantations (Forest Products Commission, 2025). The Nyabing 3 plantation is comprised of Sandalwood, *Santalum spicatum*, and covers 20.5 ha (0.07 %) of the total Project Area (Figure 12). Plantations can increase the risk of disease presence or spread due to historic site disturbance, introduced planting stock, repeated vehicle and machinery access, and altered soil or drainage conditions that may facilitate pathogen movement.

The *Roads (Simplified) (LGATE-195)* dataset (Landgate, 2025) was used to characterize the extent and construction type of road infrastructure within the assessment area (Figure 13). A total of 46 roads were identified within the Project Area, comprised of a mix of main roads, minor roads, state highways, and sealed and unsealed tracks. The vast majority of the roads within the area are unsealed, with only four roads (8.7 %) being sealed (Table 3). Unsealed tracks present an elevated risk for the introduction and spread of *P. cinnamomi* due to the increased likelihood of soil adherence to tires and machinery, and the associated reliance on effective vehicle hygiene practices.

Table 3 – Summary table of road type counts within the Katanning Gold Project and Outer Survey Area based on the Roads (Simplified) (LGATE-195) dataset (Landgate, 2025).

Road Type	Count of Road Types
Road	**31**
Main	
Sealed	2
Minor	
Sealed	2
Unsealed	27
Track	**15**
Not Applicable	
Unknown	13
Track	
Unsealed	2
Grand Total	**46**

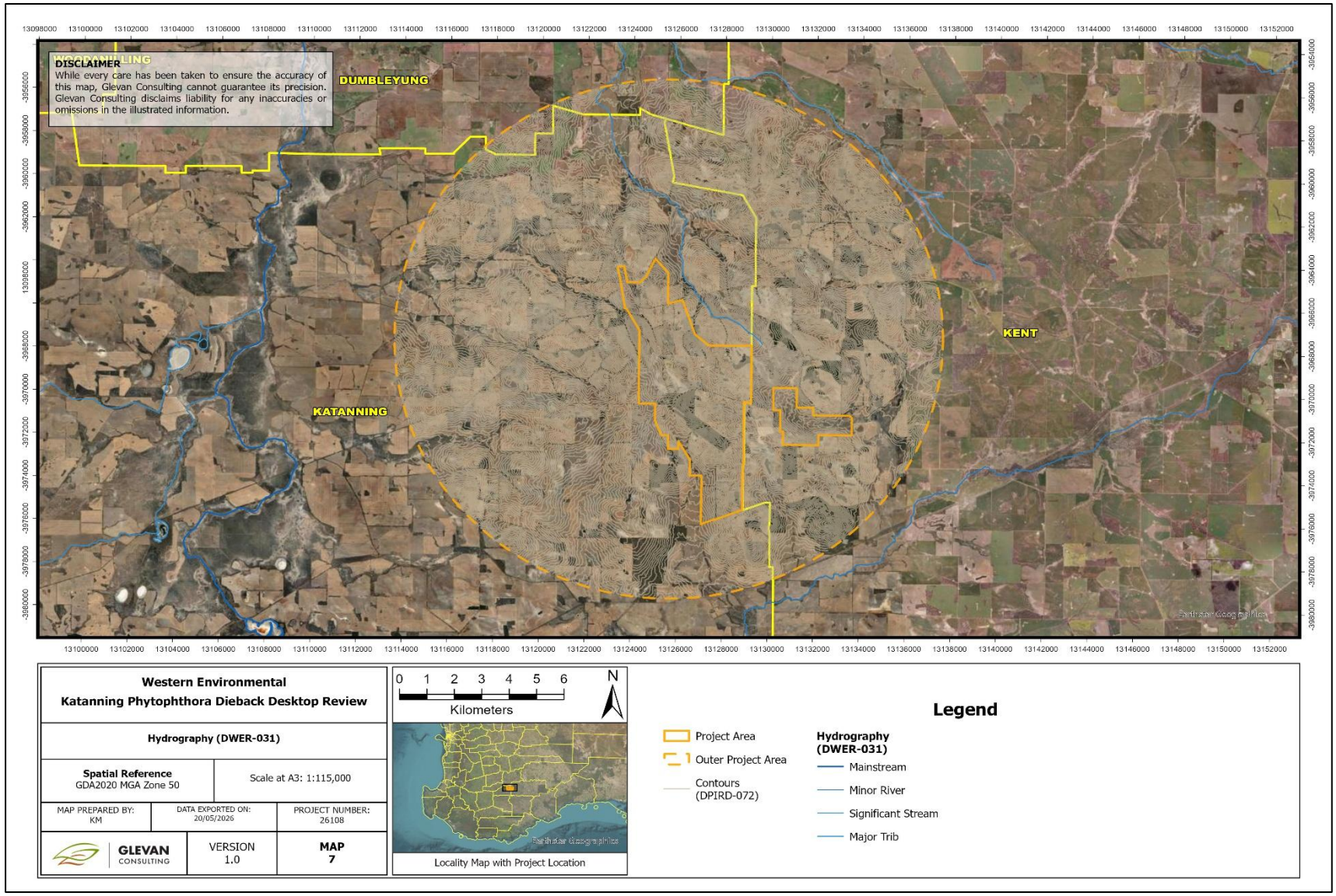

Figure 11 – Katanning Gold Project and Outer Survey Area Hydrography (DWER-031) Map.

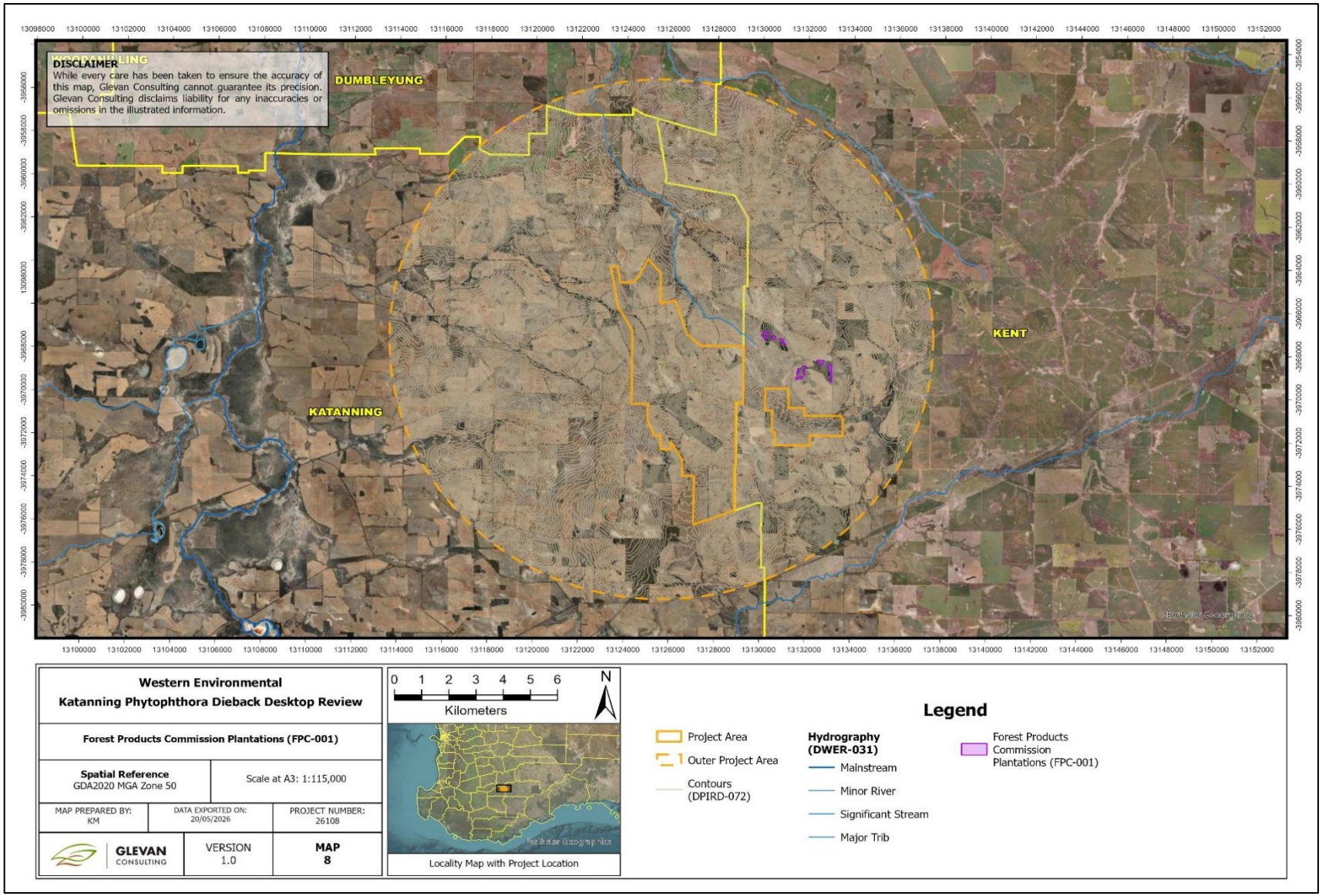

Figure 12 – Katanning Gold Project and Outer Survey Area Forest Products Commission Plantations (FPC-001) Map.

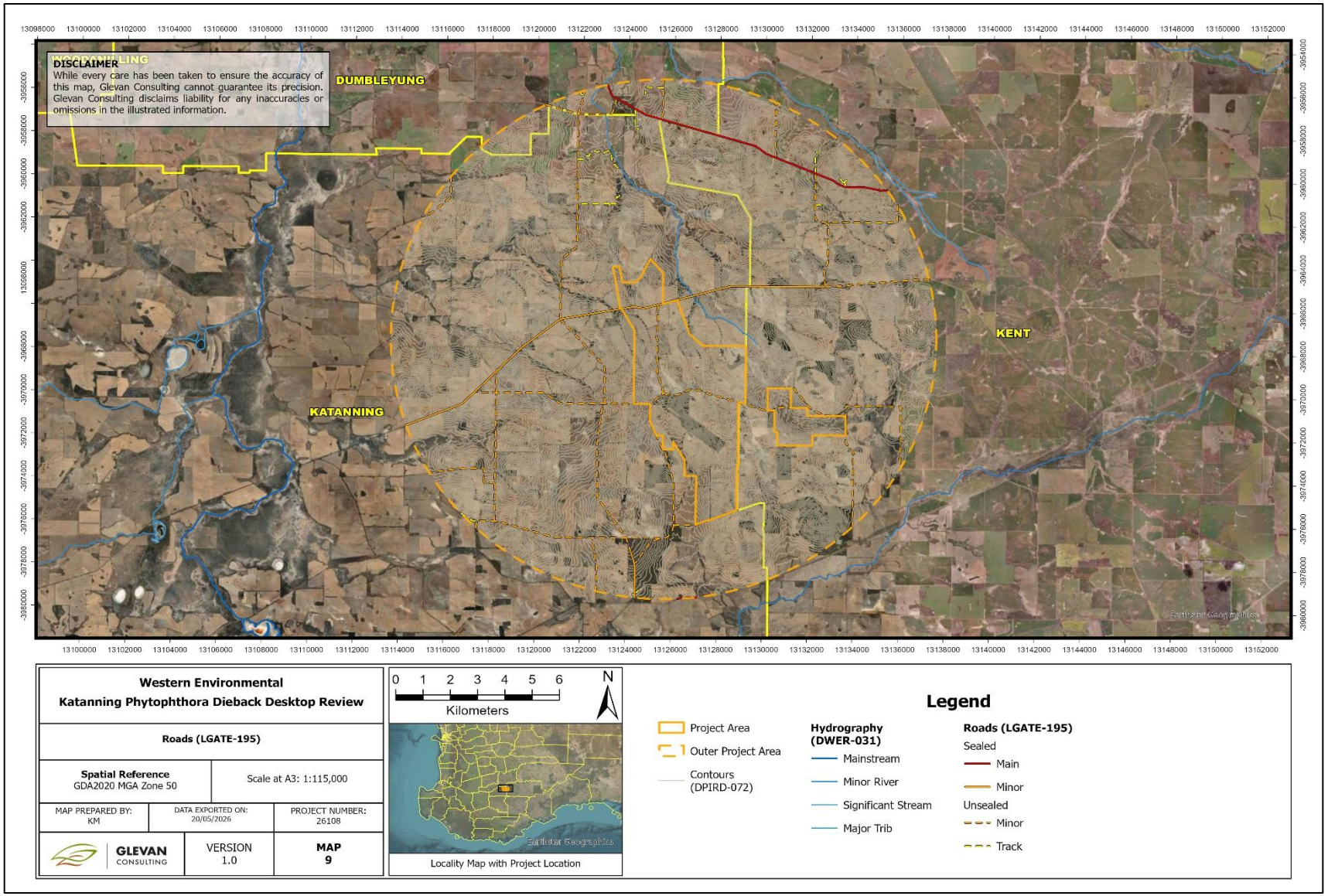

Figure 13 – Katanning Gold Project and Outer Survey Area Roads Simplified (LGATE-195) Map.

5. Key Findings

5.1. Vegetation Susceptible to Phytophthora Dieback

The desktop assessment identified vegetation within and surrounding the Project Area that is considered susceptible to *P. cinnamomi*, including several *Banksia* species, *Petrophile seminuda, Xanthorrhoea drummondii* and *Verticordia huegelii* var. *tridens*. Mattiske Consulting Pty Ltd (2025) recorded six threatened or priority flora species susceptible to *P. cinnamomi* near, but outside, the Development Envelope, with additional susceptible species recorded within the Project Area. However, the extent to which disease expression could be interpreted from vegetation condition is likely to be limited by the reduced abundance of susceptible taxa, local environmental factors such as lower rainfall, and the extensive historical clearing and agricultural use of much of the Project Area. As such, while susceptible vegetation is present, the broader landscape context reduces the reliability of vegetation condition as an indicator of Phytophthora Dieback presence or absence.

5.2. Proximity to known Phytophthora Dieback Infestations

The Desktop Assessment did not return records of Phytophthora Dieback within the Project Area, with the nearest known recoveries located approximately 50 km away. As such, natural disease dispersal from a pre-existing infestation is considered unlikely. However, the introduction of Phytophthora Dieback remains a potential risk where machinery, vehicles or basic raw materials are sourced from Infested or Unknown Dieback status areas. Effective hygiene measures and the use of Uninfested basic raw materials are therefore essential to reduce the risk of disease introduction and spread.

5.3. Likelihood of Extent of Phytophthora Dieback within the Project Area

When considering the disease triangle (pathogen, host and environment), the Project Area does contain susceptible host species, but the low annual rainfall and variability in soil types across the Project Area will very likely limit widespread upland infestation.

Climate data from the Katanning Station indicates that the Project Area occurs within a Mediterranean climate zone and experiences an average annual rainfall of 426.5 mm. Annual rainfall above 400 mm provides conditions that place an area within the vulnerable zone for *P. cinnamomi* (Department of

Parks and Wildlife, 2015). A review of the climate data compiled for this Desktop Assessment indicates that, while the Project Area is classified as being within the vulnerable zone, the two areas of interest occur at the lower end of the vulnerability spectrum. This suggests that the risk of disease dispersal across the broader area is relatively low, although the risk remains present, particularly around the identified waterbody extensions of Datatine Gully and through potential introduction via vehicles, machinery and basic raw materials.

6. Recommendations

In review of the Desktop Assessment results, the overall likelihood of Phytophthora Dieback being present and active within the Project Area is assessed as Low. The likelihood is higher in the identified water-gaining environments and increased risk is associated with the introduction of machinery and basic raw materials that have been sourced from Infested or Unknown Dieback status areas.

Based on the reviewed data, this Desktop Assessment identified a low risk of pathogen introduction and limited potential extent within the Development Envelope. As such, Glevan Consulting does not consider in-field Phytophthora Dieback assessment to be required at this stage.

It is recommended that precautionary hygiene measures be put in place in regard to introducing vehicles, machinery and basic raw materials within the Project Area to mitigate the risk of disease introduction and dispersal.

Hygiene measures should include:

- Maintaining a Raw Material Register to verify disease-free supplier accreditation,
- Applying brushing or washdown hygiene measures when entering native vegetation where required based on soil conditions,
- Maintaining vehicles and machinery in a “clean” condition (free of soil lumps, mud, slurry, and plant debris).

Ongoing monitoring and review of Phytophthora Dieback status is also recommended, particularly following disturbance activities, plantation operations, or major rainfall events, which may alter local risk profiles. These measures will assist in ensuring that future exploration and land-use activities are conducted in a manner that minimises the risk of introducing or spreading Phytophthora Dieback within the Project Area and surrounding landscape.

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8. Appendices

8.1. Mapping Metadata

Dataset Description	
Title	Western_Environmental_Katanning_Phytophthora_Dieback_Desktop _Review
Data Created	11/05/2026
Date Last Updated	11/05/2026
Abstract	Environmental and spatial dataset review of the proposed Ausgold development area to provide guidance and recommendations in the management of Phytophthora Dieback introduction, occurrence and dispersal.
Purpose	Phytophthora Dieback Desktop Review of Katanning Gold Project and Outer Survey Area
Document Number	26108
Contact Organisation	Glevan Consulting
Contact Name	Willow Feeley-Ray
Contact Position	Dieback Interpreter
Contact Phone	0427997083
Contact Email	Willow.feeley-ray@glevan.com.au
Datum / Coordinate System	GDA2020 MGA ZONE 50
Geographic Description	Shire of Katanning, Shire of Kent, Shire of Dumbleyung, Western Australia
Restrictions	None

8.2. Shapefile Spatial Data

Shapefile Spatial Data	
File Contents	**File Name**
Project Area	Western_Environmental_Katanning_Dieback_Desktop_Review_Project_Area
DBCA Legislated Lands and Waters (DBCA-011)	Western_Environmental_Katanning_Dieback_Desktop_Review_DBCA_011
Mining Tenements (DMIRS-003)	Western_Environmental_Katanning_Dieback_Desktop_Review_DMIRS_003
Generalised Agricultural Land Use of Western Australia (DPIRD-003)	Western_Environmental_Katanning_Dieback_Desktop_Review_DPIRD_003
Native Vegetation Extent (DPIRD-005)	Western_Environmental_Katanning_Dieback_Desktop_Review_DPIRD-005
Pre-European Vegetation (DPIRD-006)	Western_Environmental_Katanning_Dieback_Desktop_Review_DPIRD_006
Soil Landscape Mapping – Best Available (DPIRD-027)	Western_Environmental_Katanning_Dieback_Desktop_Review_DPIRD_027
Hydrography, Linear (Hierarchy)(DWER-031)	Western_Environmental_Katanning_Dieback_Desktop_Review_DWER_031

Shapefile Spatial Data	
File Contents	**File Name**
Forest Products Commission Plantations (FPC-001)	Western_Environmental_Katanning_Dieback_Desktop_Review_FPC_001
Roads (Simplified) (LGATE-195)	Western_Environmental_Katanning_Dieback_Desktop_Review_LGATE_195

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