

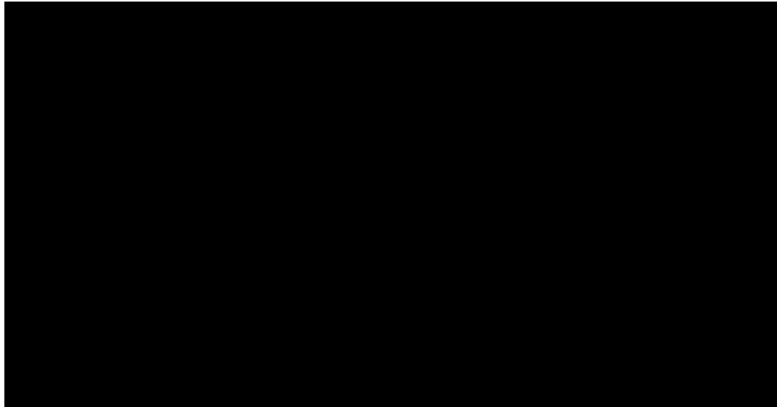
MOOREBANK INTERMODAL PRECINCT – OPERATIONAL FACILITY

Annual Flora and Fauna Monitoring Report

31 MAY 2026



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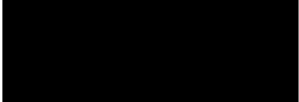
MOOREBANK INTERMODAL PRECINCT— OPERATIONAL FACILITY

Annual Monitoring Report

Author



Approver



Report No

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Date

31/05/2026

Revision Text

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REVISIONS

Revision	Date	Description	Prepared by	Approved by
A	18/05/2026	First draft	AJ, CP	TBH
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1 INTRODUCTION

Arcadis was commissioned to undertake monitoring inspections and deliver the annual flora and fauna monitoring report for the operation of the Moorebank Precinct East (MPE) facility and Moorebank Precinct West (MPW) (Figure 1-1). The requirement to monitor biodiversity values within the MPE and MPW operational facilities and biodiversity values related to the approval of the project is specified in the following Conditions of Consent (CoC) and Conditions of Approval (CoA):

- Moorebank Precinct East (MPE) EPBC Act approval (EPBC 2011/6229)
- MPE Concept Approval (MP10_0193)
- MPE Stage 1 approval (SSD 6766)
- MPE Stage 2 approval (SSD 7628 as modified). Six modifications have been approved
- Moorebank Precinct West (MPW) EPBC Act approval (EPBC 2011/6086)
- MPW Concept and Stage 1 Approval (SSD 5066)
- MPW Stage 2 approval (SSD 7709)

Additional requirements to monitor biodiversity values are included in the following project documents:

- Moorebank Precinct East – Stage 1 (SSD 6766) and Moorebank Precinct East – Stage 2 (SSD 7628) Environmental Impact Statements (EIS)
- Moorebank Precinct West – Concept and Stage 1 Approval (SSD 5066) and Moorebank Precinct West – Stage 2 Approval (SSD 7709) Environmental Impact Statements (EIS)
- Moorebank Intermodal Precinct Fauna and Flora Operational Monitoring Program (Arcadis, 2025a)
- Riparian Vegetation Management Plan for SIMTA Intermodal Terminal Facility – Stage 1 (Hyder 2015)
- SIMTA Intermodal Terminal Facility – Stage 1. Riparian Vegetation Management Plan – 2017 Updated (AMBS 2017)
- Threatened Flora Offset Management Plan (Arcadis 2020b)
- Artificial Hollow Management Strategy (Arcadis, 2025b)
- Moorebank Precinct West Stage 2. Koala Management Plan (Cumberland Ecology 2020)

1.1 Moorebank Intermodal Precinct

The Moorebank Intermodal Precinct (MIP) is an integral component of the Freight, Ports and Transport strategies of both the NSW and Commonwealth governments to help manage the challenges of an expected tripling of freight volumes at Port Botany by 2031.

The MIP aims to streamline the freight logistics supply chain from port to store, deliver savings to businesses and consumers, and help service the rapidly growing demand for imported goods in south-west Sydney. It is located approximately 27 kilometres south-west of the Sydney Central Business District and approximately 26 kilometres west of Port Botany within the Liverpool Local Government Area. The MIP is divided into an East Precinct and a West Precinct, located east and west of Moorebank Avenue, respectively.

1.1.1 Moorebank Precinct East

The main features of MPE include the following:

- An Import Export (IMEX) Terminal. The IMEX Terminal comprises:

- Truck processing, holding and loading areas with an entrance and exit from Moorebank Avenue
- Rail loading and container storage areas serviced by container handling equipment
- An Administration facility and associated car parking with light vehicle access from Moorebank Avenue
- An Operational Rail Link connecting the IMEX terminal and the Southern Sydney Freight Line (SSFL) traversing Moorebank Avenue, Anzac Creek, Georges River and Glenfield Waste Facility
- Associated ancillary infrastructure, including signage, lighting, landscaping, water management
- Warehouse and distribution facilities, including warehousing up to 21 metres in height, typically ranging in size from 20,000 meters squared to 62,000 meters squared
 - Office and administration facilities
 - Amenities
 - Car parking
 - Truck loading/unloading docks
 - Internal parking for pick-up and delivery vehicles (PUD)
 - Specialised sortation and conveyor equipment
 - Hardstand areas that provide trailer parking spaces, external PUD parking spaces, vehicle manoeuvring areas and access to the main internal site road
 - Signage for business identification purposes, including backlit illuminated signage on each warehouse
 - Internal fit out, comprising racking and storage
- A freight village including a mix of retail, commercial and light industrial spaces typically up to 15 metres in height and varying in size and design
- An internal road network to enable efficient movement of vehicles, dispatch of freight from the warehouses and transport of containers between the IMEX Terminal and warehouse and distribution facilities

In addition to the constructed assets of the MPE development, several other areas have been included within the MPE operational facility for flora and fauna monitoring. These include:

- Five designated offset sites for EPBC listed threatened flora species within Wattle Grove offset area
- Lands adjoining (within 10 meters of) the Rail Link
- Riparian vegetation management sites at Anzac Creek and Georges River
- Nest box locations within Moorebank and Wattle Grove offset areas

1.1.2 Moorebank Precinct West

- The MPW Stage 2 Development involves:
 - Construction and 24/7 operation of an intermodal terminal (IMT) facility to support a container freight throughout volume of 500,000 twenty-foot equivalent units (TEUs) per annum, including:
 - a rail terminal with nine rail sidings
 - a rail link connection from the sidings to the rail link constructed under MPE Stage 1 (SSD 6766) to the Southern Sydney Freight Line (SSFL)
 - rail and truck container loading and unloading and container storage areas
 - truck waiting area and emergency truck storage areas
 - container wash-down facilities and degassing area

- mobile locomotive refuelling station
- engineer's workshop, administration facility and associated car parking.
- Operation of the IMT facility includes operation of the rail link to the SSFL and container freight movement by truck to and from the MPE Site.
- Construction and 24/7 operation of a warehousing estate on the northern part of the site servicing the IMT facility and including:
 - six warehouses with a total gross floor area (GFA) of 215,000 m² and, for each warehouse, associated offices, staff amenities, hardstands and truck and light vehicle parking
 - 800 m² freight village (operating from 7am to 6pm, 7 days/ week) including staff/visitor amenities
 - internal roads, noise wall, landscaping, lighting and signage.
- Intersection upgrades on Moorebank Avenue at:
 - Anzac Road providing site access
 - Bapaume Road for left turn only out of the site.
- Construction and operation of on-site detention basin, bioretention/ biofiltration systems and trunk stormwater drainage for the entire site.
- Construction works and temporary ancillary facilities, including:
 - vegetation clearing, topsoil stripping and stockpiling and site earthworks and temporary on-site detention
 - importation of up to 1,600,000 m³ of uncompacted fill, temporary stockpiling and placement over the entire site to raise existing ground levels by up to 3 metres
 - materials screening, crushing and washing facilities
 - importation and placement of engineering fill and rail line ballast
 - installation and use of a concrete batching plant
 - utilities installation/connection.

1.2 Monitoring objectives

Management of flora and fauna values within the MIP operational facility and associated lands is reviewed annually following a series of detailed monitoring surveys. The core objectives of flora and fauna monitoring are to:

- Monitor protected threatened flora species
- Monitor protected vegetated areas adjacent to the operational facility (including EPBC offset areas), including:
 - Monitoring the spread of weeds and pathogens
 - Monitoring unauthorised entry and damage
- Monitoring to minimise harm to fauna and maintain habitat offsets (nest boxes)
- Monitor works to protect and improve riparian and aquatic environments
- Monitor for weed occurrence and recruitment within the operational site
- Monitor koala habitat and population

The results of flora and fauna monitoring across the MIP operational facility is the subject of this report. A series of recommendations are included to rectify any management issues identified during monitoring and enhance the biodiversity values within the MIP operational facility.

The methodologies and results of the nest box, EPBC offset sites and Koala surveys have not been included in the body of this report. These monitoring components have been described in separate documents, which have been included as appendices to this report:

- Appendix C. EPBC offset sites - Annual monitoring report (2025-2026)
- Appendix I. Nest box monitoring report (Spring 2025)
- Appendix J. Annual Koala Monitoring Report (2025-2026)



Figure 1-1. MIP operational facility and adjacent biobank sites

1.3 Requirements for monitoring

The requirements to monitor biodiversity values during the operation of the MPE facility are summarised below in Table 1, while the requirements for the MPW facility are summarised in Table 2.

Table 1 MPE operational facility flora and fauna monitoring requirements

Subject	Approval condition	Requirement	Where addressed
Weed and feral animal monitoring	CoC B110 (SSD 7628, 7709)	B110. Prior to operation, the Applicant must prepare an Operational Flora and Fauna Management Plan (OFFMP) in consultation with OEH. The OFFMP must form part of the OEMP required by condition C3 and must include measures to ensure biodiversity values not intended to be impacted are protected, including but not limited to the following: i. Weed control ii. Feral animal control iii. Pathogen management procedures iv. Monitoring v. Rehabilitation actions.	
	CoC B127 (SSD 7628, 7709)	The Applicant must: a. Take all reasonable steps to manage pests and vermin on the site; b. Manage declared noxious weeds on the site in accordance with the requirements of the noxious weeds act 1993; c. Inspect the site on a regular basis, no less than every three months, to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on site in sufficient numbers to pose an environmental hazard or cause the loss of amenity in the surrounding area	Sections: 2.3, 3.3, 4.3 (weeds) Sections: 2.4.2, 3.4.3, 4.4.3 (feral animals)
	CoA 5(h) (EPBC 2011.6229)	For the better protection of EPBC-listed flora & the environment on Commonwealth land, the person taking the action must engage a suitably qualified expert to prepare a Flora and Fauna Management Plan (FFMP) for the approval of the Minister. The FFMP must include (but need not be limited to): h) measures to safeguard flora and fauna from the threat of weeds, fire, pathogens and unauthorised access, including (but not limited to) the commitments outlined in section 7.4.1 of the EIS (and summarised in Annexure A)	
Riparian rehabilitation and management	CoC C21, E9 (SSD 6766)	C21. The Georges River Bridge shall be designed to ensure fauna movement within the riparian corridor is maintained. The bridge shall be designed in consultation with DPI Water and DPI Fisheries and approved by the Certifying Authority. A copy of the final design shall be submitted to the Secretary for information and made available on the Project Website.	Sections: 2.1.2, 3.1.2, 4.1.2

Subject	Approval condition	Requirement	Where addressed
		E9. All activities taking place in, on or under waterfront land, as defined in the Water Management Act 2000, should be conducted generally in accordance with the NSW Office of Water's Guidelines for Controlled Activities.	
	CoC B110 (i) (v) (SSD 7628)	B110 (i),(v). See above. Riparian vegetation monitoring will be conducted within the riparian management areas identified within the original MPE Stage 1 Riparian Vegetation Management Plan (Hyder 2015) and updated version (AMBS 2017). The monitoring requirements are also set out in these documents.	
EPBC-threatened flora offsets	EPBC CoA 6(e)	6(e). measures for regular monitoring of the status of individuals of Nodding Geebung and Small-flower Grevillea and their habitat as measured against the baseline population and distribution, including: i. Fluctuations in population size and distribution; and ii. Response to disturbances and/or management actions. Monitoring of threatened flora species (Nodding Geebung and Small-flowered Grevillea) within the EPBC offset areas will be completed in accordance with the Threatened Flora Offset Management Plan (Arcadis 2020).	Appendix C Appendix B
Monitoring condition of threatened flora and vegetation adjacent to the Rail Link within BA341 lands	EPBC CoA 5(i)	Ongoing monitoring to inform the adaptive management of native vegetation adjoining the rail easement Monitoring of threatened flora and vegetation conditions adjoining the Rail Link will be conducted in accordance with the OFFMP (Arcadis 2020a) and the BA341 Biobanking Agreement (OEH 2019) requirements.	Sections: 2.1.1, 2.2.1, 3.1.1, 3.2.1, 4.1.1, 4.2.1
Koala management	CoC B152 (SSD 7709)	B152. Prior to clearing of native vegetation, a Koala Management Plan (KMP) must be prepared by a suitably qualified person in consultation with OEH and be submitted to the Planning Secretary for approval. KMP must: a. Identify habitat corridors of adequate dimension to provide Koala habitat corridors as supported by Koala specialists, to provide connectivity both within the Intermodal Precinct area and with other core koala habitat areas (i.e. To the south and the west along Georges River); b. Include details of structures to eliminate barriers to movement (presented by fences, roads, drainage culverts or pits, rail lines and the like) for koalas and other native fauna likely to use the site of the habitat corridor; c. Include other measures to minimise the risk of harm to koalas.	Sections: 2.4.2, 2.4.4 , 3.4.1, 3.4.2, 4.4.2 Appendix J

Subject	Approval condition	Requirement	Where addressed
		Koala fencing is to be installed along the interface of the occupied habitat (Wattle Grove offset area) and the MPE operational site. Annual monitoring of the fencing will be conducted to ensure it is functional and in agreement within the Koala Management Plan (Cumberland Ecology 2020). Monitor Bootland and Moorebank Offset Areas for Koala presence and Koala habitat monitoring	
Artificial hollows	EPBC CoA Annexure A – Summary of mitigation measures	Consider the installation of nest boxes in woodland vegetation in the rail corridor that may offer alternative nesting habitat to hollow-dependent species recorded in the study area.	Appendix I
	CoC E34(d)(ii)(b) (SSD 6766)	The identification of areas to be cleared and details of management measures to avoid residual habitat damage or loss and to minimise or eliminate time lags between the removal and subsequent replacement of habitat, such as: - clearing procedures (including nest box plan) Requirements for nest box monitoring have been documented with the approved Nest Box Management Strategy for Moorebank East Precinct Stage 1 – Rail Link (CPB 2017)	
	CoC B108 (a) and (b) (SSD 7628)	B108. Prior to clearing of native vegetation, the Applicant must prepare a Construction Flora and Fauna Management Plan (CFFMP) in consultation with OEH. The CFFMP must form part of the CEMP required by condition C1 and must include the following: a. Measures to minimise the loss of key fauna habitat, including tree hollows; b. Measures to minimise the impacts on fauna on site, including conducting fauna pre-clearance surveys prior to vegetation clearing and building demolition	
Fauna habitat connectivity	SSD 6766 C20	The Anzac Creek rail culvert provides fauna connectivity through the provision of elevated dry passage cells. Monitoring of the use of these dry cells would be completed annually in spring.	Sections 2.4.1, 3.4.1, 4.4.1

Table 2 MPW operational facility flora and fauna monitoring requirements

Subject	Approval condition	Requirement	Where addressed
Weed and feral animal monitoring	SSD (7709)	Inspect the project site to determine weeds, vermin and pest species are not present in sufficient numbers to pose an environmental hazard or cause loss of amenity in the surrounding area.	Sections: 2.3.2, 3.3, 4.3 (weeds) Sections: 2.4.2, 3.4.3, 4.4.3 (feral animals)
Flora and fauna monitoring program	SSD (7709) FCMM 4R	The OEMP would include a biodiversity monitoring program designed to detect operational impacts of the Georges River riparian corridor (within the offset site).	Sections: 2.1.2, 3.1.2, 3.2.1, 4.1.2
Koala management	SSD (7709)	Annual monitoring of the fencing will be conducted to ensure it is functional. Monitoring would comprise a visual inspection of the entire length of fencing, looking for signs of deterioration such as holes, collapsed sections or excessive corrosion. Any additional koala monitoring that is included within the Koala Management Plan would also be included. Annual monitoring of Moorebank Offset areas for koala presence and koala habitat monitoring.	Sections: 2.4.4, 3.4.2, 4.4.2, Appendix J
Artificial hollows	SSD (5066) REMM 6AA	Annual monitoring is to take place in spring and is required to be conducted in line with the MIP Artificial Hollow Strategy (Arcadis, 2025)	Appendix I
Fauna habitat connectivity	SSD 7709 B22 FCM 4U	The native vegetation and connectivity values in the basin outlets would be monitored to ensure that fauna passage is maintained along the Georges River riparian corridor. Fauna control structures including fencing, connectivity structures, fences, grids, gates and bridges.	Sections 2.4.1, 3.4.1, 4.4.1

2 METHODOLOGY

This annual monitoring report summarises the findings of field surveys conducted across the MIP operational facility and provides an assessment of the management actions being implemented. This report contains the results of surveys and site inspections undertaken during the monitoring period (May 2025 – May 2026), including details of:

- Date, time and location
- Nature of the inspection
- Name of the person conducting the inspection
- Weather observations.

Table 3 itemises the survey dates, including the monitoring actions completed and the prevailing weather conditions from the nearest weather station at Holsworthy Aerodrome AWS {station 066161} (BOM 2025-2026).

Table 3. Timings and weather conditions on survey dates

Date	Survey type	Temperature (°C)		Rain (mm)	Attending ecologists
		Min	Max		
25 June 2025	Bi-monthly weed inspection of operational facility and Rail Link	12.1	16.2	2.0	Kate Mauger
27 August 2025	Bi-monthly weed inspection of operational facility and Rail Link	15.2	20.3	0.0	Kate Mauger
4 September 2025	BAM Plots	8.9	23.9	0.0	Kate Mauger, Acacia Jennings
8 October 2025	Threatened flora transects	11.0	31.5	0.0	Brendan Fletcher, Emma Teusner
9 October 2025	Threatened flora transects	18.1	27.8	0.0	Brendan Fletcher, Emma Teusner
15 October 2025	Camera Trap Deployment	10.2	28.6	0.0	Taylor Bliss-Henaghan, Emily Cleghorn
21 October 2025	Threatened flora transects	15.1	24.1	0.0	Brendan Fletcher, Acacia Jennings, Emily Cleghorn
24 October 2025	Threatened flora transects BAM plots	15.7	25.3	0.0	Brendan Fletcher, Acacia Jennings
5 November 2025	BAM plots Bi-monthly weed inspection of the operational facility and Rail Link	10.0	26.1	0.0	Brendan Fletcher, Kate Mauger, Taylor Bliss-Henaghan, Emily Cleghorn
6 November 2025	East Nest Box Monitoring	7.9	26.4	0.0	Taylor Bliss-Henaghan, Emily Cleghorn
18 November 2025	BAM plots Threatened flora transects	8.8	28.5	0.0	Kate Mauger, Acacia Jennings
24 November 2025	West Nest Box Monitoring	15.7	24.5	0.0	Acacia Jennings, Chris Power

Date	Survey type	Temperature (°C)		Rain (mm)	Attending ecologists
		Min	Max		
26 November 2025	Camera trap collection	16.5	34.9	0.0	Acacia Jennings, Chris Power
12 December 2025	Bi-monthly weed inspection of the operational facility and Rail Link	18.1	23.3	8.0	Kate Mauger
15 December 2025	Camera trap collection Camera trap deployment	16.1	23.9	0.0	Taylor Bliss-Henaghan, Acacia Jennings
13 January 2026	Koala SAT surveys and spotlighting Camera trap collection	17.3	30.1	0.6	Taylor Bliss-Henaghan, Emily Cleghorn
14 January 2026	Koala SAT surveys and spotlighting Camera trap collection	19.7	27.5	0.0	Acacia Jennings, Chris Power
2 February 2026	Koala SAT surveys Riparian vegetation monitoring Camera trap deployment	15.8	21.9	5.2	Kate Mauger, Taylor Bliss-Henaghan, Acacia Jennings, Chris Power
19 March 2026	Camera trap collection Bi-monthly weed inspection of the operational facility and Rail Link	19.5	25.3	0.2	Kate Mauger, Acacia Jennings

2.1 Native vegetation monitoring

The methodologies applied to monitoring native vegetation at riparian vegetation management sites and in the lands adjoining the Rail Link are discussed below, and the location of the surveys are presented in Figure 2-2.

2.1.1 Lands adjoining Rail Link

Native vegetation adjoining the Rail Link in the Wattle Grove offset area was assessed to determine whether operations within the Rail Link are resulting in edge effects that are impacting the condition of adjoining vegetation. Surveying was restricted to native vegetation adjoining (within 10 metres) the Rail Link. Monitoring of this vegetation is a requirement of the EPBC Condition of Approval (CoA) 5(i) (Table 1).

Vegetation condition was monitored by conducting 10 x 40-metre vegetation quadrats. Vegetation quadrats followed the Biodiversity Assessment Method (BAM) (DPIE EES 2020) however focused on composition and structure data; no function data was collected. Vegetation quadrats were conducted in the same location as the previous survey events to allow an accurate comparison of changes to composition across monitoring years. The location of vegetation quadrats was demarcated with a metal star picket and is given below in Table 4.

The following composition attributes were quantitatively assessed within vegetation quadrats:

- Per cent foliage cover of canopy species
- Per cent foliage cover of shrub species
- Per cent foliage cover of ground cover species
- Per cent foliage cover of exotic species.

Table 4. Location details of vegetation plots in lands adjoining the Rail Link

Plot number	Zone	Easting	Northing
Eastern side of Rail Link	56	308028	6240109
Western side of Rail Link	56	307993	6240098

2.1.2 Riparian vegetation management

Riparian vegetation monitoring is required to measure the success of bush regeneration works and track the regeneration and condition of native vegetation at Georges River and Anzac Creek management areas. Results are compared annually against the performance criteria identified in the Riparian Vegetation Management Plan ([Table 4, Riparian vegetation management monitoring report] Hyder 2015) to determine whether works are on track to achieving the RVMP objectives, which are to:

- Restore, conserve, and enhance the riparian vegetation in the Georges River and Anzac Creek sites that fall within the SIMTA Rail Corridor
- Achieve long-term eradication of weed species from the management sites
- Maintain an adequate width of riparian vegetation adjoining Georges River and Anzac Creek
- Protect and enhance fauna habitat connectivity along the Georges River and Anzac Creek riparian zone.

In April 2018, the Anzac Creek riparian management area was burned in a bushfire. Following the bushfire, asbestos was identified within the area, and since then, no bush regeneration works have been conducted within the Anzac Creek management zone. Subsequently, monitoring was not conducted by Arcadis to review bush regeneration activities within this management area. Anzac Creek riparian management area will not be reviewed further in this report.

Eight 5 x 5-metre monitoring plots were established across the Georges River management zones during the baseline survey in June 2018 (AMBS 2017). Two additional plots were established before works began on the western bank of the Georges River in September 2019 (AMBS 2017). These permanent monitoring plots were established to monitor changes in vegetation composition as well as monitor the success of plantings. The locations of each plot are detailed in Table 5.

At each monitoring plot, the following actions were conducted:

- Plots were divided into four segments, numbered 1 to 4, from the south east corner of the plot in a clockwise direction to the north-east corner of the plot.
- Vegetation attributes were assessed and recorded for each segment:
 - Per centage cover of weed species – per cent cover in each segment was estimated for each weed species present, and a mean value for each species was calculated
 - Per centage cover of native species – per cent cover in each segment was estimated for each structural layer (ground, mid and canopy), and a mean value for each structural later was calculated
 - Naturally occurring (non-planted) native species – a list of all naturally occurring native species within the plot was recorded.
- Photographs of each plot were taken from the permanent stake

Previously, the number of planted natives and naturally occurring natives were recorded separately. However, due to difficulty in distinguishing between now established planted and naturally occurring native vegetation, the methodology has been updated to exclude this delineation.

Table 5 Riparian vegetation monitoring plot details

Management zone	Plot Number	Zone	Easting	Northing
GZ1	MR09	56	307302	6239796
GZ1	MR10	56	307310	6239809
GZ1	MR11	56	307296	6239829
GZ2	MR12	56	307261	6239813
GZ2	MR13	56	307249	6239834
GZ2	MR15	56	307245	6239769
GZ4	MR14	56	307229	6239815
GZ4	MR16	56	307222	6239778
GZ2	MR18	56	307152	6239797
GZ5	MR19	56	307158	6239818



Figure 2-1. Monitoring plot locations established by AMBS during early years of monitoring

2.2 Threatened flora monitoring

Threatened flora species were monitored on lands adjoining the Rail Link. The methodologies used to monitor threatened flora are discussed below.

2.2.1 Lands adjoining Rail Link

Monitoring of threatened flora in the areas adjoining (within 10 metres) the Rail Link was conducted to determine if operations within the Rail Link are resulting in edge effects that are impacting threatened species occurrence or individual condition.

Monitoring for threatened flora species occurrence was conducted by walking parallel field transects at three-metre spacings, marking the location of any threatened species on an Arc-GIS-enabled iPad. Notes were collected on the health of plants, including whether individuals were seeding, budding or flowering.

2.3 Weed management

Weed monitoring has been conducted by an ecologist on a bi-monthly basis over the 2025/2026 monitoring period: June, August, October, and December in 2025, and February and May in 2026.

The methodology employed to monitor weeds across the operational facility and in the Rail Link corridor is described in the bi-monthly reports, which have been included in Appendix A.

A summary of the changes to weed cover across the MIP operational facility and Rail Link for the monitoring year has been summarised in Section 3.3, and ongoing recommendations to manage weed are included in Section 4.3.

2.3.1 Weed control works

Arcadis has been engaged to oversee weed remediation works conducted by Toolijooa Environmental Restoration to reduce weed cover and prevent the spread of weeds outside of the Rail Link. Sections of the Rail Link adjoin ecologically sensitive areas, which are susceptible to invasion. 57 days of weed remediation works were conducted between June 2025 and May 2026. The methodology employed to monitor weed remediation works in the Rail Link corridor is described in the weed remediation summary report, included in Appendix A.

A summary of the changes to weed cover across the Rail Link as result of the targeted weed control works has been summarised in Section 3.3. A detailed memorandum has also been included in Appendix B.

2.3.2 MPW weed monitoring

Weed monitoring works were conducted bimonthly in Moorebank Precinct West (MPW), on six occasions across the 2025/6 monitoring period.

Weed monitoring for this site are conducted bimonthly, traversing the MIP operational facility on foot, surveying landscaped areas and stormwater infrastructure. Surveys involve supervising Toolijooa bush regenerators in the northern section of MPW, adjacent to the security building, removing weeds and trimming native species. Routine monitoring of the landscaped vegetation along Bushmasters Avenue involved observing any weed occurrences or infestations within the native vegetation.

2.4 Fauna monitoring

Surveys were undertaken to assess fauna habitat connectivity, determine feral animal presence and review the effectiveness of fauna habitat features relevant to the operation of the MIP facility. The surveys conducted have been discussed below.

2.4.1 Habitat connectivity monitoring

Anzac Creek culvert in the Wattle Grove offset area, the expanse beneath the Rail Link bridge (on the eastern side of Georges River) and three drainage outlets in the Georges River offset area were monitored using remote cameras to determine whether the fauna connectivity structures are facilitating fauna passage between habitat. A total of twelve remote infrared cameras were deployed for periods between four to nine weeks to photograph animals moving between habitat patches (Figure 2-2). The locations of the cameras are described in Table 6.

Table 6 Location of remote cameras monitoring habitat connectivity

Description of location	Total deployment
MPE	
Northern bank of Anzac Creek facing downstream	8.5 weeks (15/10/2025-15/12/2025)
Northern bank of Anzac Creek facing upstream	8.5 weeks (15/10/2025-15/12/2025)
Southern bank of Anzac Creek facing downstream	8.5 weeks (15/10/2025-15/12/2025)
Southern bank of Anzac Creek facing upstream	8.5 weeks (15/10/2025-15/12/2025)
MPW	
Northern side of the rail bridge over Georges River facing south	4 weeks(15/12/25 – 14/01/2026)

Description of location	Total deployment
Southern side of the rail bridge over Georges River facing north	4 weeks (15/12/25 – 14/01/2026)
Southern-most outlet facing south	4 weeks (15/12/2025-13/01/2026)
Southern-most outlet facing north	6 weeks (02/02/2026 – 19/03/2026)
Middle culvert/outlet facing north	6 weeks (02/02/2026 – 19/03/2026)
Middle culvert/outlet facing south	4 weeks (15/12/2025-13/01/2026)
Northern-most outlet facing north	4 weeks (15/12/2025 – 14/01/2026)
Northern-most outlet facing south	6 weeks (02/02/2026 – 19/03/2026)

The captured view of deployed cameras at each survey location is presented in Plate 2-1 and Plate 2-2.



Plate 2-1 Examples of remote camera deployment at Anzac Creek management site to monitor habitat connectivity. Left: Remote camera: downstream south. Right: Remote camera: upstream south.



Plate 2-2 Example of remote camera deployment to assess the connectivity value of the Georges River management site. Left: Remote camera facing south west at rail underpass. Right: View of remote camera facing south at outlet basin

Following the collection of remote cameras, captured photographs were reviewed for animal presence. A species list was generated for each camera, with dates and times recorded for threatened species observations (Appendix B).

2.4.2 Feral animal monitoring

Feral animal presence was investigated where offset sites interface with the MIP operational facility through the deployment of remote cameras. Cameras were left at a single location for approximately four to nine weeks to detect feral animal activity, following which the captured images were reviewed and processed. A species list for each camera was documented.

Cameras were along access trails, internal roads and connecting passages that are likely to be used by feral animals when moving across the landscape. Locations of cameras are shown in Figure 2-2, and examples of the captured views of deployed cameras are presented in Plate 2-3 and Plate 2-4. The locations of the cameras are described in Table 7.

Table 7 Location of remote cameras monitoring habitat connectivity

** Represents the number of weeks of “successfully deployment” omitting the failed cameras deployed duration.*

*** Represents a “failed deployment” whereby one SD card was blank and failed to record. As such, a camera was redeployed in this location.*

Description of location	Number of cameras	Total deployment
MPE		
Internal EW Access track	1	8.5 weeks (15/10/2025-15/12/2025)
Internal EW Access track	1	8.5 weeks (15/10/2025-15/12/2025)
Access track near detention basin	1	8.5 weeks (15/10/2025-15/12/2025)
Fire trail in the south of the Precinct	1	8.5 weeks (15/10/2025-15/12/2025)
Northern access track bordering defence fence	1	8.5 weeks (15/10/2025-15/12/2025)
Access track near Yallum Court	1	8.5 weeks (15/10/2025-15/12/2025)
MPW		
Central access track	1	4 weeks (15/12/2025-13/01/2026)
South of northern-most access track	1	6 weeks* (15/12/2025 – 14/01/2026) ** (02/02/2026 – 19/03/2026)

Moorebank Precinct East

Six remote infra-red cameras were deployed targeting pest species at MPE. Two were set up along the access roads that follow the boundary fence of MPE, where it interfaces with the Wattle Grove offset area and the remaining four were located inside the Wattle Grove offset area along internal access tracks.



Plate 2-3 Examples of feral animal remote camera deployment. The left camera faces the northern access track at the boundary fence to MPE, and the right-hand image faces an internal access track within the Wattle Grove offset area.

Moorebank Precinct West

Two cameras were deployed targeting pest species at the Moorebank (Georges River) offset site. One was deployed in the southern section of the Georges River management site facing the access track and the second was set up in the northern section of the site near the fence bordering the MPW operational facility (Plate 2-4).



Plate 2-4 Examples of remote cameras deployed at MPW targeting feral vertebrates. The left camera faces the internal Central access track in the southern section of the Georges River offset site, and the right image shows the view of a camera south of the northern most access track.

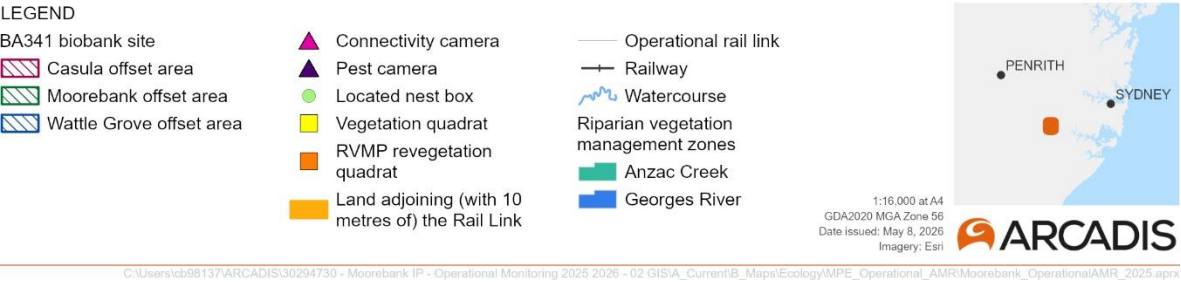


Figure 2-2. Monitoring surveys conducted across MPE operational facility

2.4.3 Koala management monitoring

Arcadis ecologists visually inspected fencing and Koala fencing within the Wattle Grove offset area where it interfaces with the MPE Operational facility. Koala fencing, bridges and culverts were assessed for installation and condition in accordance with *Figure 9. Location of Koala Grids and Bridges*, of the Moorebank Precinct West Stage 2 Koala Management Plan (KMP) (Cumberland Ecology, 2020).

Visual inspections included an assessment of the following:

- The level of intactness of fences, identifying damage, holes, points of entry, and areas of collapse or corrosion
- Presence and condition of koala bridges across cyclone fencing
- Presence and condition of koala gates and grids at management access points Wattle Grove offset area (Plate 2-3)

Where issues were identified, photographs were captured, and locations recorded using an Arc-GIS-enabled iPad.

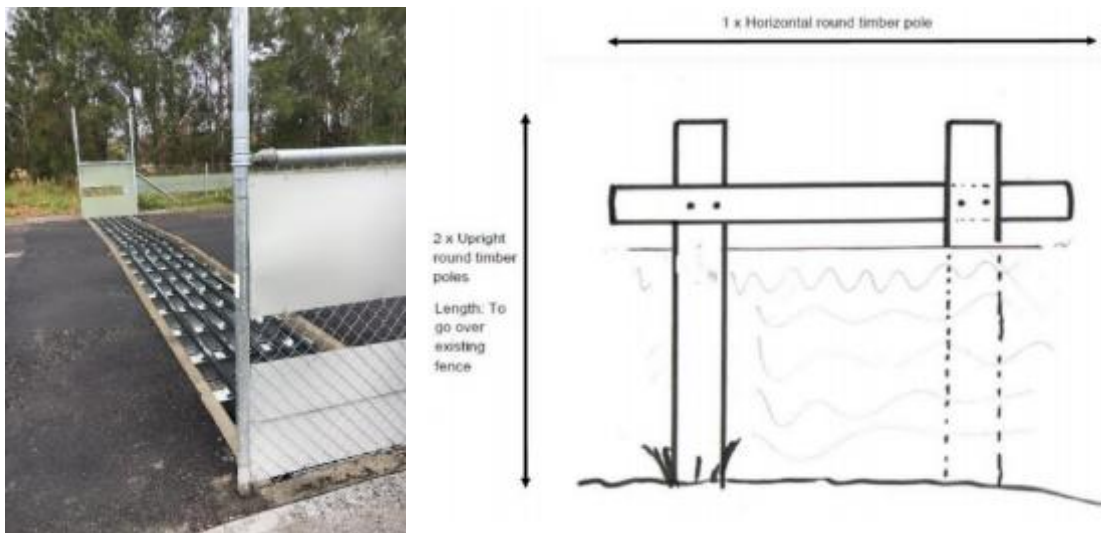


Plate 2-5 Koala structures to be constructed along the perimeter fencing. Left: Koala grids. Right: Koala bridges.

2.4.4 Annual koala surveys and habitat monitoring

Arcadis ecologists performed annual koala surveys across the MIP offset areas between December 2025 and March 2026, to monitor the established survey locations for koala habitat and population monitoring across the offset sites.

Koala survey methodology followed the Baseline Koala Monitoring Report (Arcadis, 2025c), which established the permanent koala monitoring sites during the previous year's baseline surveys. The 2025–2026 period represents Year 1 of annual monitoring. Annual monitoring comprises of spotlighting and Rapid Spot Assessment Technique surveys to assess Koala use across the offset sites, while habitat monitoring assesses potential changes in the suitability of habitat for the species. Locations of Koala monitoring surveys are shown in Figure 2-3.

Rapid Spot Assessment Techniques (SATs) (Phillips et al. 2021) were conducted at each of the Koala monitoring sites. Surveys involved searching the nearest 5-7 preferred koala feed trees that have a minimum DBH of 30 centimetres for koala presence, through the identification of faecal pellets at the base of trees or individuals in trees.

Additionally, nocturnal spotlighting surveys were conducted to detect the presence of koalas. These nocturnal spotlighting surveys were primarily completed on foot in areas of suitable koala habitat, though vehicle-based transects were conducted along Georges River Corridor in areas of low tree density. To conduct spotlighting surveys, ecologists used high-powered handheld torches to slowly scan vegetation for eyeshine, walking at an average pace of 10 minutes per 100 metres or <5 kilometres per hour when travelling in a vehicle.

Rapid habitat assessments were completed during Rapid-SAT surveys, at each Koala monitoring site. From the stake demarcating the site, a 20 x 20 metre quadrat was assessed, looking 20 metres south and 20 metres east from the stake. Two plots – sites 3 and 6 however had cleared areas to the south, so the plot was undertaken facing north instead. The following vegetation characteristics were recorded:

- Eucalypt canopy – species and per centage of cover.
- Mid-storey – species and per centage of cover (below 8m).
- Ground cover – dominant species and per centage of cover.
- Leaf litter – per centage of cover.
- Estimated cover of weeds.
- Any other changes or issues on site.
- Photo point monitoring, capturing a view of each monitoring stake facing 0° (north) and 180° (south)

In addition to rapid assessment data collected at each of the habitat monitoring points, existing vegetation monitoring data from across the biobank sites was reviewed to assess broad-scale changes in vegetation condition over time. Data collected for vegetation integrity score (VIS) plots undertaken for monitoring of BA341 and EPBC flora offset sites were reviewed for the purpose of informing changes to Koala habitat across the site

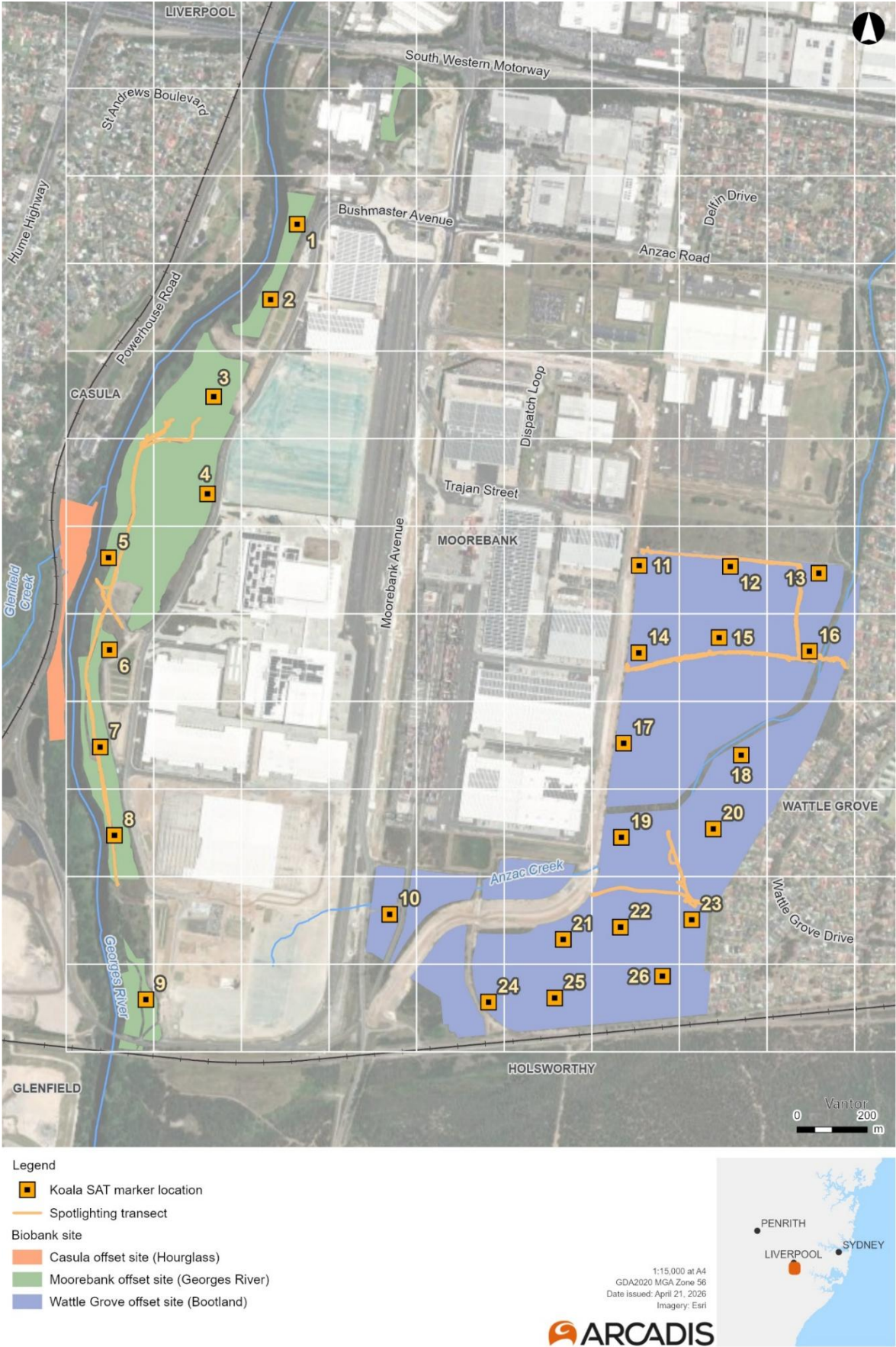


Figure 2-3 Locations of Koala monitoring surveys

3 RESULTS

The results of the monitoring surveys undertaken to assess the condition of the biodiversity values within the MIP operational facility are discussed below.

3.1 Native vegetation

The result of monitoring native vegetation at riparian vegetation management sites and in the lands adjoining the Rail Link are discussed below.

3.1.1 Lands adjoining Rail Link

Native vegetation on either side of the Rail Link is Plant Community Type (PCT) 883 Castlereagh Scribbly Gum woodland. Assemblages on either side of the Rail Link are in good condition with low levels of weed occurrence which is generally restricted to the fence line, and a diversity of native plant species. Both patches of native woodland are fully structured, including trees, shrubs, and groundcover vegetation. No signs of natural dieback were observed during monitoring surveys, nor were any signs observed to suggest that operations within the Rail Link are having a negative impact on native vegetation. Vegetation was observed to be gaining biomass in comparison to last year.

Two vegetation quadrats were conducted within the lands adjoining the Rail Link, one on the eastern side and one on the western side. A summary of the results of quadrat monitoring is presented in Table 8.

Table 8. Results of vegetation quadrat monitoring

Vegetation attribute	Monitoring quadrat on western side of Rail Link (Q1)		Monitoring quadrat on eastern side of Rail Link (Q2)	
	Cover (%)	Richness	Cover (%)	Richness
Native canopy	20	2	30	3
Native shrub	49.9	17	76	19
Native groundcover	26.7	19	22.6	24
Total native	96.6	38	126.5	45
Total exotic	0.7	7	0.4	4
High threat exotic	0.2	2	0.1	1

Ten species of exotic plants were recorded during quadrat monitoring, these were: *Briza subaristata* (Shivery grass) and *Senecio madagascariensis* (Fireweed) which are also listed as a High Threat Weeds; *Briza maxima* (Quaking grass), *Conyza bonariensis* (Hairy Fleabane), *Lolium spp.*, *Medicago polymorpha* (Burr Clover), *Plantago lanceolata* (Ribwort), *Thysanotus tuberosus*, *Trifolium arvense* (Haresfoot clover), *Vicia sativa* (Common vetch).

Exotic species cover was low in both quadrats, at 0.4% and 0.7%, respectively. Weed occurrence was largely confined to disturbed areas immediately adjacent to the Rail Link, with most in areas disturbed by the Rail Link construction, rather than in areas of intact and undisturbed native vegetation.

3.1.2 Riparian vegetation management

The 2025/2026 survey marked the thirteenth time monitoring has occurred for revegetated areas on the eastern side, and the eighth time on the western side of the Georges River management site. A total of 47

exotic species and 41 native species were recorded across the management site. A summary of exotic and native vegetation cover is presented in Appendix F.

The results demonstrate an increase in exotic cover at seven of the ten monitoring quadrats, with the largest increase in exotic cover observed at MR14, which increased from 2.75 to 46 per cent between April 2025 and February 2026, represented as light-green in Figure 3-1. Despite native species still being present, weeds have quickly colonised all bare areas and likely have suppressed native species from colonising and having higher increases in cover. Other locations where increases in weed cover have been recorded are located on the edges of the management zone and are experiencing weed encroachment from less managed adjoining areas.

Average weed cover across the management site was 20.82 per cent, higher than the 10.55 per cent recorded in 2024/2025. This increase may reflect variation in rainfall, flooding and warm weather, although management activities such as bush regeneration, weeding and planting may also have influenced the results.

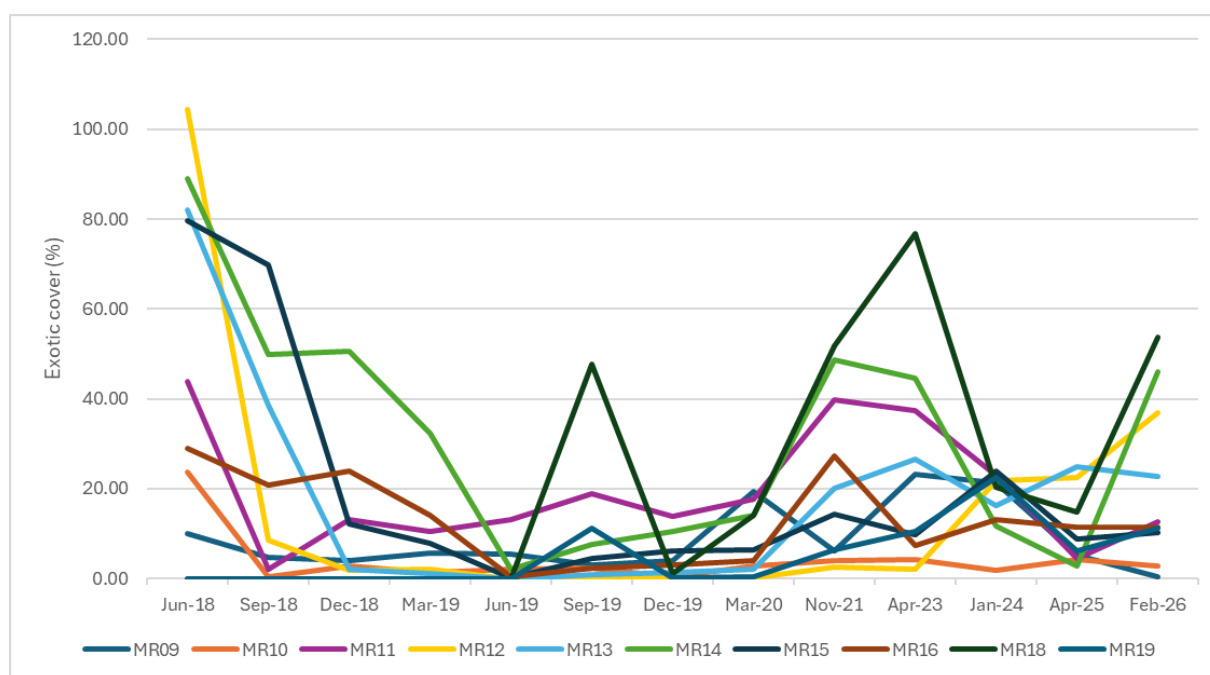


Figure 3-1 Line plot outlining exotic cover over the past thirteen monitoring events at all ten monitoring sites

An increase in native species cover was observed at six of the ten monitoring quadrats, while the other four quadrats recorded a decrease in native cover. The largest increase in native species cover was recorded at MR9 and MR11, which increased from 8.7 to 15.7 per cent and 16.3 to 27.3 per cent respectively between April 2025 and February 2026. It is likely the encroachment of weeds from areas outside of the management site contributed to the decrease in native cover at the four locations. Native vegetation cover in all monitoring quadrats increased from an average of 13.66 per cent in April 2025 to 14.37 per cent in February 2026 (Figure 3-2).

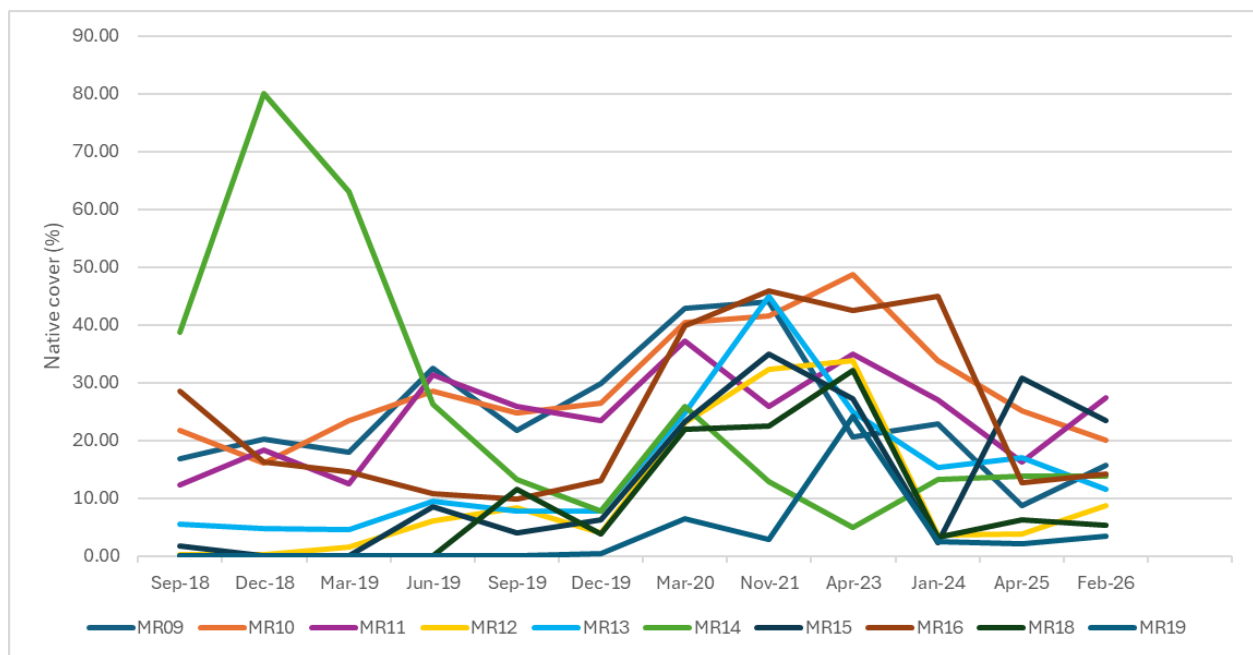


Figure 3-2 Line plot of the native cover over the past thirteen monitoring events at all ten monitoring sites

Plantings for the Georges River management site were selected based on species included in the River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (RFEFCF) Endangered Ecological Community (EEC). Ongoing monitoring of the revegetation areas focused on reviewing the survival and persistence of planted species commensurate with the EEC. A suite of shrub and groundcovers species were recorded which are characteristic of RFEFCF, including *Acacia parramattensis* (Parramatta Wattle), *Austrostipa ramosissima* (Stout Bamboo Grass), *Echinopogon ovatus* (Forest Hedgehog Grass) and *Melaleuca styphelioides* (Prickly-leaved Tea Tree). A comparison of the species recorded during plot monitoring with species characteristic of the RFEFCF EEC is included in Appendix E.

Plantings have displayed significant growth over the past eight years. Individual plantings are mostly indistinguishable from each other however there are still patches of bare ground which could encourage weed incursion. Native and exotic cover within plot locations varied over the past eight years of monitoring.

An inventory of native flora species recorded within the fixed monitoring quadrats has been included in Appendix E, and photo points are included in Appendix G.

3.2 Threatened flora

The results of monitoring threatened flora are discussed below.

3.2.1 Lands adjoining Rail Link

Parallel field transect identified two threatened plant species within 10 metres of the Rail Link corridor fencing - *Hibbertia puberula* subsp. *puberula* and *Persoonia nutans* (Nodding Geebung). These species have been recorded in this area during previous monitoring surveys.

Grevillea parviflora subsp. *parviflora* (Small-flower Grevillea) was identified in the south-west corner of the western side of the Rail Link in 2023, however was not identified during the 2024 or 2025 surveys. *Acacia bynoeana* (Bynoe's Wattle) was recorded in the 2021 monitoring survey but has not been recorded since.

One individual of *Persoonia nutans* (Nodding Geebung) was identified at the north-eastern extent of the survey area in 2024 and was detected again this survey period. *Hibbertia puberula* subsp. *puberula* was observed in high numbers, including 11 new individuals, most notably on the west rail link corridor. Individuals appeared to be in a healthy condition, with some bearing flowers and seeds. The locations of new threatened individuals detected have been presented in Figure 3-3.

Table 9 provides the listing status for the threatened plant species located and a count for the number of new individuals found.

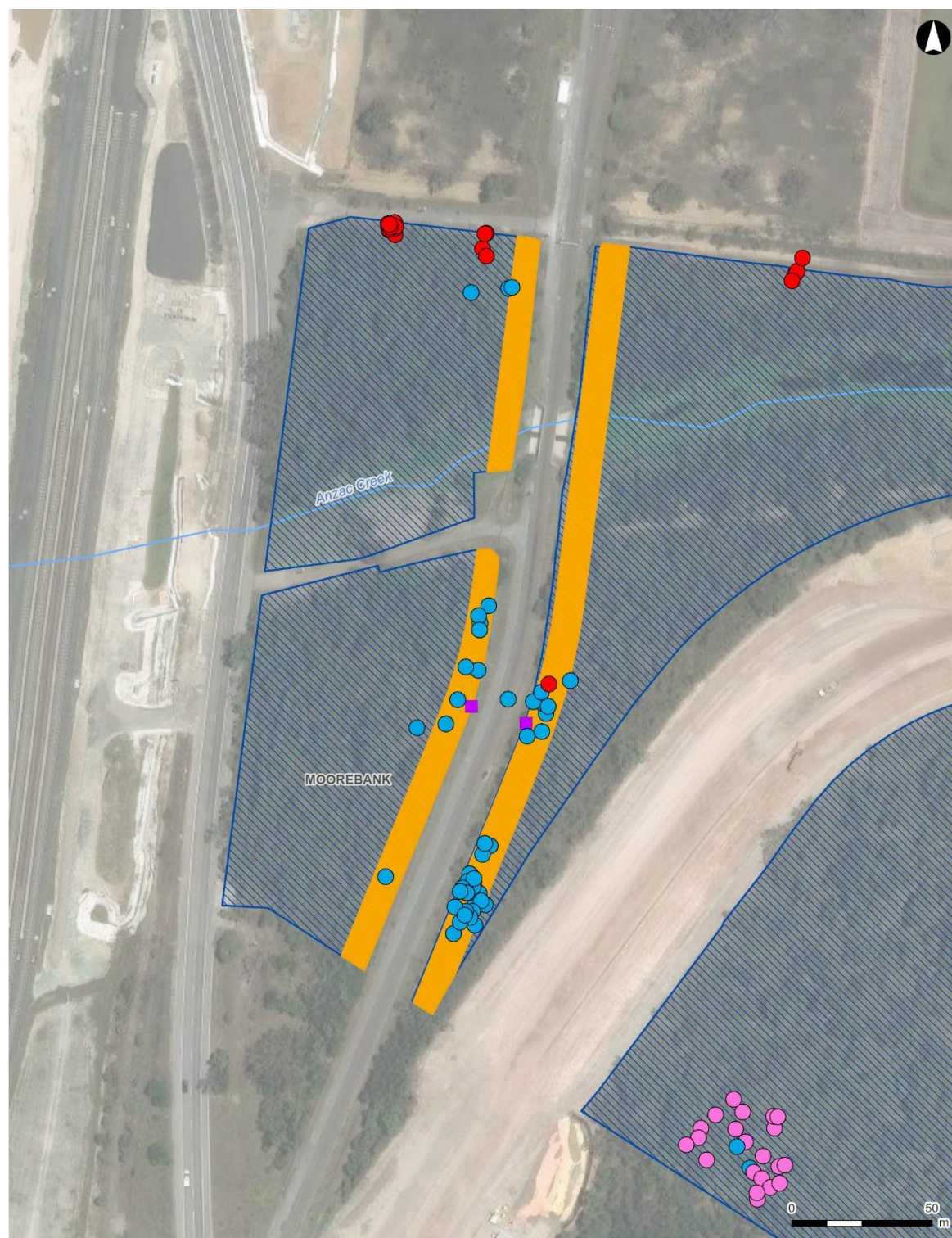
Table 9. Threatened plant species identified within lands adjoining the operational Rail Link

Species	Listing status	Number of new individuals identified
<i>Hibbertia puberula</i> subsp. <i>puberula</i>	BC Act: Endangered EPBC Act: Not listed	11
<i>Persoonia nutans</i> (Nodding Geebung)	BC Act: Endangered EPBC Act: Endangered	0

Changes to the number of individuals of the observed threatened plant species are shown below in Table 10.

Table 10 Changes to numbers of individuals of the four threatened plant species identified on lands adjoining the Rail Link between this survey period (2025/2025) and the last survey period (2024/2025)

Species	Number individuals detected 2024/2025	Change
<i>Acacia bynoeana</i> (Bynoe's Wattle)	0	0
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> (Small-flower Grevillea)	0	0
<i>Hibbertia puberula</i> subsp. <i>puberula</i>	65	+11
<i>Persoonia nutans</i> (Nodding Geebung)	1	0



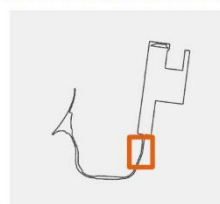
Legend

- Wattle Grove offset area
- Land adjoining (with 10 metres of) the Rail Link
- Watercourse
- Vegetation quadrat

Threatened flora

- Grevillea parviflora* subsp. *parviflora*
- Hibbertia puberula* subsp. *puberula*
- Persoonia nutans*

1:2,000 at A4
GDA2020 MGA Zone 56
Date issued: May 18, 2026
Imagery: Esri



ARCADIS

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Figure 3-3. Individuals detected in lands adjoining the operational Rail Link

3.3 Weed management

Moorebank Precinct East

During operational monitoring, *Eragrostis curvula* (African Lovegrass) was identified at three EPBC Offset Areas (P1, P2 and P3). *Eragrostis curvula* is dominating the edges of these areas hugging the roadside and outcompeting native understorey species. Within the Wattle Grove offset area, two additional priority weeds were incidentally detected along the northwestern edge of the northern access track. A mature *Lantana camara* (Lantana) and two juvenile *Olea europaea* subsp. *cuspidata* (African olive) are present along the road. These species should be a priority for eradication from the offset area. The locations of these occurrences are compiled in Table 11 below.

Table 11 Incidental observations of weed outbreaks in Wattle Grove offset area

Species present	Offset site	Latitude	Longitude (WSG 1984)
<i>Eragrostis curvula</i> (African Lovegrass)	P1	-33.960626°	150.922054°
	P2	-33.960626°	150.922962°
	P3	-33.960421°	150.926238°
<i>Lantana camara</i> (Lantana)	Wattle Grove	-33.955263°	150.929755°
<i>Olea europaea</i> subsp. <i>cuspidata</i> (African olive)	Wattle Grove	-33.955260°	150.929948°

An additional weed species listed as a Weeds of National Significance was recorded in the MPE operational facility and Rail Link during the monitoring year: *Senecio madagascariensis* (Fireweed).

Priority weeds were sparsely distributed and were mainly confined to the Rail Link corridor. The locations of bi-monthly weed monitoring survey sites are provided in Appendix A.

Weed cover across the MPE operational facility was generally low throughout the monitoring year.

The greatest changes occurred in the warehouse areas and eastern boundary drainage infrastructure. Most of these areas have now been affected by the Moorebank Avenue Upgrade project and can no longer be surveyed adequately due to access constraints associated with ongoing construction. Historically, regular mowing in these areas reduced occurrences of *Chloris virgata* (Rhodes Grass). Periodic weed control works were effective in maintaining low weed cover and promoting native species cover; however, recent disturbance associated with the Moorebank Avenue Upgrade means current weed trends in these areas are uncertain.

Weed cover in the Rail Link decreased steadily over the monitoring year. A large-scale remediation project began in early spring 2020 to remove weeds from soft landscaped areas and revegetate them with native species. Bi-monthly surveys during the reporting period tracked the progress of this work and assessed weed cover and native seed establishment.

Overall, exotic plant cover remained consistent with the previous year, at 0.4 per cent in Q2 and 0.7 per cent in Q1. Ten exotic plant species were recorded during quadrat monitoring: *Briza subaristata* (Shivery Grass), *Senecio madagascariensis* (Fireweed), *Briza maxima* (Quaking Grass), *Conyza bonariensis* (Hairy Fleabane), *Lolium* spp., *Medicago polymorpha* (Burr Clover), *Plantago lanceolata* (Ribwort), *Thysanotus tuberosus*, *Trifolium arvense* (Haresfoot Clover) and *Vicia sativa* (Common Vetch). High-threat weeds require ongoing management.

A targeted large-scale effort to reduce the biomass of exotic species and eradicate aggressive grasses impacting native seedlings commenced in December 2022. As of May 2026, 57 days of weed control

works had been completed in the 2025-2026 period (across all of the MIP). The weed control works conducted by Toolijooa Environmental Restoration and overseen by Arcadis successfully reduced weed biomass whilst maintaining native species. Efforts to control/suppress weeds were focused on weed species that were having a detrimental impact on native seedlings, mainly competitive exotic grass species. Targeted weed control works included herbicide spraying and slashing.

Over the period that weed control works were undertaken, native plants were observed to be increasing in size and colonising new areas. Weed growth continues to be suppressed, particularly in the areas immediately adjacent to the BioBank site. Large instances of native grasses (*Themeda triandra* and *Dichanthium sp.*) are growing substantially. Steep areas along berms are being avoided for slashing due to safety concerns. Additionally, the small amounts of exotic vegetation are currently stabilising these berms and will be targeted once construction is finalised.

At the IMEX building and adjacent drainage infrastructure *Acacia falcata* (Hickory Wattle) continue to grow unimpeded by weeds.



Plate 3-1. Left: Soft batters in the Rail Link corridor following weed removal works by Toolijooa, native grasses (*Themeda triandra* and *Dichanthium sp.*) are growing substantially with weed growth suppressed particularly in the areas immediately adjacent to the BioBank Site. Right: at the IMEX building and adjacent drainage infrastructure *Acacia falcata* (Hickory Wattle) continue to grow unimpeded by weeds.

Moorebank Precinct West (MPW)

Weed monitoring conducted across 2025-2026 concluded that the landscaped areas along Bushmasters Avenue are in good condition, with minor weed incursions. Whilst the 2025-2026 surveys found the levels of weeds to be low, if continued maintenance of these landscaped areas is not frequent enough their coverage could increase. This is pertinent for areas where landscaped species have died back, and



bare ground is more abundant (



Plate 3-2). Sediment basins adjacent to BioBank site showed no significant increases in weed coverage were observed around the basin outlet points. The APZ area – within northern MPW is showing a suppression of *Medicago polymorpha* and other herbaceous weeds occurring in this area (*Sonchus oleraceus* (Common Sow thistle), *Cirsium vulgare*) with large stands of the native shrub *Dodonaea viscosa* growing unimpeded.



Plate 3-2 Left: Areas with limited to no landscaped vegetation are particularly susceptible to weed incursion from cleared areas along Bushmasters Avenue which could be colonised by weed species. Right: No significant increases in weed coverage were observed around the basin outlet points

The following reports have been completed throughout the year to document weed control works being undertaken within the Rail Link and broader operational area. These reports have been included as Appendices to this report:

- Bi-monthly weed monitoring reports (June 2025 – May 2026) (Appendix A)

3.4 Fauna

The results of monitoring fauna habitat connectivity, feral animals and the effectiveness of fauna habitat connectivity features are discussed below.

3.4.1 Habitat connectivity

A total of twelve connectivity cameras were deployed across the MIP, including four surrounding the rail culvert at Anzac Creek with the Wattle Grove offset area (MPE), and eight within the Georges River management site (MPW). Within MPW, two were located beneath the Rail Link and the remaining six were around the three outlet basins to the Georges River.

Moorebank Precinct East

Remote infra-red cameras captured a suit of native and introduced fauna utilising the Anzac Creek culvert to move between patches of bushland within the Wattle Grove offset area. Fauna furniture provides a stable surface, enabling ground-dwelling mammals and birds to safely cross between fragmented bushland patches, supporting habitat connectivity. Common native species recorded utilising the fauna furniture included Swamp Wallaby (*Wallabia bicolor*), Eastern Grey Kangaroo (*Macropus giganteus*), Australasian Swamphen (*Porphyrio melanotus*), Australian Raven (*Corvus coronoides*), White-faced heron (*Egretta novaehollandiae*) and Superb Fairy-wren (*Malurus cyaneus*). Introduced fauna recorded included Red Fox (*Vulpes vulpes*), Domestic Cat (*Felis catus*) and Black Rat (*Rattus rattus*).



Plate 3-3 Fauna captured on remote cameras using fauna furniture to move between patches of bushland crossing Anzac Creek. Top Left: Red fox. Top Right: Swamp Wallaby.

Moorebank Precinct West

Terrestrial fauna were recorded on remote cameras beneath the Rail Link bridge on the eastern side of the Georges River and around the outlet basins. Native species detected included Swamp Wallaby and Brushtail Possum (*Trichosurus vulpecula*). More pest species were recorded at MPW than in the Wattle Grove offset area, including Rusa Deer (*Rusa timorensis*), Red Fox, Brown Hare (*Lepus europaeus*) and Domestic Cat (Plate 3-4). No fauna was captured utilising the woody debris to cross the ballast.



Plate 3-4 Fauna species identified beneath the Rail Link bridge (on the eastern side of Georges River). From top left clockwise: Swamp Wallaby, Rusa Deer, Red Fox carrying prey item, Domestic cat.

A complete list of fauna recorded on remote cameras at Anzac Creek culvert and in the Georges River management site has been included as Appendix B.

3.4.2 Koala management

To date, no Koala bridges or grids have been constructed as per the MIP Koala Management Plan (KMP) (Cumberland Ecology 2020). Fauna ramps were located at Anzac Creek culvert, which are providing connectivity between patches of bushland for Koala. Fauna ramps were observed to be in good condition. The condition of perimeter fencing separating the Wattle Grove offset area from the MPE operational facility was found to be in good condition with no maintenance issues.

Koala surveys and habitat monitoring

During targeted Koala surveys at least one Koala was detected within the Wattle Grove offset area. Nocturnal spotlighting surveys were conducted on 14 and 15 of January 2026, with one individual was observed in a tree along the central east-west access track of the Wattle Grove offset area on 14 January. No individuals were observed during surveys in the Georges River Corridor offset area. Additionally, one Koala was incidentally observed on 6 November 2025 in the Wattle Grove offset area.

Koala Rapid Spot Assessment Technique (SAT) Surveys were conducted across the 26 Koala monitoring sites. During Rapid-SAT surveys, Koala faecal pellets were found at two monitoring sites, both within MPE, at the base of a Grey Gum (*Eucalyptus punctata*) and a Narrow-leaved Ironbark (*Eucalyptus crebra*).

No Koalas were detected on the remote camera traps this monitoring period.

Koala habitat monitoring during the baseline surveys conducted in 2024/2025 found that the majority of sites were classified as juvenile and maturing forests as most eucalypts had narrow DBH (<50cm), likely due to signs of historical timber removal. These habitat assessments identified that the Wattle Grove and Georges River Corridor offset sites had very different habitat types and species composition in the canopy layer, though both could support Koalas. While the shrub density between both offset sites were similar and had the potential to impede Koala movement, Wattle Grove frequently contained dense

stands of native shrubs, while the Georges River offset was dominated by invasive shrubs. The Georges River offset site has also been subject to clearing of *Lantana camara*, potentially improving suitability for Koalas.

The first annual habitat monitoring surveys showed no significant change in broad-scale vegetation structure or overall suitability for Koalas. Vegetation cover declined slightly across all strata compared with baseline surveys, however differences in cover did not exceed 5 per cent.

3.4.3 Feral animals

Moorebank Precinct East

Remote camera monitoring identified four feral animal species within the Wattle Grove offset area, immediately adjacent to the MPE operational facility. Feral animals recorded included, Domestic Cat (*Felis catus*), Red Fox (*Vulpes vulpes*), Black Rat (*Rattus rattus*) and Common Myna (*Acridotheres tristis*). It is anticipated that these feral animals are using the MPE operational facility when moving around the landscape.

Red Fox was captured on all cameras except three, including the four that were deployed at Anzac Creek assessing connectivity. The foxes were also recorded predating on native wildlife numerous times throughout the monitoring period, indicative of the direct impact of pest species on native wildlife within adjacent bushland areas. Black rats were detected on three out of the four cameras at Anzac Creek, and across the Wattle Grove offset area, at least three distinct cats were recorded on remote cameras.

Moorebank Precinct West

A total of two remote cameras were deployed within Georges River management site for feral animal monitoring. Feral animals recorded included Domestic Cat (*Felis catus*), Red Fox (*Vulpes vulpes*), Brown Hare (*Lepus europaeus*) and Red Deer (*Cervus timorensis*). Deer were recorded on both cameras deployed under the Train Rail Link for assessment of connectivity, at the southern end of the Georges River. This was consistent to recordings of deer in this area from previous monitoring years.

In addition to the detections of these species on remote cameras, Brown Hare were incidentally observed several times in December 2025 and January 2026 in the Georges River offset area, found along the internal access tracks and near the outlet basins.

A complete list of fauna recorded on remote cameras has been included in Appendix B.





Plate 3-5 Feral animal species within the MIP operational facility. Top left: Red fox. Top right: Red Deer. Bottom left: Brown Hare. Bottom right: Domestic cat.

4 DISCUSSION AND RECOMMENDATIONS

An assessment of the various monitoring requirements for the MIP operational facility has been discussed below. Where necessary, recommendations have been included to improve or enhance the management of biodiversity values.

4.1 Native vegetation

A discussion of the monitoring results for assemblages of native vegetation required to be managed as a component of operations of the MIP operational facility is included below with recommendations to further improve the condition.

4.1.1 Lands adjoining Rail Link

Castlereagh Scribbly Gum woodland (PCT 883) adjacent to the Rail Link is in good condition and has low levels of weeds. There is a high diversity of native plant species within the patches, with the native woodland assemblage being fully structured, including trees, shrubs and native groundcover vegetation.

No signs of change (i.e., dieback) were observed by ecologists in vegetation either side of the Rail Link. A comparison of quadrat data with previous years monitoring data does indicate that the patches have changed slightly with an improvement in native cover across both quadrats and an improvement in richness at Q2 with richness the same as 2024/2025 in Q1. Some discrepancies can be explained due to the timing of surveys between monitoring years and potentially climatic variables. Exotic species diversity and cover was consistent across Q2 with an increase in Q1.

Table 12. Comparison of vegetation quadrat data between 2022-2025 and 2025/2026 monitoring events

Plot	Eastern (Q2)				Western (Q1)			
Survey period	2022-2023	2023-2024	2024-2025	2025-2026	2022-2023	2023-2024	2024-2025	2025-2026
Native cover	52.6	79	56.5	126.5*	80.7	72	58.3	96.6
Native richness	52	48	41	45	46	48	38	38
Exotic cover	0.5	0.3	0.4	0.4	0.6	0.4	0.3	0.7
Exotic richness	10	3	4	4	5	4	3	7

*Native cover may exceed 100% due to overlap between strata. See Table 8 for full results.

Data collected over the last four years indicates that the operation of the Rail Link is having a negligible impact on adjoining patches of native vegetation. Exotic species are still being recorded in the offset area; however, they are mostly restricted to already disturbed edges within the former construction footprint of the Rail Link. Over the period that these patches of native vegetation have been monitored, encroachment of weeds into the undisturbed, natural areas has been minor. Of the weeds species recorded, *Briza subaristata* (Shivery grass) and *Senecio madagascariensis* (Fireweed) have been observed in the natural areas. It is likely the lower nutrient soils of natural areas which have a high

composition of sand are unsuitable to the exotic species growing in the Rail Link, inhibiting encroachment.

Ongoing operation of the Rail Link should include management of soft landscaped areas within the corridor to minimise the movement of weeds into adjacent areas of native vegetation. Contractors undertaking weed control works should employ techniques that do not risk impacts to native vegetation like hand weeding, targeted slashing, and spot spraying with herbicide. Indiscriminate hi-volume spraying should be avoided. The management contractor for the Wattle Grove offset site should be made aware of minor weed encroachment from the Rail Link and undertake semi-regular targeted weed control works to remove any colonising weeds and maintain the good condition of native vegetation within the 10-metre corridor. Recommended management actions to maintain/enhance the condition of native vegetation adjacent to the Rail Link have been summarised in Table 13.

Table 13. Recommended management actions to maintain/enhance the condition of native vegetation adjacent to the Rail Link

Identified Issue	Recommended action
Increased cover and abundance of weeds on soft landscapes areas within the rail link corridor which are encroaching on adjacent patches of native vegetation.	Hi-volume spraying of herbicide within the Rail Link in areas adjacent to native vegetation (specifically the BA341 biobank site) should not be conducted. Weed control works within these areas should include manual removal or spot spraying with herbicide. Spot spraying with herbicide should only be undertaken during optimal conditions to avoid spray drift.
Occurrence of weeds immediately outside the rail corridor fencing on areas disturbed during construction of the Rail Link. Potential for these weeds to infiltrate the adjacent native vegetation.	These areas should be subject to on-going monitoring to determine whether weeds from the Rail Link are infiltrating and degrading the condition of native vegetation. The management contractor for the Moorebank biobank site should be made aware of potential weed encroachment from the Rail Link and undertake semi-regular targeted weed control works to remove any colonising weeds and maintain the good condition of native vegetation.

4.1.2 Riparian vegetation management

With the Georges River management site, on the eastern side of the Georges River, being incorporated into the BA341 biobank site, native vegetation and biodiversity values are subject to improvement through a combination of management activities including weed removal, bush regeneration, soil stabilisation and habitat enhancement. In 2022 EcoLogical was engaged by National Internodal (owner of the BA341 biobank site) to commence active management of the biobank site (which includes this management site). EcoLogical has been undertaking targeted weed control works throughout this area including brush cutting, careful spot spraying with herbicide and hand weeding targeting the following aggressive weed species: *Asparagus asparagoides* (Bridal Creeper), *Senecio madagascariensis* (Fireweed), *Conyza* sp. (Fleabane), *Lantana camara* (Lantana), *Ligustrum* sp. (Privet) and *Acetosa sagitta* (Turkey Rhubarb).

This report should be provided to the bush regeneration contractor for their reference and consideration when planning and scheduling works over the coming year.

The Georges River management site on the western side of the Georges River is not incorporated into the BA341 biobank site and is not subject to the management activities being undertaken by EcoLogical. No evidence of bush regeneration works has been observed in this location since the last monitoring survey in 2025. It is recommended that a bush regeneration contractor should be procured to remove weeds and support native plantings. Weeds should be removed, and native species cover increased.

The removal of weeds may create enough space for native species to naturally colonise surrounding areas, however if this is not observed additional tube stock plantings should be installed.

No particular trends in vegetation condition have been observed across the management site since the previous monitoring year.

A review of the monitoring data and vegetation condition across the management site has been assessed against the Key Performance Indicators (KPIs) of the Riparian Vegetation Management Plan (RVMP) (Hyder 2015) in Appendix D. A summary of performance against the relevant KPIs has been included below in Table 14.

Table 14. Summary of performance against project KPIs

Key Performance Indicator	Status
Gradual improvement of native plant establishment with the aim of achieving 80 per cent cover of native vegetation after five years following the initial planting	KPI completion date: Western side (June 2024); Eastern side (December 2024) Plans have failed to successful fulfil this KPI
Gradual reduction in weed density to 5 per cent of the total area of each management site (eastern bank of Georges River)	KPI completion date: June 2023 Plans have failed to successful fulfil this KPI
Reduction in weed density to 5 per cent of the total area of management site 5 years after construction (western bank of Georges River only)	KPI completion date: June 2023 Plans have failed to successful fulfil this KPI
Gradual extension of native plant cover in each management site through natural regeneration	In progress – works required
Stability of riparian banks, including maintenance or reduction of erosion within management sites	Achieving
Re-establish and maintain connectivity for fauna habitat, particularly in the Georges River management site.	In progress – works required and review of adequacy

Additional works are required across the management site to achieve the KPIs and restore native riparian vegetation across the Georges River management site. Recommendations for revegetation, weed control and connectivity enhancement are included in Table 15.

Table 15. Recommended actions to increase the ecological value of the Georges River management site

Identified Issue	Recommended action
Increased weed coverage within revegetation areas	The bush regeneration contractor for the BA341 biobank site should be notified of the RVPM and the objectives for the Georges River management site. A bush regeneration contractor should be on-boarded to undertake weed control and revegetation in the Casula offset area. The condition of revegetated areas should be improved through weed removal. Scattered weeds and isolated infestations should be removed from the management site. Natural regeneration of native species should be assisted, however if this is not observed tube stock plantings should; be installed in areas where weeds have been removed.

Identified Issue	Recommended action
Encroachment of weed species from adjacent areas of infested bushland	The installation of a sediment fence to limit the amount of weed seed being transported into the revegetated site should be considered if the encroachment is continuing despite routine weeding exercises.
Bare patches between plantings on the eastern side of Georges River	Encourage natural recruitment of native species by maintaining low levels of weeds in bare areas between plantings.
Bare and weedy areas surrounding plantings on the western side of Georges River.	Infill planting with native tube stock should be considered if natural recruitment is not observed in bare areas beneath the Rail Link bridge. Plantings should be commensurate with species present in the RFEFCF vegetation community.

4.2 Threatened flora

4.2.1 EPBC Offset Sites

As per the *2020 Moorebank Intermodal Facility - Threatened Flora Offset Management Plan (TFOMP)*, Section 6.3 provides potential scenarios to manage threatened species population declines with remedial actions (Arcadis 2020b). *Persoonia nutans* totalled 112 individuals in 2019 across three offset sites, with P4 being added in 2020 after the fire, increasing the number of individuals to 133. Across the 2025/2026 monitoring period 86 individuals were detected. As there is a measured population decline greater than 25 per cent of stem count for *Persoonia nutans* over the past 5-year monitoring period, the below remedial actions are required (Table 16).

As per the TFOMP, if remedial actions listed are implemented, Cth. DAWE (now Cth. DCCEEW), will need to be notified. Should additional actions be required, DCCEEW would need to be consulted and, if necessary, the TFOMP would be updated. Any updates would require written approval from the Minister under Condition 14 of EPBC 2011/6229 Conditions of Approval.

Table 16 Potential remedial actions to manage population fluctuations within the offset sites from the 2020 Moorebank Intermodal Facility Threatened Flora Offset Management Plan

Scenario	Remedial Action
Population decline of greater than 25% of stem count within a 5-year period	Identify and document visible causes of population decline such as habitat degradation, unauthorised access or fire. Consider and document any climatic events that could have resulted in population fluctuations such as unseasonably hot or dry conditions. Review the use of herbicide for weed control within the offset site and in adjacent areas. Implement manual (rather than chemical) weed control methods within a buffer zone to the EPBC offset site if appropriate. Consider the impact of long-term bush restoration and native species establishment on the populations of threatened species within the offset site. For example, promotion of native shrub recruitment could result in shading of threatened species seedlings. In such instances thinning of the native shrub layer (excluding the threatened species) may be required. Seed collection and/or propagation of cuttings from a selection of individuals to preserve the genetic material of the population, should the population decline continue.

4.2.2 Lands adjoining the Rail Link

Threatened species transects identified two threatened plant species within 10 metres of the Rail Link corridor fencing, *Hibbertia puberula* subsp. *puberula* and *Persoonia nutans* (Nodding Geebung). These species have been recorded in this area during previous monitoring surveys. Eleven new *Hibbertia puberula* subsp. *puberula* individuals were detected this year, with individuals observed to be in good condition. This is considered a natural fluctuation and could be in response to the warm wet season.

The previously identified *Persoonia nutans* individual persisted this year with no impact from the operation or ongoing management of Rail Link evident. Warmer periods (spring and summer) following the period of high rainfall, caused prolific growth of native groundcovers and shrubs in the understorey as demonstrated by the increased native cover in the quadrats on both sides of the rail link. As such, detectability is considered limited due to the potential for species to be obscured by high density shrubbery which could affect the threatened species counts.

Grevillea parviflora subsp. *parviflora* was identified in the Rail Link in 2023, however has not been identified since. The threatened plant species *Acacia bynoeana* (Bynoe's Wattle) was not recorded during the survey and is likely to have perished in this location.

Cover and abundance of weeds in areas occupied by these threatened flora species was observed to be low. No dense infestations of exotic perennial grass species or other aggressive weed species was observed. At current the occurrence of weeds in the Rail Link is not deemed to be impacting upon the presence or persistence of *Persoonia nutans* or *Hibbertia puberula* subsp. *puberula*.

Recommended management actions to protect and promote the persistence of threatened flora species in lands adjoining the Rail Link are identified in Table 17.

Table 17. Recommended management actions to protect threatened flora species in lands adjoining the Rail Link

Identified Issue	Recommended action
Increased cover and abundance of weeds on soft landscapes areas within the rail link corridor which are encroaching on habitat of threatened flora species.	Hi-volume spraying of herbicide within the Rail Link in areas adjacent to native vegetation (specifically the BA341 biobank site) should not be conducted. Weed control works within these areas should include removal or spot spraying with herbicide. Spot spraying with herbicide should only be undertaken during optimal conditions to avoid spray drift.
Occurrence of weeds immediately outside the rail corridor fencing on areas disturbed during construction of the Rail Link. Potential for these weeds to encroaching on habitat of threatened flora species	These areas should be subject to on-going monitoring to determine whether weeds from the Rail Link are infiltrating and degrading the condition of threatened flora species habitat. The management contractor for the Moorebank biobank site should be made aware of potential weed encroachment from the Rail Link. It is recommended that semi-regular targeted weed control works to remove any colonising weeds and maintain the good condition of threatened flora species habitat.

4.3 Weed management

Based on this past monitoring year, it is anticipated that providing ongoing weed control works will increase the cover of native species in soft landscaped areas. Existing plantings, with support from bush regenerators, will continue to colonise surrounding areas and outcompete annual common herbaceous weeds.

To maintain low weed covers and promote the regeneration of native plant species across the MIP operational facility, the recommended management actions identified in Table 17 and Table 18 should be implemented.

Table 18. Recommended actions to achieve/maintain low weed cover across MIP operational area, Rail Link and Offset Areas.

Identified issue	Recommended action
Weed growth on soft landscaped areas within the MPE operational facility	Weeds on soft batters within the trunk drainage system and retention basin/swale at the north-eastern extent of the facility should continue to be suppressed through a combination of herbicide application, slashing and hand weeding.
Weed growth on soft landscaped areas within the Rail Link	Weed control works targeting exotic species listed as 'priority' for the Greater Sydney Local Land Services region and the exotic grass species: <i>Melinus repens</i> (Red Natal Grass), <i>Chloris gayana</i> (Rhodes Grass), <i>Eragrostis curvula</i> (African Love Grass), <i>Hyparrhenia hirta</i> (Coolatai Grass) and <i>Themeda quadrivalvis</i> (Grader Grass). Large patches of African Lovegrass and Rhodes Grass between the Rail Link and the East Hills train line should be slashed on a regular basis to prevent seeding events.
Low cover of native species on revegetated soft batters in the Rail Link	To support the continued regeneration and colonisation of native species: • A trained bush regeneration contractor should continue to conduct regular ongoing weed control work targeting weed species that have a detrimental impact on native seedlings, mainly competitive exotic grasses • Retention of mature native species particularly seeding native grasses during weed control works promote colonisation of surrounding areas. • Monitoring of rehabilitated areas of the Rail Link to identify areas that may require additional support to increase native plant cover (i.e. seeding) or any novel exotic species which may be detrimental to the survival of natives.
Weed growth along margins of P1-P3 Offset Areas	Weed growth, particularly that of African Love Grass, has increased along the margins of P1, P2 and P3 Offset Areas. This increased competition is impacting on the recruitment ability of Nodding Geebung. It is recommended that hand weeding occur in these areas, targeting African Love Grass.
Priority weed outbreaks in the Wattle Grove Offset Area	Monitoring of a previous outbreak of <i>Rubus fruticosus</i> sp. agg. (Blackberry) in the northeast of the site on the edge of the P4 <i>Persoonia nutans</i> EPBC offset area and along the eastern fence line should be conducted in case of a resurgence. It is recommended that hand weeding occur in the Wattle Grove Offset area, targeting Lantana and African Olive.
Weed incursion in landscaped areas along Bushmasters Avenue (MPW)	All areas of native landscaping should be incorporated into the current bush regeneration schedule, to control weeds and monitor the condition of landscaped areas.

4.4 Fauna

4.4.1 Fauna habitat connectivity

Moorebank Precinct East

Fauna habitat connectivity monitoring identified that several species, both native and invasive, are regularly utilising the Anzac Creek corridor to move between patches of native vegetation within the Wattle Grove offset area. Consistent with last year's findings, Red Fox and Black Rat were the most frequently observed species using the Anzac Creek crossing, followed by Swamp Wallaby.

During periods of high rainfall, Anzac Creek culverts have been inundated with water resulting in the fauna ramps moving slightly. Regular monitoring inspections should be made of the culvert to ensure fauna ramps remain in situ and vegetation growth within crossing passages does not begin to obstruct movement or cause an issue to the culvert infrastructure or operation of the Rail Link.

Surrounding the Wattle Grove Offset Area is 6-foot high barbed-wire fencing. This is a barrier to wildlife movement and a hazard to native animals. The carcass of a Grey-headed Flying Fox (*Pteropus poliocephalus*) which is listed as Vulnerable under the NSW state *Biodiversity Conservation Act, 2016* and the federal *Environment Protection and Biodiversity Conservation Act, 1999*, was discovered in the barbed wire along the northern edge of the Offset area in the 2024-2025 monitoring period. This fencing is still present, with the fauna mortality exemplifying how this fencing is inappropriate for managing wildlife.

Large logs and coarse woody debris placed on rock ballast remain as the habitat connectivity measure linking riparian vegetation within the MPW precinct with bushland to the south. This alternative habitat connectivity measure was adopted following the placement of ballast in the 20-metre-wide gap cleared for the bridge on the eastern side of the Georges River during construction. No fauna were observed utilising the woody debris during the current monitoring period, with no use observed during the previous monitoring periods (2022-2025). Installation of additional woody debris or flat wooden ramps similar to those at the Anzac Creek culverts should be considered to encourage movement between areas of habitat.



Plate 4-1. Large logs and piles, of course, woody debris placed to facilitate movement of fauna across ballast at Georges River beneath the rail link bridge

Moorebank Precinct West

Mobile native species recorded within the Georges River offset site which are likely to move along riparian vegetation corridors include *Petaurus breviceps* (Sugar Glider), *Pseudocheirus peregrinus*

(Common Ringtail Possum), *Trichosurus vulpecula* (Common Brushtail Possum), *Wallabia bicolor* (Swamp Wallaby) and *Macropus robustus* (Common Wallaroo). Remote camera monitoring for the Rail Link area identified four species as using the corridor, including Red Fox, Domestic Cats, Rusa Deer and Swamp Wallaby. Evidently, only a small subset of the native species known to occur within MPW have been recorded using the corridor. Arboreal mammals often will not cross areas with low tree cover (Soanes & van der Ree, 2009), and no evidence of use by these species has been recorded by remote cameras. It is likely that the current habitat connectivity measures in place are not facilitating dispersal for some species along the vegetated Georges River corridor. The installation of a connectivity structure, such as a rope bridge between patches of vegetation either side of the ballast should be considered to facilitate movement of arboreal fauna.

Additionally, a six-foot-high cyclone fence with top-lined barbed wire installed to the south of the Georges River management site is likely a barrier to the movement of some fauna species between the MPW site and bushland to the south. Ground-dwelling fauna like macropods are unlikely to be able to pass this cyclone fence, and due to the barbed wire lined top, arboreal fauna is also likely prevented from climbing the fence and dispersing across the landscape. Koalas have been recorded in riparian bushland along the Georges River as well as bushland to the south outside of the MPW precinct. Koalas would readily move along this corridor for various reasons (foraging, dispersal, breeding), and cyclone fencing may be inhibiting these movements.



Plate 4-2. Cyclone fence at the southern extent of the management site

Recommended actions

Removal of the cyclone fencing should be considered to facilitate movement of a greater diversity of fauna species along the Georges River riparian corridor. Recommended actions to increase the connectivity value of the Georges River management site are identified in Table 19. These actions integrate components of the methodology outlined in the RVMP to maintain and enhance fauna habitat beneath the Rail Link bridge.

Table 19. Recommended actions to improve habitat connectivity at Anzac Creek culvert and beneath the Rail Link bridge on the eastern banks of the Georges River

Identified Issue	Recommended action
Vegetation growth within crossing passages on the	Intermittent monitoring inspections should be made of the culvert to ensure fauna ramps remain in situ and vegetation growth within crossing passages

Identified Issue	Recommended action
northern and southern sides of the Anzac Creek culvert.	does not begin to obstruct movement or cause an issue to the culvert infrastructure or operation of the Rail Link
Inadequate habitat connectivity beneath the Rail Link bridge	Improvement of connectivity structures is required. Placement of additional woody debris or flat wooden ramps across the ballast should be considered. The installation of a rope canopy bridge or similar arboreal crossing between trees either side of the bridge is recommended to facilitate movement of arboreal fauna. Should these additional connectivity measures not improve movement of fauna in the next monitoring period, a review of rock ballast as the necessary means for erosion and sediment control beneath the Rail Link bridge. If rock ballast is not deemed necessary for the entire 20-metre-wide gap, as much as feasible should be removed and replaced with alternative soil stabilisation materials (i.e. coir logs, jute and coir mesh). Planting of native species should be undertaken in conjunction with the installation of soft stabilisation materials as per the original habitat connectivity enhancement plan from the RVMP (Hyder 2015).
Installation of a six-foot-high cyclone fence at the southern extent of the management site restricting the movement of fauna along the Georges River riparian corridor	A review of the fencing location and design should be conducted to determine whether it is necessary and/or whether it can be modified to allow the movement of fauna from the MIP site to bushland south of the site. Fencing design should not include barbed wire, and existing fencing should be modified to improve connectivity. Considerations should be made for the installation of crossing mechanisms for fauna (i.e. Koala bridges) or replacement of the current Cyclone fence with a rural style fence with wooden bollard and five straight wires, as is to be installed around MIP drainage channels.

4.4.2 Koala management

Koala management monitoring

Cyclone mesh fencing is present along the interface between Wattle Grove offset area and the MPE operational facility restricting the movement of Koalas into unsuitable areas. Inspection of areas where gaps under the fence have previously been identified were not subject to increases gap size and subsequently no management actions are currently recommended. Monitoring of these areas should continue throughout the year to ensure gaps do not increase in size due to erosion or use by smaller animals such as hares.

Currently, no structures (bridges, culverts, refuge posts) have been installed which facilitate the movement of Koalas from the Wattle Grove offset area to adjoining areas of suitable habitat. Koala bridges are yet to be installed along the southern boundary of the offset area as per the KPM (Cumberland Ecology 2020) to facilitate Koala movement into bushland areas within the Holsworthy defence area. It is noted in the KPM that prior to installing Koala bridges, "Transport for NSW and Department of Defence will need to be consulted...to gain necessary access/permits." Additionally, a series of other actions are required to increase suitability for Koala movement across the rail line, as discussed in Section 8.3.5.2 of the KMP (Cumberland Ecology 2020).

As development continues across the MIP site, Koala fences, bridges, gates and grids will be installed in accordance with the plans outlined in the KMP (Cumberland Ecology, 2020).

Table 20. Recommended management actions to maintain Koala fencing adjacent to the MPE operational facility

Identified Issue	Recommended action
No connectivity between Wattle Grove offset area and bushland in Holsworthy defence area	Discussions should commence with TfNSW and the Department of Defence to determine the feasibility of implementing connectivity measures outlined in the KMP (Cumberland Ecology 2020) to allow Koalas and other fauna to move between the Wattle Grove offset area and bushland in the Holsworthy defence area. Barbed wire should not be used in fence design in these areas.

Koala surveys and habitat monitoring

The previously successful detection of Koalas on both the MPW and MPE sides of the biobank highlights the importance of conservation of habitat in these areas. Ecological enhancements to the biobank areas will provide the Koalas with increased availability of habitat to support population growth in the area.

Results from the year 1 annual monitoring surveys demonstrated a decline in detections when compared to the baseline surveys. Ongoing construction, such as the Moorebank Avenue Realignment near Wattle Grove, may contribute to reduced detections. However, detection numbers were relatively low even during the baseline surveys, so it is also possible that the surveys simply missed any existing individuals by chance, given the inherent variability in wildlife monitoring.

The Koala habitat monitoring demonstrated no significant changes to vegetation structure when compared to baseline. While a small reduction in vegetation cover was recorded, when considered in conjunction with the observed annual improvements in VIS from Biodiversity Assessment Method monitoring plots, results indicate that habitat within the Georges River and Wattle Grove offset sites continues to be suitable to support the Moorebank koala population. Ongoing monitoring is needed to confirm long-term trends and account for minor year-to-year variation in surveyor assessment. If vegetation cover continues to decline, active management should be considered.

It is anticipated that enhancements to the biobanks through revegetation, weed control, fencing and pest animal control, that the Koala population should continue to grow. Critical to this however is their safe movement out of the fences so that they can access adjoining habitat. This can be enabled through carefully designed Koalas bridges and 'doggy doors' through consultation with experienced ecologists.

Continued annual monitoring will aim to evaluate changes over time and provide opportunities for intervention if there are threats which could impact on the population. This is of particular importance as the realignment of Moorebank Avenue is underway and disturbance to the population is considered likely.

4.4.3 Feral animals

The assessment of feral animal presence through remote camera monitoring has remained consistent with previous monitoring periods, with Red Fox, Black Rat and Feral Cats detected on cameras with the addition of Brown Hare, Common Myna, Rock Pigeon and Rusa Deer this monitoring period. Abundance and impacts of these species are difficult to determine through camera results, though given the number of images captured during this monitoring period of feral species, it is possible that the abundance and impacts have increased from the previous years.

Brown Hare has previously been recorded throughout the offset sites, with several observations in the Georges River offset site. Brown Hare can cause significant damage when gnawing the bark of young trees and shrubs and can cause severe damage to revegetation sites (Agriculture Victoria 2021). Ongoing revegetation may be at risk from this species. Continued monitoring for this species is recommended.

The occurrence of Black Rat is not considered to be a significant issue. This species is common across the landscape and was detected at four different cameras across MIP, at one camera in MPW and across three cameras at Anzac Creek. Several nest boxes in Georges River Corridor were occupied by a Black Rats during the current monitoring period. This result is consistent with previous monitoring periods. Black Rats may predate on native bird eggs and/or compete for nesting space with hollow-dependant fauna (Zarzoso-Lacoste et al. 2011), and in large numbers, this species has the potential to impact native fauna through predation and competition for resources. No significant infestations of this species or signs of infestation have been observed across the facility or within the adjacent Wattle Grove and Georges River Corridor offset areas.

There is evidence to suggest that Red Fox populations are problematic within the offset sites. The species was detected on 10 of 20 remote cameras deployed and collected during the spring monitoring period. Juveniles have been recorded in the Wattle Grove offset site for the past two monitoring periods, which had previously indicated a breeding population. This monitoring period however, no juveniles were detected which could indicate breeding did not occur in 2025. Although, there were several distinct captures of Red Fox with prey items during the monitoring period. This number likely represents a small portion of the predation of native fauna by Red Fox and indicates that management of the Red Fox population should be undertaken to reduce impacts to local biodiversity.

As with previous years, cats were also recorded on remote cameras walking along the access tracks on the boundary of the MPE and MPW operational facility. Cats were captured across four of the ten camera trap locations across MPW and at two within Wattle Grove. These include at least three individual cats, at least one of which is domestic.

Rusa Deer have been recorded in the MPW management site, with detection limited to beneath the rail bridge at Georges River. Actions are required to monitor the population of Rusa deer and eliminate their impact on the local ecosystem. Rusa Deer can have significant impacts on native vegetation due to overgrazing, trampling, and browsing, which may lead to habitat degradation and biodiversity loss. If their population is not managed, they could create long-term ecological challenges for the area. As a priority actions should be taken to contain them and prevent their spread to the rest of the offset area.

The landholder should support the implementation of a feral animal control program predominately focusing on the control of Red Fox and Rusa Deer in the bushland immediately adjacent to the operation facility. The MIP property manager should communicate with Liverpool City Council and surrounding landholders (Glenfield Waste Facility, National Intermodal and Holsworthy Army Barracks) to discuss the feasibility and willingness to undertake a coordinated feral animal control program. Live trapping of feral/domestic cats is also recommended in both offset areas to remove these individuals and determine if they are owned or feral individuals. As per Liverpool City Council's Urban Cat Management Plan and the *Companion Animals Act 1998 (revised 2019)*, cats should not be free roaming in wildlife protection areas. The council has animal management services available to support the collection of cats from the Wattle Grove and Georges River management areas.

Table 21. Recommended actions for feral animals within the MIP operational facility

Identified Issue	Recommended Corrective Action
Vertebrate pests within the MIP operational facility and surrounds	Ongoing opportunistic monitoring should be conducted through MPE operational facility and surrounds to determine whether populations of Brown Hare, Red Fox, Black Rat, Rusa Deer and feral Cats are having a negative impact on native biota. Any signs of novel pests within the biobank site should also be recorded.
Increased observation of Red Fox including predation on native wildlife	A control program should be undertaken to manage the Red Fox population within the Georges River Corridor and Wattle Grove offset sites. Communicate with Liverpool City Council and surrounding landholders (Glenfield Waste

	Facility and Holsworthy Army Barracks) to discuss feasibility and willingness to undertake a coordinated Red Fox control program.
Domestic/Feral Cats in offset site.	Communicate with Liverpool City Council to discuss collection of cats in the offset areas. Live trapping should be undertaken to along the central access track at night to collect individuals in the offset site. Liaise with Liverpool City Council to see if they can communicate with nearby residents to raise awareness of the impacts of cats on local wildlife.

4.5 Summary of recommendations

Table 22 compiles management issues identified during the 2025/2026 monitoring period within the MIP operational facility and recommend appropriate corrective actions.

Table 22. Compiled list of management issues identified within the MIP operational facility and recommended corrective actions

Identified issue and reference number		Recommended action
Native vegetation: Lands adjoining the Rail Link		
1	Increased cover and abundance of weeds on soft landscapes areas within the rail link corridor which are encroaching on adjacent patches of native vegetation.	Hi-volume spraying of herbicide within the Rail Link in areas adjacent to native vegetation (specifically the BA341 biobank site) should not be conducted. Weed control works within these areas should include manual removal or spot spraying with herbicide. Spot spraying with herbicide should only be undertaken during optimal conditions to avoid spray drift.
2	Occurrence of weeds immediately outside the rail corridor fencing on areas disturbed during construction of the Rail Link. Potential for these weeds to infiltrate the adjacent native vegetation.	These areas should be subject to on-going monitoring to determine whether weeds from the Rail Link are infiltrating and degrading the condition of native vegetation. The management contractor for the Moorebank biobank site should be made aware of potential weed encroachment from the Rail Link and undertake semi-regular targeted weed control works to remove any colonising weeds and maintain the good condition of native vegetation.
Native vegetation: Riparian vegetation management		
3	Increased weed coverage within revegetation areas	The bush regeneration contractor for the BA341 biobank site should be notified of the RVPM and the objectives for the Georges River management site. A bush regeneration contractor should be on-boarded to undertake weed control and revegetation works on the western side of Georges River. The condition of revegetated areas should be improved through weed removal. Scattered weeds and isolated infestations should be removed from the management site. Natural regeneration of native species should be assisted, however if this is not observed tube stock plantings should be installed in areas where weeds have been removed.
4	Encroachment of weed species from adjacent areas of infested bushland	The installation of a sediment fence to limit the amount of weed seed being transported into the revegetated site should be considered if the encroachment is continuing despite routine weeding exercises.
5	Bare patches between plantings on the eastern side of Georges River	Encourage natural recruitment of native species by maintaining low levels of weeds in bare areas between plantings.
6	Bare and weedy areas surrounding plantings on the western side of Georges River.	Infill planting with native tube stock should be considered if natural recruitment is not observed in bare areas beneath the Rail Link bridge. Plantings should be commensurate with species present in the RFEFCF vegetation community.

Identified issue and reference number		Recommended action
Threatened flora: EPBC Offset Sites		
7	Population decline of greater than 25% of stem count within a 5-year period (<i>Persoonia nutans</i>).	Identify and document visible causes of population decline such as habitat degradation, unauthorised access or fire. Consider and document any climatic events that could have resulted in population fluctuations such as unseasonably hot or dry conditions. Review the use of herbicide for weed control within the offset site and in adjacent areas. Implement manual (rather than chemical) weed control methods within a buffer zone to the EPBC offset site if appropriate. Consider the impact of long-term bush restoration and native species establishment on the populations of threatened species within the offset site. For example, promotion of native shrub recruitment could result in shading of threatened species seedlings. In such instances thinning of the native shrub layer (excluding the threatened species) may be required. Seed collection and/or propagation of cuttings from a selection of individuals to preserve the genetic material of the population, should the population decline continue.
Threatened flora: Lands adjoining the Rail Link		
8	Increased cover and abundance of weeds on soft landscaped areas within the rail link corridor which are encroaching on habitat of threatened flora species.	Hi-volume spraying of herbicide within the Rail Link in areas adjacent to native vegetation (specifically the BA341 biobank site) should not be conducted. Weed control works within these areas should include manual removal or spot spraying with herbicide. Spot spraying with herbicide should only be undertaken during optimal conditions to avoid spray drift.
9	Occurrence of weeds immediately outside the rail corridor fencing on areas disturbed during construction of the Rail Link. Potential for these weeds to encroaching on habitat of threatened flora species	These areas should be subject to on-going monitoring to determine whether weeds from the Rail Link are infiltrating and degrading the condition of threatened flora species habitat. The management contractor for the Moorebank biobank site should be made aware of potential weed encroachment from the Rail Link and undertake semi-regular targeted weed control works to remove any colonising weeds and maintain the good condition of threatened flora species habitat.
Weed management		
10	Weed growth on soft landscaped areas within the MIP operational facility	Weeds on soft batters within the trunk drainage system and retention basin/swale at the north-eastern extent of the facility should continue to be suppressed through a combination of herbicide application, slashing and hand weeding.
11	Weed growth on soft landscaped areas within the Rail Link	Weed control works targeting exotic species listed as 'priority' for the Greater Sydney Local Land Services region and the exotic grass species: <i>Melinis repens</i> (Red Natal Grass), <i>Chloris gayana</i> (Rhodes Grass), <i>Eragrostis curvula</i> (African Love Grass), <i>Hyparrhenia hirta</i> (Coolatai Grass) and <i>Themeda quadrivalvis</i> (Grader Grass).

Identified issue and reference number	Recommended action
	Large patches of African Lovegrass and Rhodes Grass between the Rail Link and the East Hills train line should be slashed on a regular basis to prevent seeding events.
12 Low cover of native species on revegetated soft batters in the Rail Link	To support the continued regeneration and colonisation of native species: • a trained bush regeneration contractor should be onboarded to conduct regular ongoing weed control work targeting weed species that have a detrimental impact on native seedlings, mainly competitive exotic grasses • retention of mature native species particularly seeding native grasses during weed control works promote colonisation of surrounding areas. • monitoring of rehabilitated areas of the Rail Link to identify areas that may require additional support to increase native plant cover (i.e. seeding) or any novel exotic species which may be detrimental to the survival of natives
13 Weed growth along margins of P1-P3 Offset Areas	Weed growth, particularly that of African Love Grass, has remained consistently high along the margins of P1, P2 and P3 Offset Areas. This increased competition is impacting on the recruitment ability of Nodding Geebung. It is recommended that hand weeding occur in these areas, targeting African Love Grass.
14 Priority weed outbreaks in the Wattle Grove Offset Area	Monitoring of a previous outbreak of <i>Rubus fruticosus</i> sp. agg. (Blackberry) in the northeast of the site on the edge of the P4 <i>Persoonia nutans</i> EPBC offset area and along the eastern fence line should be conducted in case of a resurgence. It is recommended that hand weeding occur in the Wattle Grove Offset area, targeting Lantana and African Olive.
Fauna: Fauna habitat connectivity	
15 Vegetation growth within crossing passages on the northern and southern sides of the Anzac Creek culvert.	Intermittent monitoring inspections should be made of the culvert to ensure fauna ramps remain in situ and vegetation growth within crossing passages does not begin to obstruct movement or cause an issue to the culvert infrastructure or operation of the Rail Link
16 Inadequate habitat connectivity beneath the Rail Link bridge	Improvement of connectivity structures is required. Placement of additional woody debris or flat wooden ramps across the ballast should be considered. The installation of a rope canopy bridge or similar arboreal crossing between trees either side of the bridge is recommended to facilitate movement of arboreal fauna. Should these additional connectivity measures not improve movement of fauna in the next monitoring period, a review of rock ballast as the necessary means for erosion and sediment control beneath the Rail Link bridge. If rock ballast is not deemed necessary for the entire 20-metre-wide gap, as much as feasible should be removed and replaced with alternative soil stabilisation materials (i.e. coir logs, jute and coir mesh). Planting of native species should be undertaken in conjunction with the installation of soft stabilisation materials as per the

Identified issue and reference number		Recommended action
		original habitat connectivity enhancement plan from the RVMP (Hyder 2015).
17	Inappropriate six-foot high barbed wire fencing surrounding Wattle Grove offset area.	A review of fencing suitability should be conducted considering the death of a state and federally listed threatened species, a Grey-headed Flying Fox whose carcass was discovered in the barbed wire along the northern edge of the Offset area last monitoring period. This fencing is considered inappropriate for managing wildlife and recommended to be replaced with a wildlife friendly alternative, such as 'floppy top' fencing.
18	Installation of a six-foot-high cyclone fence at the southern extent of the management site restricting the movement of fauna along the Georges River riparian corridor	A review of the fencing location and design should be conducted to determine whether it is necessary and/or whether it can be modified to allow the movement of fauna from the MIP site to bushland south of the site. Fencing design should not include barbed wire, and existing fencing should be modified to improve connectivity. Considerations should be made for the installation of crossing mechanisms for fauna (i.e. Koala bridges) or replacement of the current Cyclone fence with a rural style fence with wooden bollard and five straight wires, as is to be installed around MIP drainage channels.
Fauna: Koala management monitoring		
19	No connectivity between Wattle Grove offset area and bushland in Holsworthy defence area	Discussions should commence with TfNSW and the Department of Defence to determine the feasibility of implementing connectivity measures outlined in the KMP (Cumberland Ecology 2020) to allow Koalas and other fauna to move between the Wattle Grove offset area and bushland in the Holsworthy defence area.
Fauna: Feral animals		
20	Vertebrate pests within the MIP operational facility and surrounds	Ongoing opportunistic monitoring should be conducted through MIP operational facility and surrounds to determine whether populations of Rusa Deer, Brown Hare, Red Fox, Black Rat and Feral Cat are having a negative impact on native biota. Any signs of novel pests within the biobank site should also be recorded.
21	Increased observation of Red Fox including predation on native wildlife	A control program should be undertaken to manage the Red Fox population within the Georges River Corridor and Wattle Grove offset sites. Communicate with Liverpool City Council and surrounding landholders (Glenfield Waste Facility and Holsworthy Army Barracks) to discuss feasibility and willingness to undertake a coordinated Red Fox control program.
22	Domestic/Feral Cats in offset site.	Communicate with Liverpool City Council to discuss collection of cats in the offset areas. Live trapping should be undertaken to along the central access track at night to collect individuals in the offset site. Liaise with Liverpool City Council to see if they can communicate with nearby residents to raise awareness of the impacts of cats on local wildlife.

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6 APPENDICES

APPENDIX A . WEED MONITORING REPORTS (JUNE 2025 – JUNE 2026)

APPENDIX B . REMOTE CAMERA: FAUNA SPECIES INVENTORY

APPENDIX C . EPBC OFFSET SITES - ANNUAL MONITORING REPORT

APPENDIX D . KEY PERFORMANCE INDICATORS (KPIS) FOR RVMP WORKS

APPENDIX E . RIPARIAN VEGETATION MANAGEMENT – NATIVE FLORA INVENTORIES

APPENDIX F . RIPARIAN VEGETATION COMPARISON OF EXOTIC AND NATIVE COVER PER CENTAGES FOR EACH VEGETATION QUADRAT ACROSS MONITORING EVENTS (JUNE 2018 – FEBRUARY 2026)

APPENDIX G . RIPARIAN VEGETATION MANAGEMENT – PHOTO POINTS

APPENDIX H . BA341 LANDS ADJOINING RAIL LINK - QUADRAT MONITORING DATA

APPENDIX I . NEST BOX MONITORING REPORT (SPRING 2025)

APPENDIX J . ANNUAL KOALA MONITORING REPORT

APPENDIX A. WEED MONITORING REPORTS (JUNE 2025 - JUNE 2026)

MIP BI-MONTHLY WEED MONITORING REPORT – JUNE 2025

Introduction

Arcadis has been commissioned to conduct bi-monthly weed monitoring surveys within the operational areas of Moorebank Precinct East (MPE) and Moorebank Precinct West (MPW). These areas together are known as the Moorebank Intermodal Precinct (MIP).

The MPE operational facility includes the Import and Export Terminal (IMEX), Rail Access Land Package (RALP), warehouses, distribution facilities and freight village, and stormwater trunk drainage infrastructure and landscaping areas. The MPW operational facility includes the landscaped vegetation along Bushmasters Avenue (Figure 1).

Regular monitoring of the MIP operational facilities will inform the land manager of weed cover, and the presence of any weeds listed as 'priority' for the Greater Sydney Local Land Services region under the *Biosecurity Act 2015*.

The schedule for the bi-monthly weed monitoring inspections for the 2025-26 monitoring year are detailed in Table 1. This document will be treated as live throughout the monitoring year and will be updated at the end of each inspection.

Table 1 Schedule for bi-monthly weed inspections

Inspection month	Date completed
June 2025	25/06/2025
August 2025	TBC
October 2025	TBC
December 2026	TBC
February 2026	TBC
April 2026	TBC

Background

Arcadis has been monitoring the MPE operational facility for weed occurrence since April 2020. The RALP, which includes the MPE operational RALP, has seen significant change and works over the time Arcadis has conducted weed monitoring. Additionally, works conducted in MPW in 2023/24 have changed the layout and vegetation spread in the RALP. Several weed remediation events have occurred since the inception of weed monitoring, detailed below in Table 2.

Table 2 Summary of weed events throughout monitoring history

Timing	Summary of events	Weed contractor
Spring 2020	Weeds removed from batters and revegetated with native species, as per the Urban Design and Landscaping Plan (UDLP) for MPE	Spray Grass Solutions

Timing	Summary of events	Weed contractor
	Cumberland Plain Seeds were procured to provide technical oversight of revegetation effort	
December 2021	- As per recommendations from Spray Grass Solutions and Cumberland Plain Seeds, the monitoring methodology was changed - Changes included reporting on cover on 'priority' weeds species and key weeds specific to the project.	
December 2022 to June 2023	- Weed remediation works commenced - Priority weed species were targeted - Native species were identified throughout the RALP to avoid accidental removal.	P&E Services
December 2023 to present	- Weed remediation works continued - Regular maintenance of priority weed species via slashing, hand removal and herbicide spraying	Toolijooa Environmental Restoration

Methodology

Arcadis ecologist Kate Mauger attended the MIP operational area on 25 June 2025. Monitoring involved traversing the MIP operational facility on foot, surveying landscaped areas, stormwater infrastructure and soft batters adjoining the RALP for increases in weed abundance of the identified species in Appendix A and Appendix B. The areas surveyed are presented in Figure 1.

The weather on the 25 June was windy, with a maximum temperature of 16.2°C, and the weather recorded at Holsworthy Aerodrome (station 066161) (BOM 2025).

Study Limitations

The data presented within this report is restricted to what was observed and recorded by the attending Arcadis ecologists during the site assessment on 25 June 2025.

Monitoring of weeds was restricted to the operational facility; weeds were not assessed within the bounds of the active construction areas surrounding new warehouses.

Surveys were not undertaken in areas extending beyond the junction between the QUBE RALP and the Southern Sydney Freight Line (SSFL).



- Legend
- MPW operational boundary
 - MPE operational boundary
 - Weed monitoring survey extent



1:15,000 at A4
GDA2020 MGA Zone 56
Date issued: July 3, 2025
Imagery: Esri



C:\Users\emaz4669\ARCADIS\30228596 - Moorebank Logistics Precinct 2 - 02 GIS\A_Current\B_Maps\Ecology\MPE_OperationalMonitoring\2022\WeedMonitoring_2022_v2.aprx
Created by : EM Updated by : QA by : NB

Figure 1. Survey extent within the MPI operational facility

Results

Results of the weed monitoring surveys during the June 2025 survey are summarised below in Table 3. Weed records, previously recorded threatened flora species records, and instances of native species within the survey extent are shown in Figure 2.

Progress photographs of monitoring locations are provided in Appendix E and a complete flora species inventory in Appendix F.

Table 3 Summary of weed abundances across all inspection areas in MPI, for the current survey

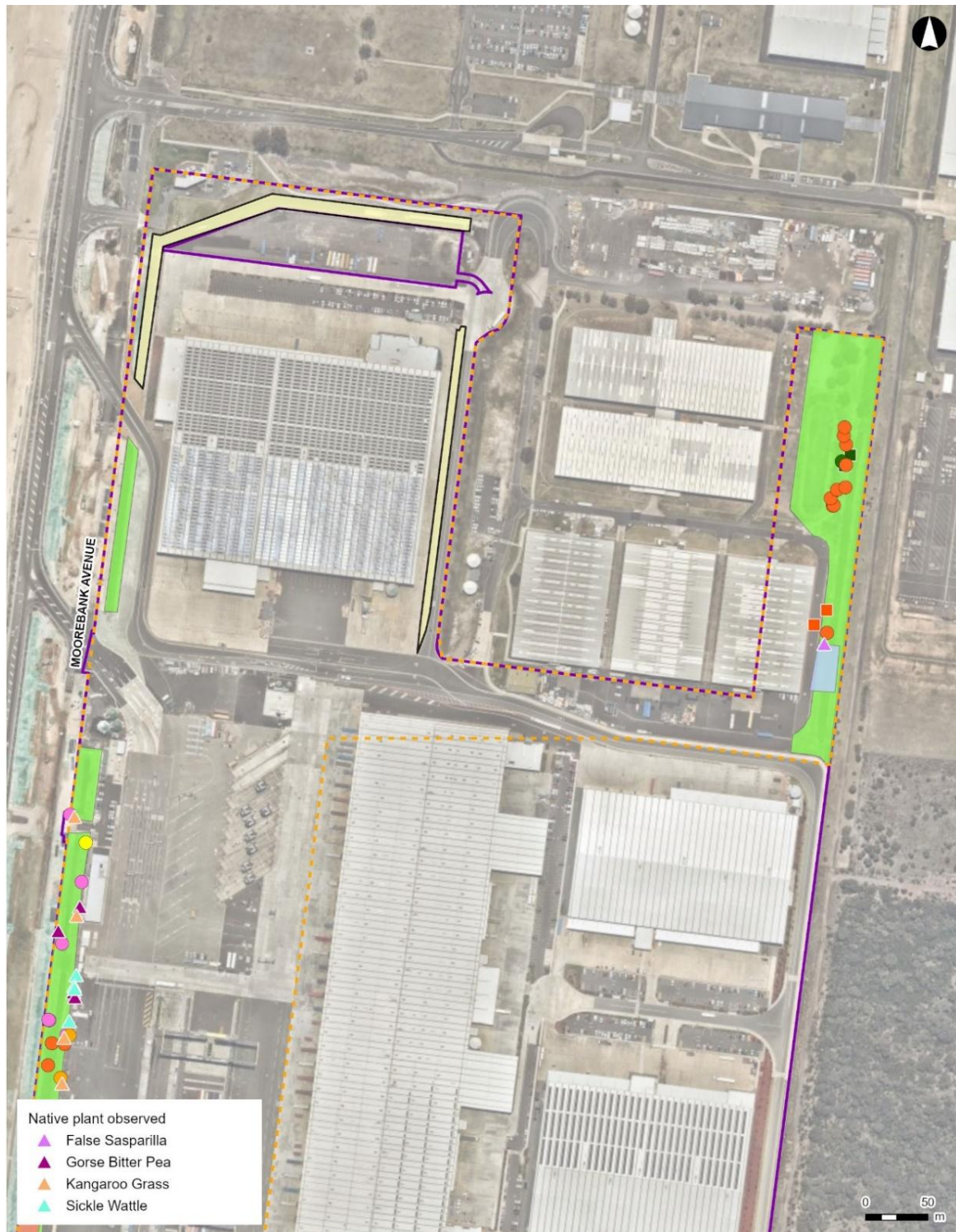
Inspection area	Weed abundances for current survey	Photo of inspection area
Moorebank Precinct East (MPE)		
Rail Access Land Package (RALP)	- Chloris gayana (Rhodes Grass) and small amounts of <i>Themeda quadrivalvis</i> (Grader Grass) were removed during this inspection - Some areas of <i>Lantana camara</i> (Lantana) were slashed along the fences adjacent to the Georges River BioBank site - The southern section of the RALP, in areas that have previously experienced significant batter erosion, were being colonised intensely by <i>Tagetes minuta</i> (Stinking Roger), and were slashed during this inspection (see adjacent photo).	

Inspection area	Weed abundances for current survey	Photo of inspection area
IMEX building and adjacent drainage infrastructure	• <i>Acacia falcata</i> (Hickory Wattle) continue to grow unimpeded by weeds.	

Inspection area	Weed abundances for current survey	Photo of inspection area
Warehouse areas	• Large areas of the native <i>Cynodon dactylon</i> (Couch Grass) are present across most of these areas and is generally outcompeting weed species. • Occurrences of weeds in the warehouse area and the adjacent drainage infrastructure is restricted to scattered individuals of <i>Senecio madagascariensis</i> (Fireweed), <i>Plantago lanceolata</i> (Plantain), <i>Trifolium arvense</i> (Clover) and exotic grasses like <i>Chloris gayana</i> (Rhodes Grass), <i>Sporobolus africanus</i> (Parramatta Grass), <i>Paspalum urvillei</i> (Giant Paspalum) and <i>Ehrharta erect</i> (Panic Veldtgrass) • Majority of this area has now been claimed by the Moorebank Avenue Upgrade project.	

Inspection area	Weed abundances for current survey	Photo of inspection area
Eastern boundary drainage infrastructure	• Drainage infrastructure dominated by <i>Bulboschoenus fluviatilis</i> (Marsh club-rush) whilst other are dominated by <i>Typha orientalis</i> (Bulrush). Where space is present between stands of these native emergent species small clumps of <i>Pericaria decipiens</i> (Slender Knotweed), <i>Daviesia ulicifolia</i>, <i>Ficinia nodosa</i> (Knotted Club-rush), <i>Carex tereticaulis</i> and <i>Juncus usitatus</i> are present. Other native species such as <i>Imperata cylindrica</i> and <i>Lomandra longifolia</i> were observed in the drainage channels. • Areas of erosion still present.	

Inspection area	Weed abundances for current survey	Photo of inspection area
Moorebank Precinct West (MPW)		
Landscaped areas along Bushmasters Avenue	- Landscapes vegetation is in good condition, with minor weed incursions - Weed species present include <i>Sonchus oleraceus</i> (Common Sowthistle), <i>Chloris virgata</i> (Rhodes Grass), <i>Bidens pilosa</i>, <i>Conyza bonariensis</i> (Fleabane), <i>Cyclosporum leptophyllum</i> (Slender Celery), and <i>Tagetes minuta</i> (Stinking Roger). - Areas with limited to no landscaped vegetation are particularly susceptible to weed incursion from cleared areas (see adjacent photo)	



LEGEND

■ MPE operational boundary

■ Survey extent

■ Areas targeted in weed remediation works in Dec 2022 & Feb 2023

■ Management issue

■ Erosion

■ Damage to native veg
Weed cover (outside Rail Link)

■ Low

■ None

■ Priority & key weeds

■ African Lovegrass

■ Fireweed

■ Golden Wreath Wattle

■ Paterson's Curse

■ Red Natal Grass

■ Rhodes Grass

■ Fireweed

■ Large-leaf Pennywort

Page 1 of 8

1:4,500 at A4
Coord System: GDA2020 MGA Zone 56
Date issued: March 20, 2023
Imagery: Nearmap

ARCADIS
SIMTA

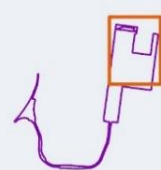


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (1 of 8)

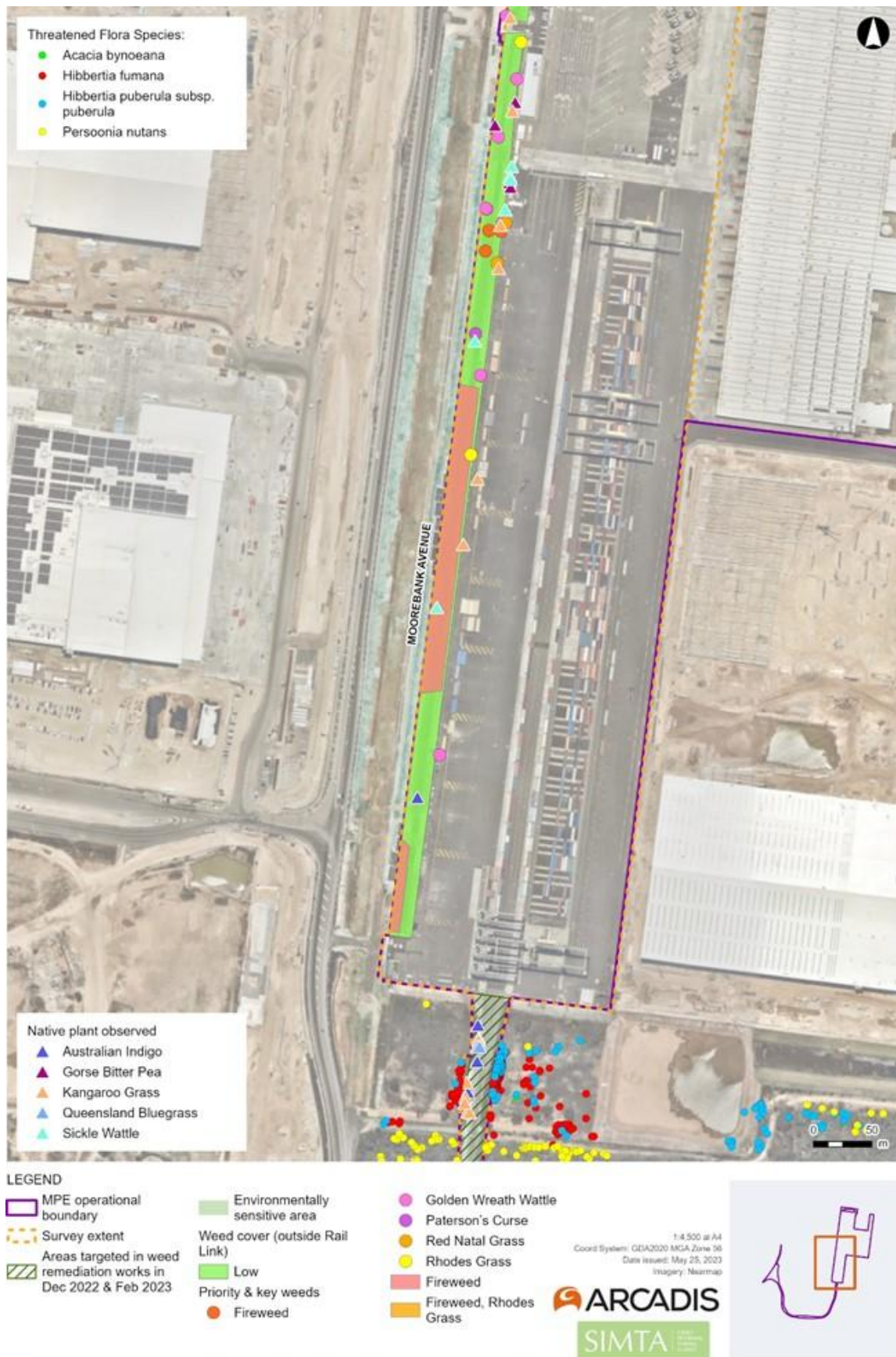


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (2 of 8)

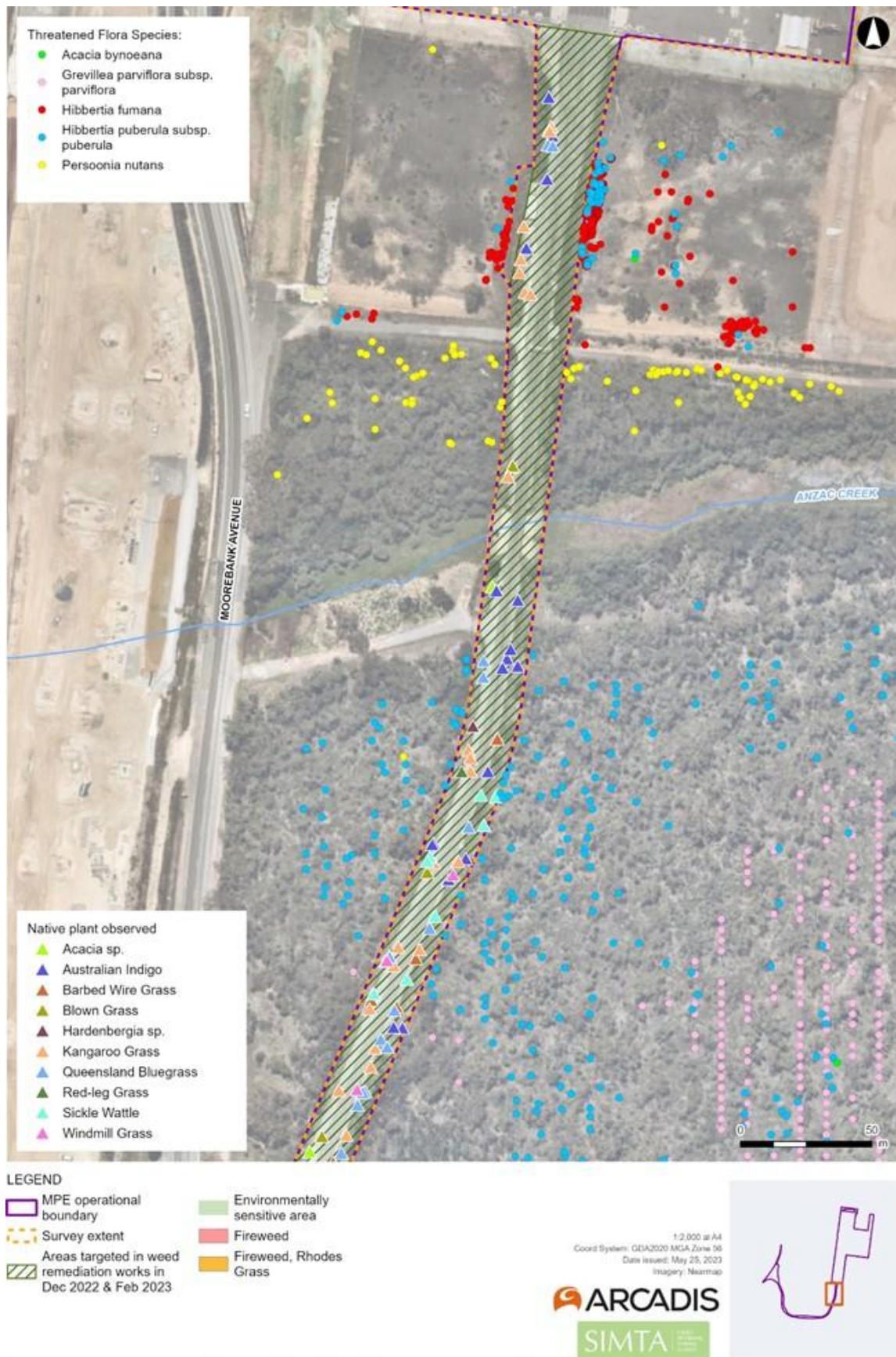


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (3 of 8)

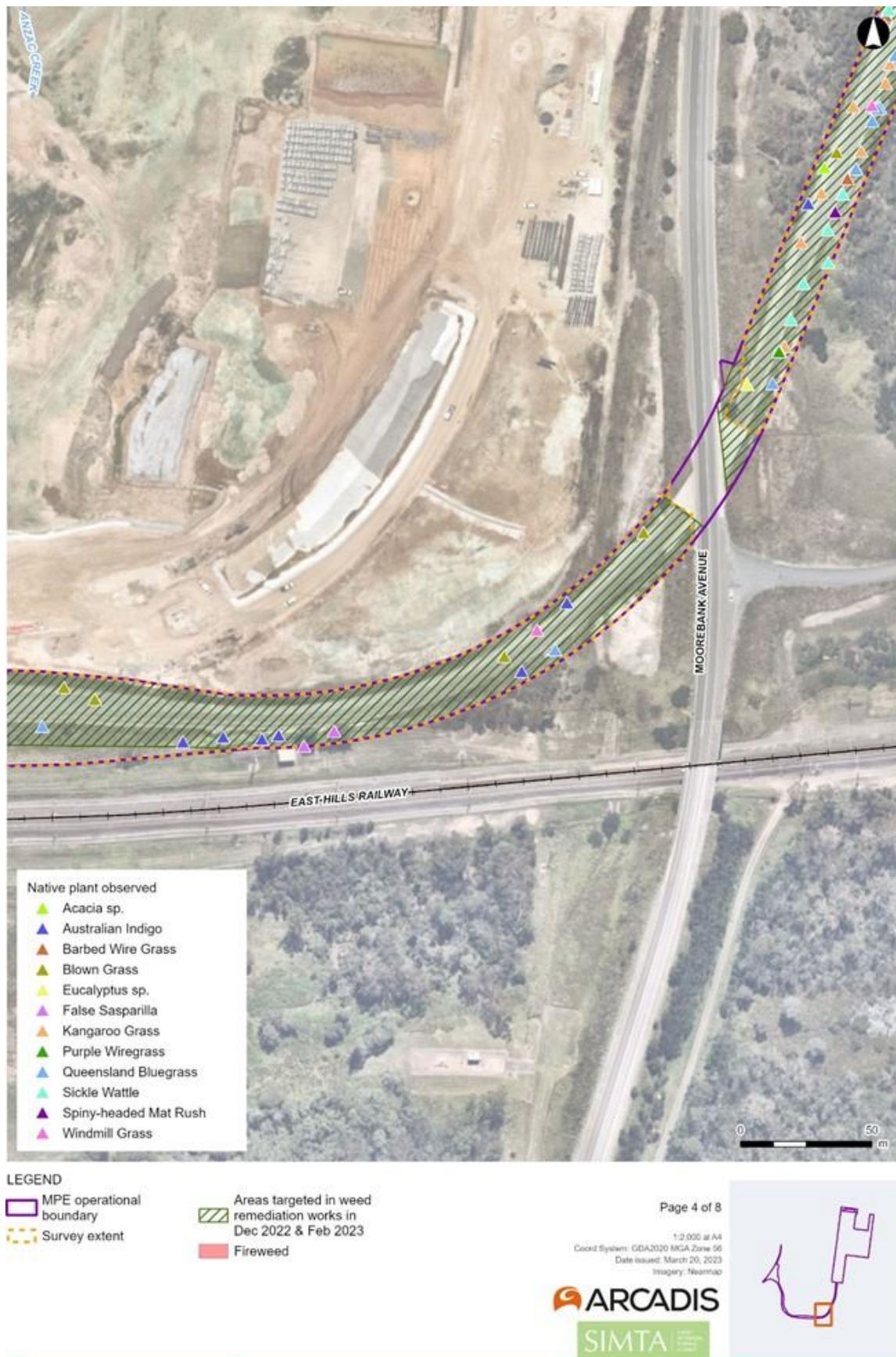


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (4 of 8)



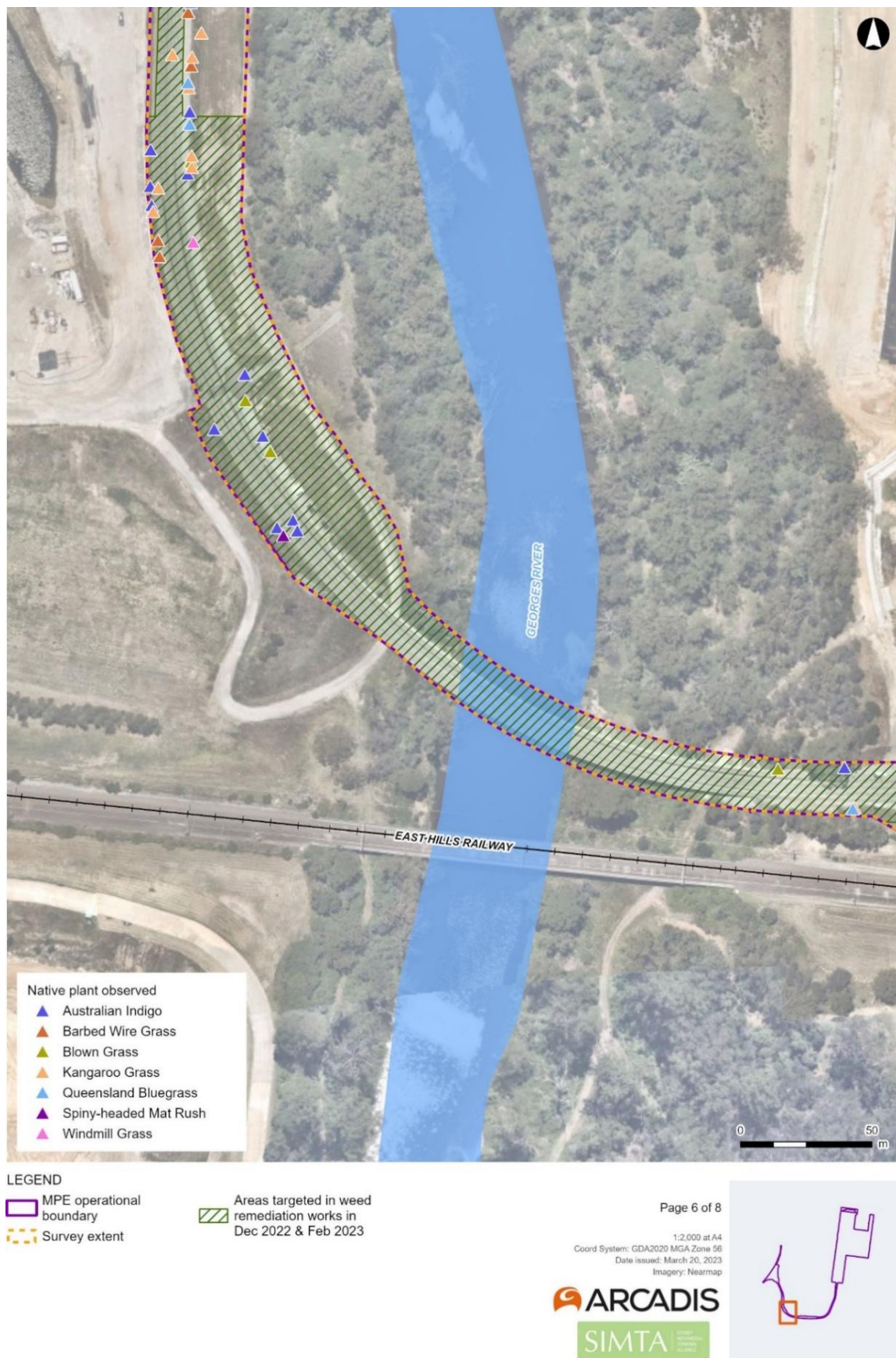


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (6 of 8)

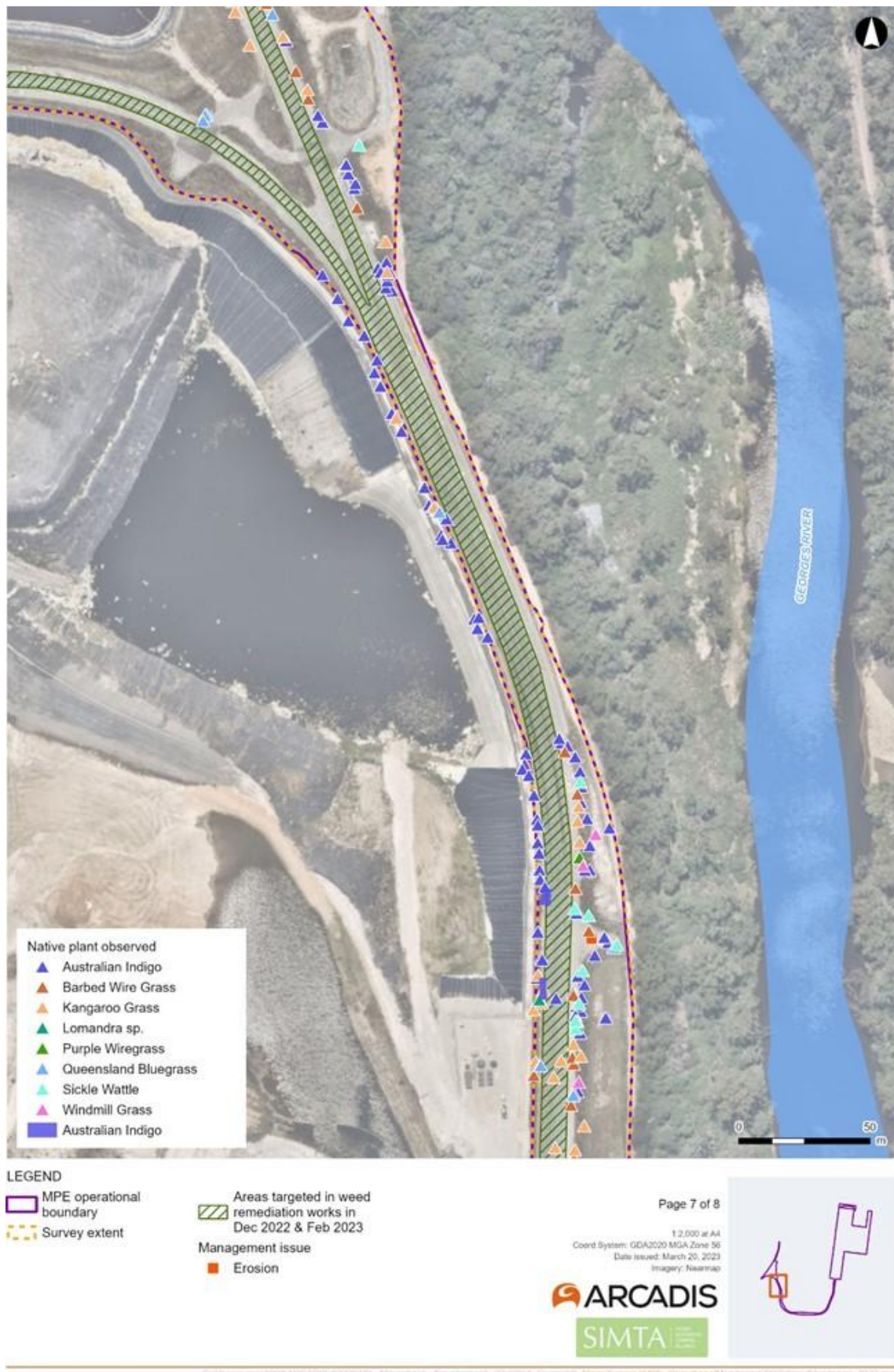


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (7 of 8)

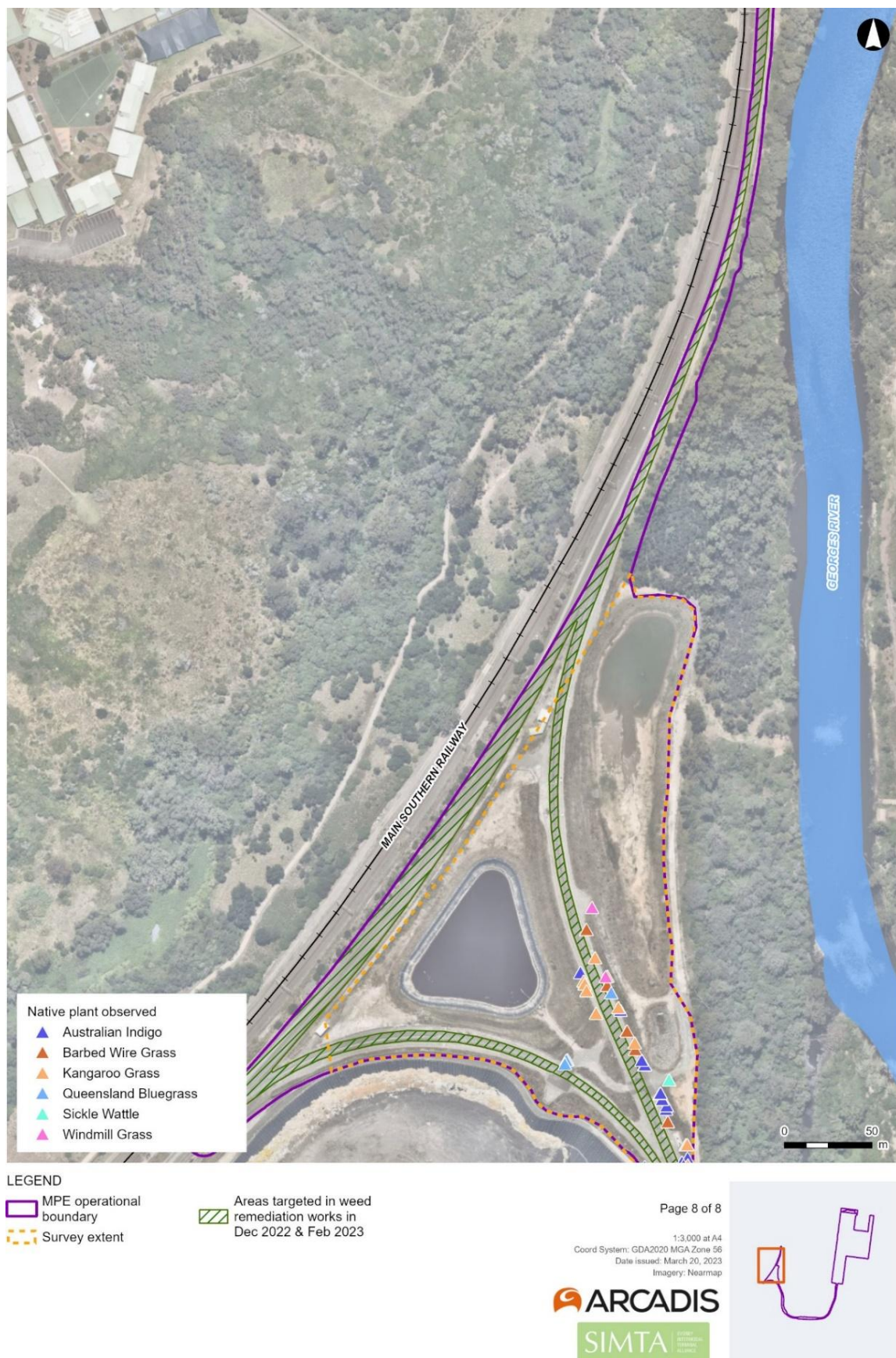


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (8 of 8)

Recommendations

Weed monitoring and weed remediation works should continue throughout the 2025/26 monitoring year. Table 4 summarises the recommendations for weed remediation within the MIP. Additionally, the weed remediation works being conducted by Toolijooa in the RALP have been compared against the criteria in Appendix C and are considered to be consistent.

Recommended actions documented in previous weed monitoring reports are included in Appendix D. The catalogue has been reviewed and updated to reflect works which have been completed and is considerate of the revegetation methodology proposed by Spray Grass Solutions and Cumberland Plain Seeds.

Table 4 Recommended actions for weed remediation in the MIP

Area	Recommendation
All areas	Targeted weed remediation to continue during the 2025/26 monitoring year and is to be conducted using the same methods and at the same locations as previously conducted
Rail Access Land Package (RALP)	Weed remediation works will focus on controlling priority and key weed species (Appendix A and Appendix B)
	Suppression of environmental weeds and encroachment into areas of bushland should occur where possible
	Hand weeding should be conducted for individuals, whereas slashing and herbicide spraying should be adopted to target larger patches of weeds. However, extreme care must be taken when conducting any weed management within the RALP, as many native grasses have become established
	Hand weeding is only feasible on annual species such as <i>Themeda quadrivalvis</i> (Grader Grass) and <i>Senecio madagascariensis</i> (Fireweed) due to their relatively small root system
	Contractors should identify the extent of the works zone and discuss 'No Go' zones with all involved in the works. Weeding must be restricted to identified weeds and native species to be retained should be identified prior to works commencing
	Priority and aggressive weed species outside revegetated RALP areas should be removed. Weeds that should be targeted include <i>Senecio madagascariensis</i> (Fireweed)
	- Large patches of <i>Eragrostis curvula</i> (African Lovegrass), <i>Chloris gayana</i> (Rhodes Grass) and <i>Themeda quadrivalvis</i> (Grader Grass) between the RALP and the East Hills train line should be slashed regularly to prevent seeding events (Figure 2 (5 of 8)). This will reduce the colonisation of these grasses into revegetation areas - Slashing should only occur when plants are not seeding to prevent further spread. As more native species become established in these areas, slashing may impact their growth; therefore, non-targeted slashing should be avoided - Application of herbicide within the RALP and in areas adjacent to the Moorebank biobank site should be conducted to prevent overspray (off-target poisoning). If herbicide application occurs, recommended herbicides for tussock grass, <i>Chloris gayana</i> (Rhodes Grass) and <i>Eragrostis curvula</i> (African Lovegrass), include glyphosate or flupropanate, while plants are actively growing during summer and spring. Native vegetation outside the

Area	Recommendation
	RALP fence must not be impacted by herbicide during weed remediation works - No herbicide spraying should be conducted outside the RALP, specifically adjacent to ecologically sensitive areas south of the MPE Operational facility (Figure 2). Manual weed remediation works in ecologically sensitive areas should not extend beyond the construction envelope of the RALP. If further clarification is necessary, the project ecologist should be consulted - Batters that currently have limited vegetation cover should be colonised by a native seed mix as soon as practical. This will ensure that these areas are not colonised by weed species and will further reduce erosion during heavy rainfall events - Continue to collect litter from within the RALP and in adjacent areas
IMEX building and adjacent drainage infrastructure	Soft batters within the trunk drainage system and retention basin/swale at the north-eastern extent of the facility should be inspected for weed growth. Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan
Warehouse areas	Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan
Eastern boundary drainage infrastructure	- Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan - Erosion in the drainage infrastructure should be controlled by planting additional native ground cover species to maintain batters during heavy rainfall events
Landscaped areas along Bushmasters Avenue	- Continued maintenance of these landscaped areas should be maintained at a frequency that does not increase the current abundance of identified weed species. This is pertinent for areas where landscaped species have died back, and bare ground is more abundant - Areas adjacent to cleared areas in the MPW operational area should be sprayed for weeds to limited the potential for spreading

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APPENDIX A PRIORITY WEED PROFILES



Lantana (*Lantana camara*)



Fireweed (*Senecio madagarsensis*)



Alligator Weed (*Alternanthera philoxeroides*)



African Olive (*Olea europea* subsp. *cuspidata*)



Lantana (*Lantana camara*)



Fireweed (*Senecio madagarsensis*)



Bridal Creeper (*Asparagus asparagoides*)



Peruvian Primrose (*Ludwigia peruviana*)

APPENDIX B KEY WEED PROFILES



Rhodes Grass (*Chloris gayana*)



Patterson's Curse (*Echium plantaganium*)



African Love Grass (*Eragrostis curvula*)



Coolatai Grass (*Hyparrhenia hirta*)



Grader Grass (*Themeda quadrivalvis*)



Red Natal Grass (*Melinis repens*)

APPENDIX C WEED REMEDIATION WORKS TRACKING

Priority	Action	Action description	Current performance assessment
1	Eradicate 'priority' weeds	Target 'priority' weed species through manual removal and herbicide treatment. Herbicide application should consider timing (i.e., applying herbicide when weeds are actively growing) and best practice methodologies. Areas outlined by coloured polygons in Figure 2 should be prioritised.	One priority weed species are present within the RALP: <i>Senecio madagascariensis</i> (Fireweed). These should be removed as a priority. Progress has been made through remediation works within the RALP. Continued management must be undertaken to work towards eradication.
2	Removal of key and aggressive weed species	Key weed species, including African Lovegrass, Rhodes Grass, Paterson's Curse, Coolatai Grass and Grader Grass, should be removed from revegetated areas of soft batter. Aggressive weed species, including Moth Vine and Castor Oil Plant, should be removed from all operational areas using a combination of manual and herbicide control. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Key weed species, including Rhodes Grass, African Lovegrass, Coolatai Grass, Paterson's Curse, and Grader Grass, are colonising soft batters in the RALP. These weeds should be removed. Progress has been made through remediation works within the RALP. Continued management must be undertaken to work towards eradication.
3	Suppress further colonisation of environmental weeds and encroachment into areas of bushland	Control of exotic species adjacent to the biobank site and ecologically sensitive areas. Manual removal should be adopted in areas adjacent to threatened flora locations. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Weed growth is stabilising through continued weed management on soft batters adjacent to the biobank site and ecologically sensitive areas. Manual removal, including routine slashing, is being used to prevent present weeds from reaching seeding maturity and further encroaching on adjacent high-value areas (biobank site and ecologically sensitive areas containing threatened plant species). All works should be restricted to the operational area and not extend into the biobank site or identified ecologically sensitive areas. Slashing should only be conducted when weed species are not in flower to prevent further spread. Appropriate slashing time is during winter for most species.

Priority	Action	Action description	Current performance assessment
4	Slashing of invasive grasses to prevent seeding.	Management of invasive grasses such as Rhodes Grass and African Love Grass through regular mowing or slashing. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Slashing has been adopted to manage the regrowth of invasive grasses (African Lovegrass, Grader Grass) within the RALP in ballast and gravel areas. Some areas beyond the Georges River bridge are yet to be managed. Slashing should be used to manage large expanses of exotic grassland to prevent seeding events. However, as native grasses become established, extreme care must be taken, and indiscriminate slashing must be avoided. A contractor with knowledge of native species should be employed to carry out this task, in failing that, an ecologist should be on site to monitor weed remediation.
5	Reduce cover of weeds within the RALP	Reduction of weed cover by applying control methods commensurate with the Operational Flora and Fauna Management Plan (Arcadis 2019).	Works should involve targeted slashing of mature plants and removing flowering and seed heads to minimise seeding. Targeted slashing has been previously employed to control weed colonisation on soft batters. However, it must be continued to limit the re-colonisation of weeds within the RALP. Future weed control actions will focus on removing and reducing the cover of priority and key weed species and suppressing the further colonisation of common weeds, which is consistent with the rehabilitation methodology proposed by Spray Grass Solutions and Cumberland Plain Seeds.
6	Remove herbaceous and woody weeds within the operational area and trunk drainage infrastructure.	Reduction in herbaceous and woody weeds by applying control methods commensurate with the Operational Flora and Fauna Management Plan (Arcadis 2019)	Weed cover has generally remained low within trunk drainage infrastructure and at the north-eastern extent of the MIP East operational facility.

APPENDIX D RECOMMENDED ACTIONS CATALOGUE

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
April 2020	Eradicate priority weeds species, including Bridal Creeper, Alligator Weed, Lantana, Fireweed and African Olive	Completed	Most instances of these weeds have been removed from the RALP. Small instances of Fireweed occur, however these are being managed by the current weed remediation works within the RALP.
April 2020	Remove key and aggressive weed species within RALP, including Golden Wreath Wattle, Moth Vine, Castor Oil Plant, Small-leafed Privet, Grader Grass and Balloon Vine	Commenced	Grader Grass has been observed colonising remediated areas within the RALP. This species should be removed to prevent further colonisation and infestations. Golden Wreath Wattle, Moth Vine and Castor Oil Plant on the southern side of the RALP in the area between the operational boundary and the East Hills line rail corridor. Consideration should be given to the management of these areas to reduce encroachment into recently remediated areas.
June 2020	Planning should commence to revegetate soft batters and undeveloped areas within the MPE operational facility with native species in accordance with the approved Urban Design and Landscaping Plan (Arcadis 2019a, Arcadis 2020)	Commenced	Revegetation has commenced for remediated areas using a hydro-mulch containing a seed palette commensurate with the UDLP (Arcadis 2020). Previous instances of native seed setting have been colonized by weed species within the RALP and should be cleared and re-set with a native seed mix as soon as practical.
December 2020	Exotic species, specifically <i>Medicago polymorpha</i> (Burr Medic), should be removed from grassland on either side of the RALP at its eastern extent, closest to the operational area.	Commenced	Targeted manual removal, including slashing, has been conducted for exotic species outside the RALP fencing. A qualified bush regeneration contractor should be used to avoid impacts on

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
			native species. Strictly no herbicide should be used in this area, and works should not extend beyond the RALP construction envelope. Where possible, contractors should not access/pass through adjacent areas.
December 2021	Collect litter scattered through the RALP and in adjacent areas	Commenced	Litter remains in the RALP and adjacent areas.
December 2021	Control aggressive weed species Coolatai Grass and Paterson's Curse within the RALP	Commenced	New instances of aggressive weed species Coolatai Grass and Paterson's Curse within the RALP should be removed as soon as practicable to avoid the spread of these species into ecologically sensitive areas adjacent to the RALP.
February 2022	Continued targeted slashing of woody and herbaceous weeds within the RALP.	Completed	Majority of large woody weeds have been removed from the RALP. Continue regular slashing of large woody weeds to remove the fertile seed head and discourage further germination of these weeds within the RALP should occur.
December 2022	Prioritise weed remediation works for priority and key weed species which have experienced accelerated growth in recent months.	Commenced	Areas of particularly high biomass of priority and key weed species should be prioritised for weed remediation works in coming months to avoid mass seeding events.
	Begin remediation of soft batters which have slipped following extreme rainfall events in recent weeks	Not started	Areas within the operational facility, including a number of areas within the RALP, require urgent batter remediation in areas of batter slipping.
December 2022	Begin weed remediation of gravel and ballast areas along RALP	Commenced	Removal of all vegetation in gravel and ballast areas due along RALP using slashing and

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
			herbicide due to safety concerns of train operators and prevent spread of weeds.
December 2022	Continue weed remediation works along the soft batters within the RALP.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
February 2023	Continue weed remediation works along the soft batters within the RALP beyond Georges River bridge.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
April 2023	No weed remediation has occurred since February 2023. Expected to recommence in June 2023, in same areas that have previously been remediated.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
June 2023	Continue weed remediation works along the soft batters within the RALP	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
December 2023	Toolijooa Environmental Restoration inducted as primary weed control contractors. Weed remediation recommenced throughout the RALP	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.

APPENDIX E REMEDIATION PROGRESS PHOTOGRAPHS



April 2021



December 2023



June 2025



April 2021



December 2023



June 2025



April 2021



December 2023



June 2025



April 2021



December 2023



June 2025



April 2021



December 2023



June 2025



April 2021



December 2023



June 2025



April 2021



December 2023



June 2025

APPENDIX F FLORA SPECIES INVENTORY

Scientific name	Common name	Exotic	Priority/key weed
<i>Acacia falcata</i>	Hickory Wattle		
<i>Acacia parramattensis</i>	Parramatta Wattle		
<i>Acacia saligna</i>	Golden Wreath Wattle	*	
<i>Alternanthera philoxeroides</i>	Alligator weed	*	Priority
<i>Alternanthera pungens</i>	Khaki Weed	*	
<i>Araujia sericifera</i>	Moth Vine	*	
<i>Asparagus asparagoides</i>	Bridal Creeper	*	Priority
<i>Atriplex semibaccata</i>	Creeping Saltbush		
<i>Austrodanthonia spp.</i>	-		
<i>Avena spp.</i>	Oats	*	
<i>Bidens pilosa</i>	Cobbler's Pegs	*	
<i>Brassica rapa</i>	Field Mustard	*	
<i>Briza maxima</i>	Quaking Grass	*	
<i>Briza minor</i>	Shivery Grass	*	
<i>Cenchrus clandestinus</i>	Kikuyu Grass	*	
<i>Centaureum spp.</i>	-	*	
<i>Chloris gayana</i>	Rhodes Grass	*	Key
<i>Chloris truncata</i>	Windmill Grass		
<i>Cirsium vulgare</i>	Spear Thistle	*	
<i>Convolvulus erubescens</i>	Pink Bindweed		
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	*	
<i>Cyclospermum leptophyllum</i>	Slender Celery	*	
<i>Cynodon dactylon</i>	Common Couch		
<i>Cymbopogon refractus</i>	Barbed Wire Grass		
<i>Cyperus eragrostis</i>	Umbrella Sedge	*	
<i>Daviesia ulicifolia</i>	Gorse Bitter Pea		
<i>Dichanthium sericeum</i>	Queensland Bluegrass		
<i>Dichondra repens</i>	Kidney Weed		
<i>Echium plantagineum</i>	Paterson's Curse	*	Key
<i>Eragrostis brownii</i>	Brown's Lovegrass		
<i>Eragrostis curvula</i>	African Lovegrass	*	Key
<i>Euchiton spp.</i>	-		
<i>Ficinia nodosa</i>	Knobby Club-rush		
<i>Foeniculum vulgare</i>	Fennel	*	
<i>Glycine clandestina</i>	-		

Scientific name	Common name	Exotic	Priority/key weed
<i>Hardenbergia violacea</i>	False Sarsaparilla		
<i>Hypochoeris radicata</i>	Catsear	*	
<i>Indigofera australis</i>	Australian Indigo		
<i>Juncus usitatus</i>	-		
<i>Lantana camara</i>	Lantana	*	Priority
<i>Lachnagrostis filiformis</i>	Blown Grass		
<i>Lactuca serriola</i>	Prickly Lettuce	*	
<i>Linum trigynum</i>	French Flax	*	
<i>Lolium perenne</i>	Perennial Ryegrass	*	
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush		
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	*	
<i>Ludwigia peruviana</i>	Peruvian water primrose	*	Priority
<i>Medicago polymorpha</i>	Burr Medic	*	
<i>Melilotus alba</i>	Bokhara	*	
<i>Melinis repens</i>	Red Natal Grass	*	Key
<i>Modiola caroliniana</i>	Red-flowered Mallow	*	
<i>Olea europaea</i> subsp. <i>cuspidate</i>	African Olive	*	Priority
<i>Paspalum dilatatum</i>	Paspalum	*	
<i>Persicaria decipiens</i>	Slender Knotweed		
<i>Phytolacca octandra</i>	Inkweed	*	
<i>Plantago lanceolata</i>	Lamb's Tongues	*	
<i>Portulaca oleracea</i>	Common Purslane		
<i>Rumex crispus</i>	Curled Dock	*	
<i>Senecio madagascariensis</i>	Fireweed	*	Priority
<i>Setaria parviflora</i>	-	*	
<i>Sida rhombifolia</i>	Paddy's Lucerne	*	Key
<i>Solanum nigrum</i>	Black-berry Nightshade	*	
<i>Solanum sisymbriifolium</i>		*	
<i>Sonchus oleraceus</i>	Common Sowthistle	*	
<i>Tagetes minuta</i>	Stinking Roger	*	
<i>Themeda quadrivalvis</i>	Grader Grass	*	Key
<i>Themeda triandra</i>	-		
<i>Trifolium arvense</i>	Haresfoot Clover	*	
<i>Trifolium repens</i>	White Clover	*	
<i>Trifolium michelianum</i>	Bolansa Clover	*	
<i>Verbena bonariensis</i>	Purpletop	*	

Scientific name	Common name	Exotic	Priority/key weed
<i>Verbena rigida</i> var. <i>Rigida</i>	Veined Verbena	*	

MIP BI-MONTHLY WEED MONITORING REPORT – AUGUST 2025

Introduction

Arcadis has been commissioned to conduct bi-monthly weed monitoring surveys within the operational areas of Moorebank Precinct East (MPE) and Moorebank Precinct West (MPW). These areas together are known as the Moorebank Intermodal Precinct (MIP).

The MPE operational facility includes the Import and Export Terminal (IMEX), Rail Access Land Package (RALP), warehouses, distribution facilities and freight village, and stormwater trunk drainage infrastructure and landscaping areas. The MPW operational facility includes the landscaped vegetation along Bushmasters Avenue (Figure 1).

Regular monitoring of the MIP operational facilities will inform the land manager of weed cover, and the presence of any weeds listed as 'priority' for the Greater Sydney Local Land Services region under the *Biosecurity Act 2015*.

The schedule for the bi-monthly weed monitoring inspections for the 2025-26 monitoring year are detailed in Table 1. This document will be treated as live throughout the monitoring year and will be updated at the end of each inspection.

Table 1 Schedule for bi-monthly weed inspections

Inspection month	Date completed
June 2025	25/06/2025
August 2025	27/08/2025
October 2025	TBC
December 2026	TBC
February 2026	TBC
April 2026	TBC

Background

Arcadis has been monitoring the MPE operational facility for weed occurrence since April 2020. The RALP, which includes the MPE operational RALP, has seen significant change and works over the time Arcadis has conducted weed monitoring. Additionally, works conducted in MPW in 2023/24 have changed the layout and vegetation spread in the RALP. Several weed remediation events have occurred since the inception of weed monitoring, detailed below in Table 2.

Table 2 Summary of weed events throughout monitoring history

Timing	Summary of events	Weed contractor
Spring 2020	Weeds removed from batters and revegetated with native species, as per the Urban Design and Landscaping Plan (UDLP) for MPE	Spray Grass Solutions

Timing	Summary of events	Weed contractor
	Cumberland Plain Seeds were procured to provide technical oversight of revegetation effort	
December 2021	- As per recommendations from Spray Grass Solutions and Cumberland Plain Seeds, the monitoring methodology was changed - Changes included reporting on cover on 'priority' weeds species and key weeds specific to the project.	
December 2022 to June 2023	- Weed remediation works commenced - Priority weed species were targeted - Native species were identified throughout the RALP to avoid accidental removal.	P&E Services
December 2023 to present	- Weed remediation works continued - Regular maintenance of priority weed species via slashing, hand removal and herbicide spraying	Toolijooa Environmental Restoration

Methodology

Arcadis ecologist Kate Mauger attended the MIP operational area on 27 August 2025. Monitoring involved traversing the MIP operational facility on foot, surveying landscaped areas, stormwater infrastructure and soft batters adjoining the RALP for increases in weed abundance of the identified species in Appendix A and Appendix B. The areas surveyed are presented in Figure 1.

The weather on the 27 August was cloudy, with a maximum temperature of 20.3°C, and the weather recorded at Holsworthy Aerodrome (station 066161) (BOM 2025).

Study Limitations

The data presented within this report is restricted to what was observed and recorded by the attending Arcadis ecologists during the site assessment on 27 August 2025.

Monitoring of weeds was restricted to the operational facility; weeds were not assessed within the bounds of the active construction areas surrounding new warehouses or other infrastructure.

Surveys were not undertaken in areas extending beyond the junction between the QUBE RALP and the Southern Sydney Freight Line (SSFL).



- Legend
- MPW operational boundary
 - MPE operational boundary
 - Weed monitoring survey extent



1:15,000 at A4
GDA2020 MGA Zone 56
Date issued: July 3, 2025
Imagery: Esri



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Created by : EM Updated by : QA by : NB

Figure 1. Survey extent within the MPI operational facility

Results

Results of the weed monitoring surveys during the August 2025 survey are summarised below in Table 3. Weed records, previously recorded threatened flora species records, and instances of native species within the survey extent are shown in Figure 2.

Progress photographs of monitoring locations are provided in Appendix E and a complete flora species inventory in Appendix F.

Table 3 Summary of weed abundances across all inspection areas in MPI, for the current survey

Inspection area	Weed abundances for current survey	Photo of inspection area
Moorebank Precinct East (MPE)		
Rail Access Land Package (RALP)	• Weed growth has been slow since June 2025 inspection • Small instances of Fireweed slashed • Steep areas along berms are being avoided for slashing due to safety concerns. Additionally, the small amounts of exotic vegetation are currently stabilising these berms, and will be targeted once construction is finalised in the MPW areas.	

Inspection area	Weed abundances for current survey	Photo of inspection area
IMEX building and adjacent drainage infrastructure	• <i>Acacia falcata</i> (Hickory Wattle) continue to grow unimpeded by weeds.	 The photograph shows a concrete walkway on the left, a chain-link fence running parallel to it, and a dark, industrial-style building in the background. The area behind the fence appears to be a drainage or utility area with some vegetation. The sky is clear and blue.

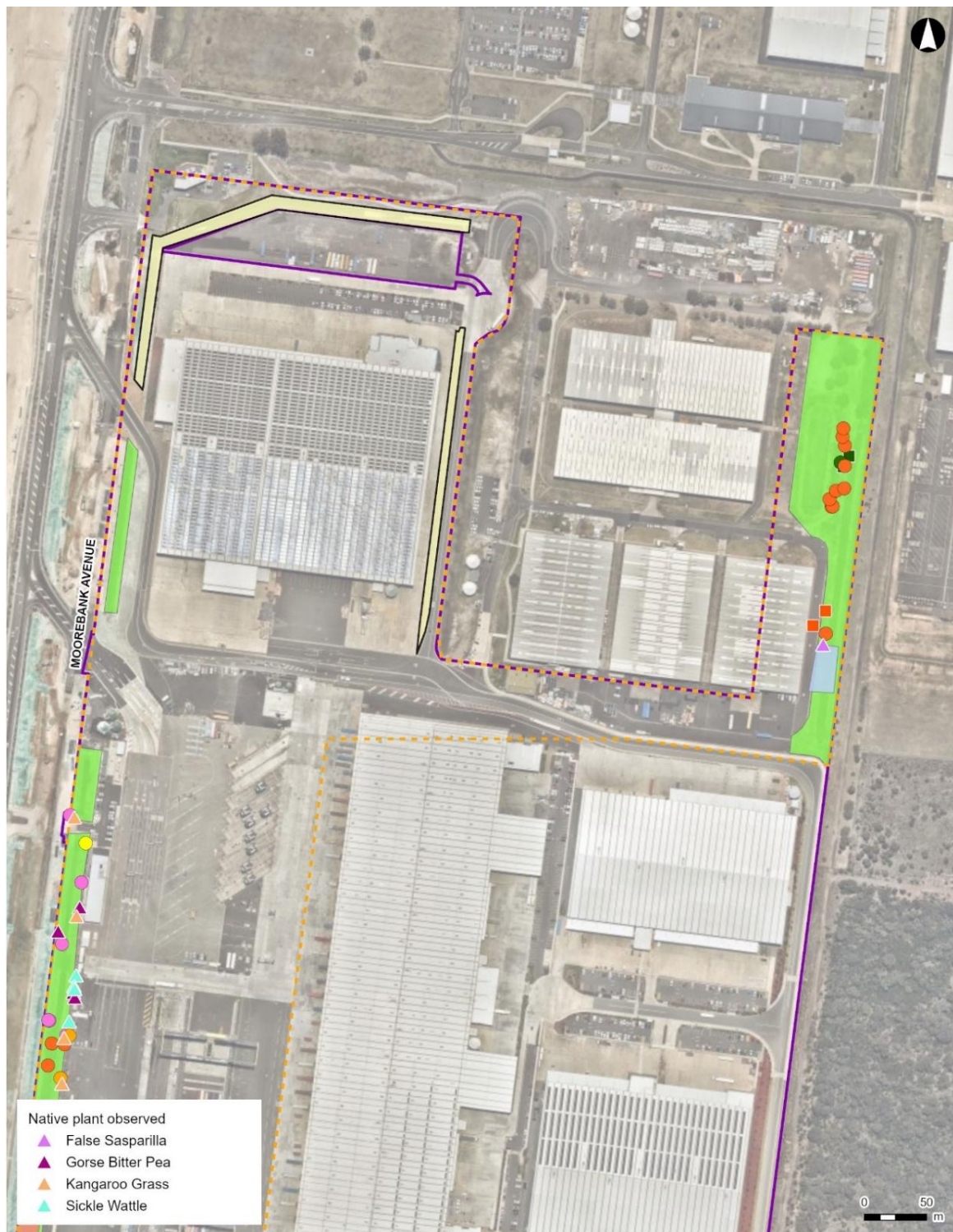
Inspection area	Weed abundances for current survey	Photo of inspection area
Warehouse areas	• Large areas of the native <i>Cynodon dactylon</i> (Couch Grass) are present across most of these areas and is generally outcompeting weed species. • Occurrences of weeds in the warehouse area and the adjacent drainage infrastructure is restricted to scattered individuals of <i>Senecio madagascariensis</i> (Fireweed), <i>Plantago lanceolata</i> (Plantain), <i>Trifolium arvense</i> (Clover) and exotic grasses like <i>Chloris gayana</i> (Rhodes Grass), <i>Sporobolus africanus</i> (Parramatta Grass), <i>Paspalum urvillei</i> (Giant Paspalum) and <i>Ehrharta erect</i> (Panic Veldtgrass) • Majority of this area has now been claimed by the Moorebank Avenue Upgrade project.	

Inspection area	Weed abundances for current survey	Photo of inspection area
Eastern boundary drainage infrastructure	• Drainage infrastructure dominated by <i>Bulboschoenus fluviatilis</i> (Marsh club-rush) whilst other are dominated by <i>Typha orientalis</i> (Bulrush). Where space is present between stands of these native emergent species small clumps of <i>Pericaria decipiens</i> (Slender Knotweed), <i>Daviesia ulicifolia</i>, <i>Ficinia nodosa</i> (Knotted Club-rush), <i>Carex tereticaulis</i> and <i>Juncus usitatus</i> are present. Other native species such as <i>Imperata cylindrica</i> and <i>Lomandra longifolia</i> were observed in the drainage channels. • Areas of erosion still present.	

Inspection area	Weed abundances for current survey	Photo of inspection area
Moorebank Precinct West (MPW)		
Landscaped areas along Bushmasters Avenue	- Landscapes vegetation is in good condition, with minor weed incursions - Weed species present include <i>Sonchus oleraceus</i> (Common Sowthistle), <i>Chloris virgata</i> (Rhodes Grass), <i>Bidens pilosa</i>, <i>Conyza bonariensis</i> (Fleabane), <i>Cyclosporum leptophyllum</i> (Slender Celery), and <i>Tagetes minuta</i> (Stinking Roger). - Areas with limited to no landscaped vegetation are particularly susceptible to weed incursion from cleared areas (see adjacent photo)	

Inspection area	Weed abundances for current survey	Photo of inspection area
APZ area – northern MPW	• Suppression of Medicago and other herbaceous weeds occurring in this area (<i>Sonchus oleraceus</i> (Common Sowthistle), <i>Cirsium vulgare</i>) • Methods include slashing and hand removal around native species	

Inspection area	Weed abundances for current survey	Photo of inspection area
Sediment basins adjacent to BioBank site	Spot spraying, and hand pulling of weeds occurring along boundary of basins and BioBank site	



LEGEND

■ MPE operational boundary

■ Survey extent

■ Areas targeted in weed remediation works in Dec 2022 & Feb 2023

■ Management issue

■ Erosion

■ Damage to native veg

■ Weed cover (outside Rail Link)

■ Low

■ None

■ Priority & key weeds

■ African Lovegrass

■ Fireweed

■ Golden Wreath Wattle

■ Paterson's Curse

■ Red Natal Grass

■ Rhodes Grass

■ Fireweed

■ Large-leaf Pennywort

Page 1 of 8

1:4,500 at A4
Coord System: GDA2020 MGA Zone 56
Date issued: March 20, 2023
Imagery: Nearmap

ARCADIS
SIMTA

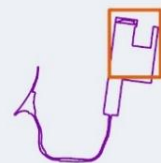


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (1 of 8)

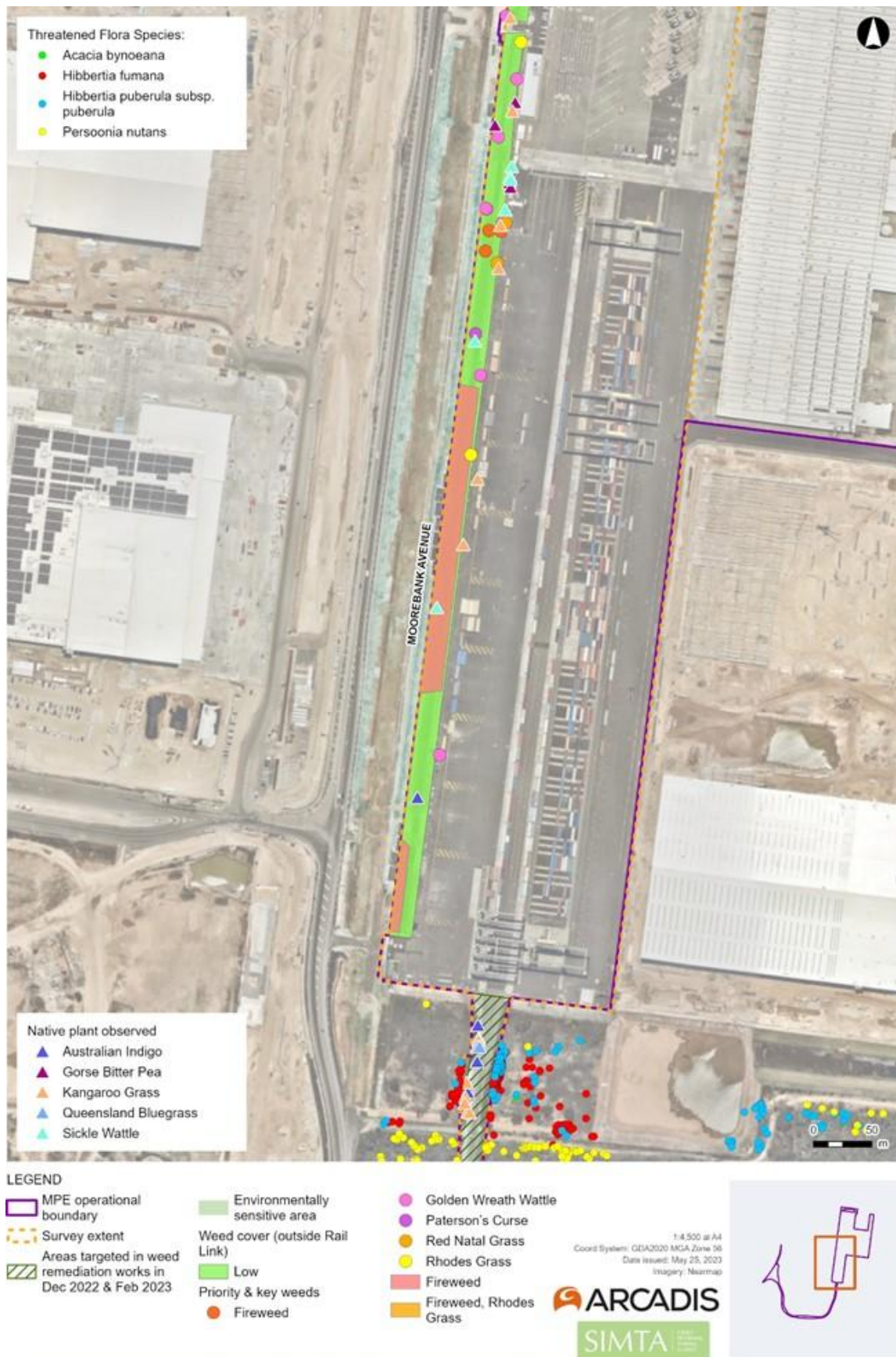


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (2 of 8)

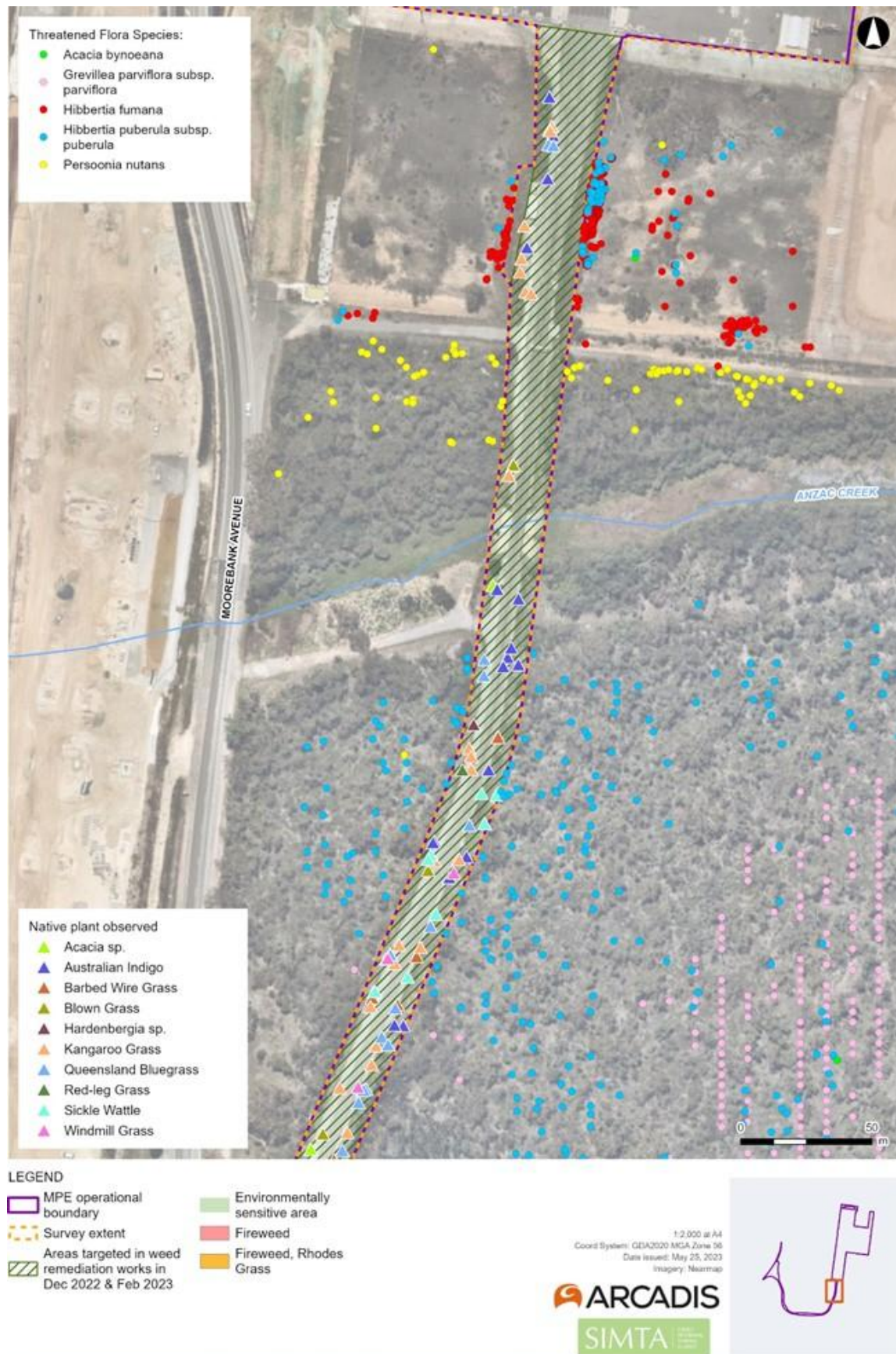


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (3 of 8)

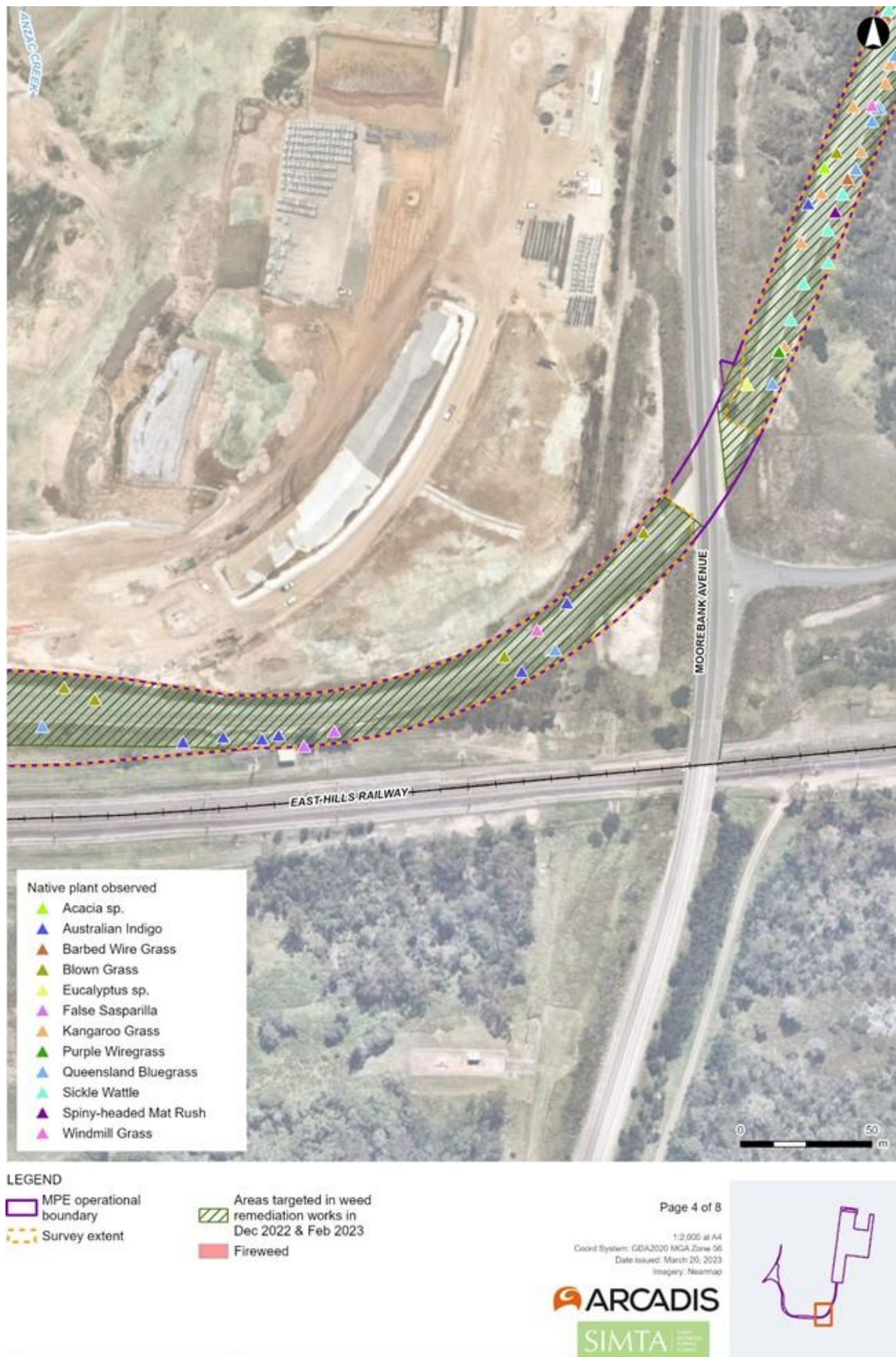


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (4 of 8)



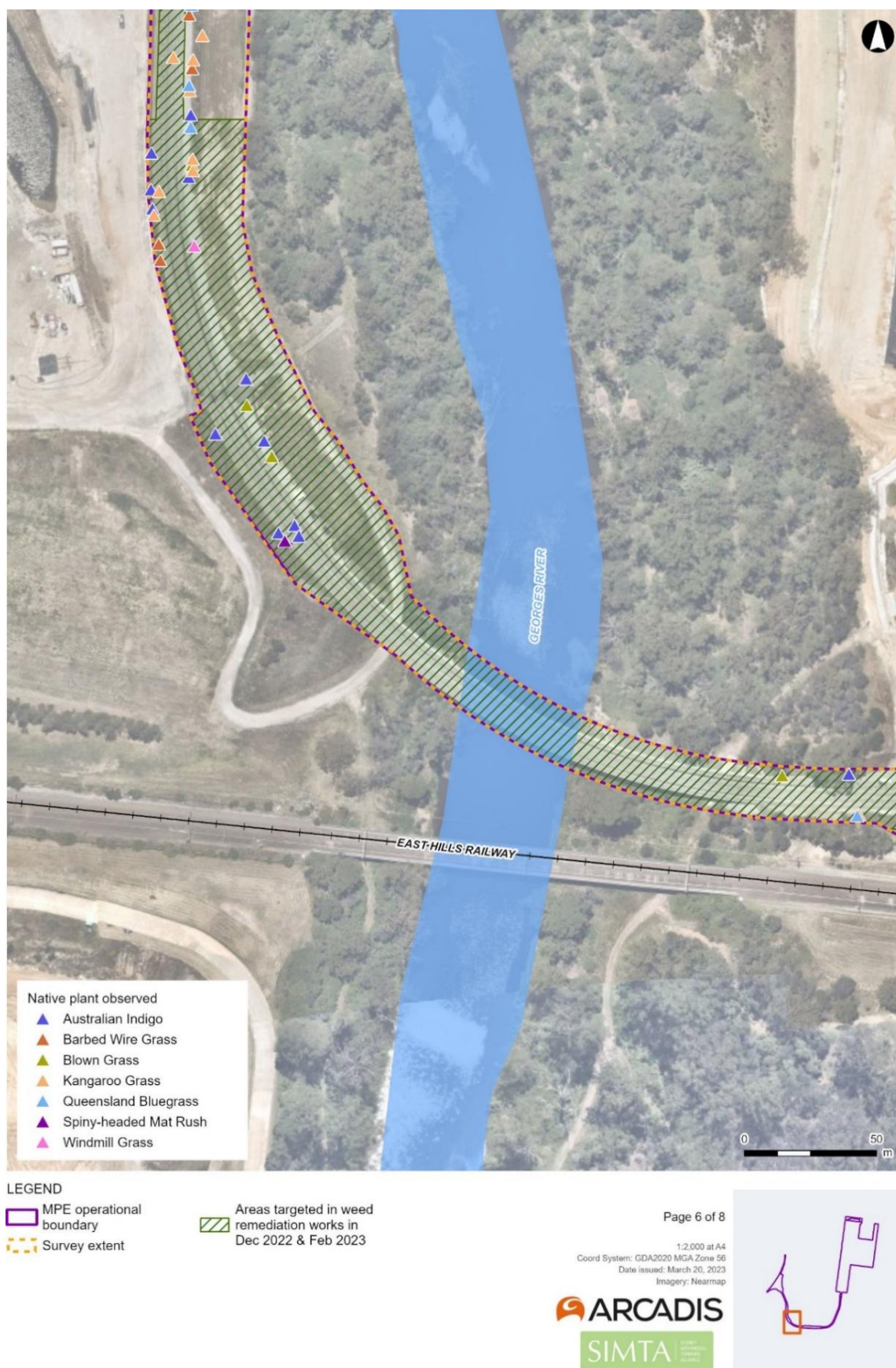


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (6 of 8)

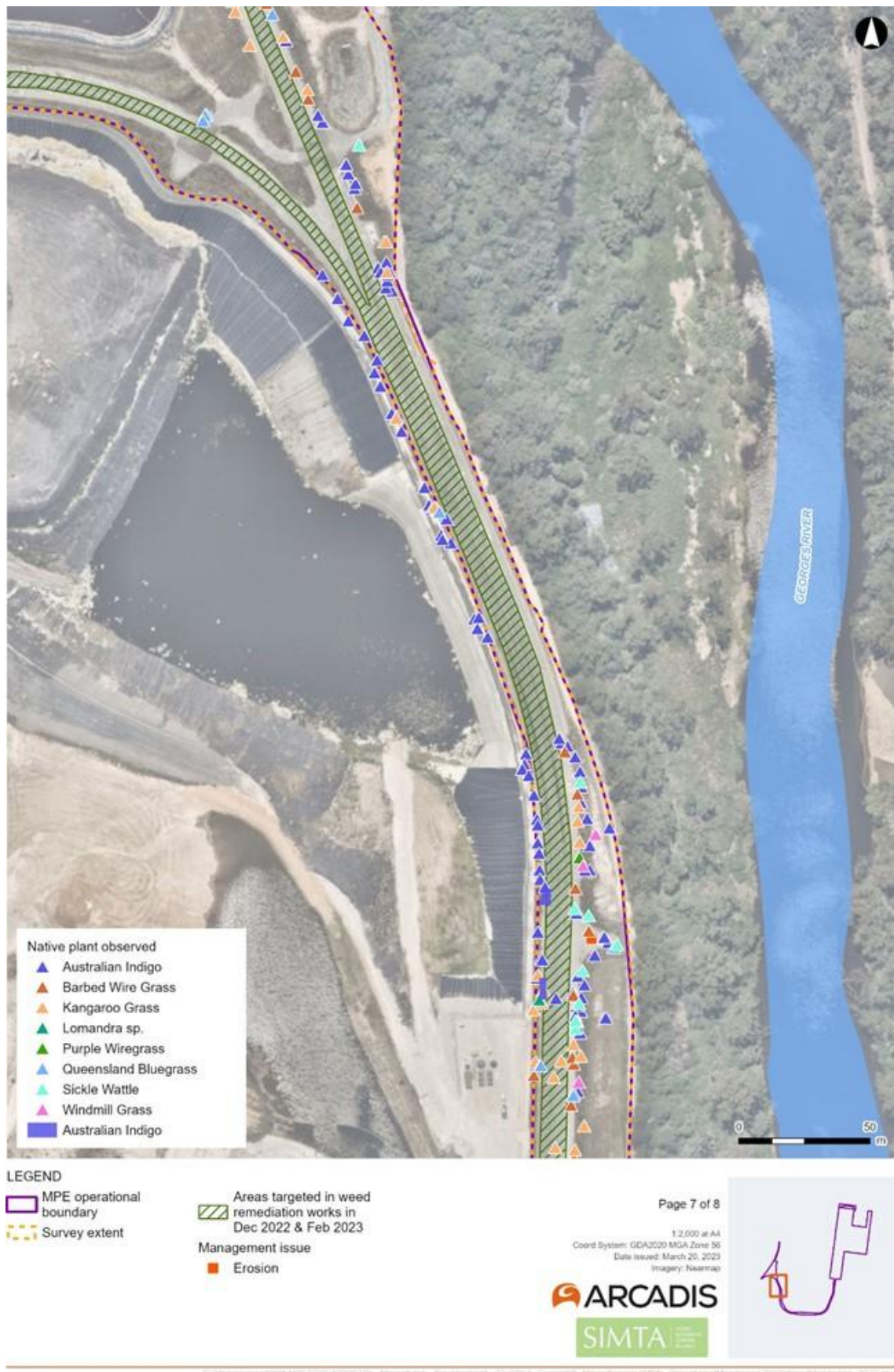


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (7 of 8)

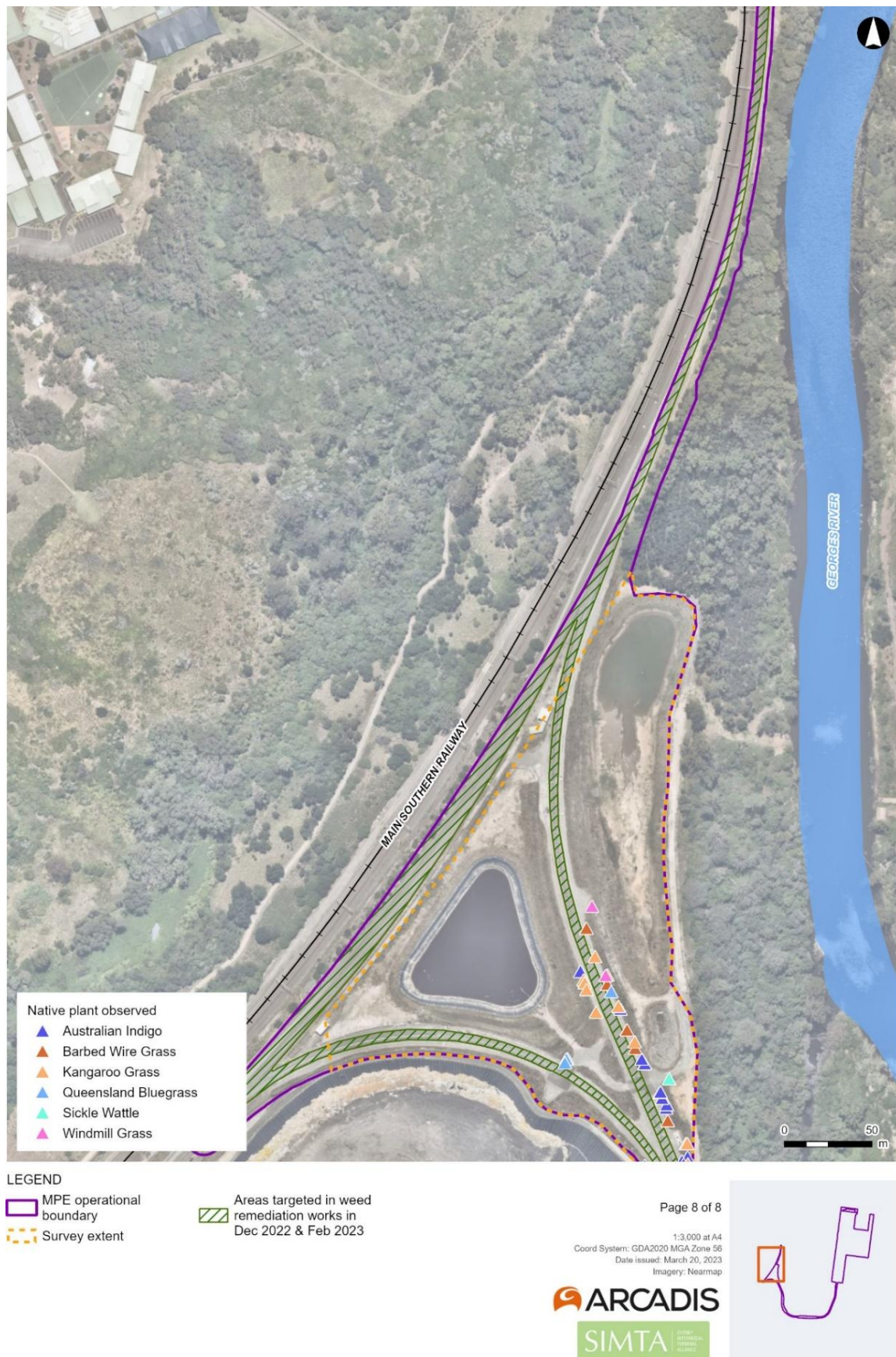


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (8 of 8)

Recommendations

Weed monitoring and weed remediation works should continue throughout the 2025/26 monitoring year. Table 4 summarises the recommendations for weed remediation within the MIP. Additionally, the weed remediation works being conducted by Toolijooa in the RALP have been compared against the criteria in Appendix C and are considered to be consistent.

Recommended actions documented in previous weed monitoring reports are included in Appendix D. The catalogue has been reviewed and updated to reflect works which have been completed and is considerate of the revegetation methodology proposed by Spray Grass Solutions and Cumberland Plain Seeds.

Table 4 Recommended actions for weed remediation in the MIP

Area	Recommendation
All areas	Targeted weed remediation to continue during the 2025/26 monitoring year and is to be conducted using the same methods and at the same locations as previously conducted
Rail Access Land Package (RALP)	Weed remediation works will focus on controlling priority and key weed species (Appendix A and Appendix B)
	Suppression of environmental weeds and encroachment into areas of bushland should occur where possible
	Hand weeding should be conducted for individuals, whereas slashing and herbicide spraying should be adopted to target larger patches of weeds. However, extreme care must be taken when conducting any weed management within the RALP, as many native grasses have become established
	Hand weeding is only feasible on annual species such as <i>Themeda quadrivalvis</i> (Grader Grass) and <i>Senecio madagascariensis</i> (Fireweed) due to their relatively small root system
	Contractors should identify the extent of the works zone and discuss 'No Go' zones with all involved in the works. Weeding must be restricted to identified weeds and native species to be retained should be identified prior to works commencing
	Priority and aggressive weed species outside revegetated RALP areas should be removed. Weeds that should be targeted include <i>Senecio madagascariensis</i> (Fireweed)
	- Large patches of <i>Eragrostis curvula</i> (African Lovegrass), <i>Chloris gayana</i> (Rhodes Grass) and <i>Themeda quadrivalvis</i> (Grader Grass) between the RALP and the East Hills train line should be slashed regularly to prevent seeding events (Figure 2 (5 of 8)). This will reduce the colonisation of these grasses into revegetation areas - Slashing should only occur when plants are not seeding to prevent further spread. As more native species become established in these areas, slashing may impact their growth; therefore, non-targeted slashing should be avoided - Application of herbicide within the RALP and in areas adjacent to the Moorebank biobank site should be conducted to prevent overspray (off-target poisoning). If herbicide application occurs, recommended herbicides for tussock grass, <i>Chloris gayana</i> (Rhodes Grass) and <i>Eragrostis curvula</i> (African Lovegrass), include glyphosate or flupropanate, while plants are actively growing during summer and spring. Native vegetation outside the

Area	Recommendation
	RALP fence must not be impacted by herbicide during weed remediation works - No herbicide spraying should be conducted outside the RALP, specifically adjacent to ecologically sensitive areas south of the MPE Operational facility (Figure 2). Manual weed remediation works in ecologically sensitive areas should not extend beyond the construction envelope of the RALP. If further clarification is necessary, the project ecologist should be consulted - Batters that currently have limited vegetation cover should be colonised by a native seed mix as soon as practical. This will ensure that these areas are not colonised by weed species and will further reduce erosion during heavy rainfall events - Continue to collect litter from within the RALP and in adjacent areas
IMEX building and adjacent drainage infrastructure	Soft batters within the trunk drainage system and retention basin/swale at the north-eastern extent of the facility should be inspected for weed growth. Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan
Warehouse areas	Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan
Eastern boundary drainage infrastructure	- Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan - Erosion in the drainage infrastructure should be controlled by planting additional native ground cover species to maintain batters during heavy rainfall events
Landscaped areas along Bushmasters Avenue	- Continued maintenance of these landscaped areas should be maintained at a frequency that does not increase the current abundance of identified weed species. This is pertinent for areas where landscaped species have died back, and bare ground is more abundant - Areas adjacent to cleared areas in the MPW operational area should be sprayed for weeds to limited the potential for spreading

References

Arcadis (2019a) Urban Design and Landscape Plan. Moorebank Precinct East Stage 1

Arcadis (2019b) Operational Flora and Fauna Management Plan. Moorebank Logistics Park – East Precinct

Arcadis (2019c) Landscape Vegetation Management Sub Plan. Moorebank Precinct East Stage 2

Arcadis (2020) MPE Operational – Weed Monitoring Report December 2020

Arcadis (2020) Urban Design and Landscape Plan. Moorebank Precinct East Stage 2

Bureau of Meteorology (BOM) (2021) Climate Data Online. Weather and Climate: Holsworthy Aerodrome NSW (station 066161) <http://www.bom.gov.au/climate/dwo/IDCJDW2161.latest.shtml>

NSW Department of Primary Industries (DPI) (accessed 2021) NSW WeedWise. priority weeds for the Greater Sydney. <https://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=3>

APPENDIX A PRIORITY WEED PROFILES



Lantana (*Lantana camara*)



Fireweed (*Senecio madagarsensis*)



Alligator Weed (*Alternanthera philoxeroides*)



African Olive (*Olea europea* subsp. *cuspidata*)



Lantana (*Lantana camara*)



Fireweed (*Senecio madagarsensis*)



Bridal Creeper (*Asparagus asparagoides*)



Peruvian Primrose (*Ludwigia peruviana*)

APPENDIX B KEY WEED PROFILES



Rhodes Grass (*Chloris gayana*)



Patterson's Curse (*Echium plantaganium*)



African Love Grass (*Eragrostis curvula*)



Coolatai Grass (*Hyparrhenia hirta*)



Grader Grass (*Themeda quadrivalvis*)



Red Natal Grass (*Melinis repens*)

APPENDIX C WEED REMEDIATION WORKS TRACKING

Priority	Action	Action description	Current performance assessment
1	Eradicate 'priority' weeds	Target 'priority' weed species through manual removal and herbicide treatment. Herbicide application should consider timing (i.e., applying herbicide when weeds are actively growing) and best practice methodologies. Areas outlined by coloured polygons in Figure 2 should be prioritised.	One priority weed species are present within the RALP: <i>Senecio madagascariensis</i> (Fireweed). These should be removed as a priority. Progress has been made through remediation works within the RALP. Continued management must be undertaken to work towards eradication.
2	Removal of key and aggressive weed species	Key weed species, including African Lovegrass, Rhodes Grass, Paterson's Curse, Coolatai Grass and Grader Grass, should be removed from revegetated areas of soft batter. Aggressive weed species, including Moth Vine and Castor Oil Plant, should be removed from all operational areas using a combination of manual and herbicide control. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Key weed species, including Rhodes Grass, African Lovegrass, Coolatai Grass, Paterson's Curse, and Grader Grass, are colonising soft batters in the RALP. These weeds should be removed. Progress has been made through remediation works within the RALP. Continued management must be undertaken to work towards eradication.
3	Suppress further colonisation of environmental weeds and encroachment into areas of bushland	Control of exotic species adjacent to the biobank site and ecologically sensitive areas. Manual removal should be adopted in areas adjacent to threatened flora locations. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Weed growth is stabilising through continued weed management on soft batters adjacent to the biobank site and ecologically sensitive areas. Manual removal, including routine slashing, is being used to prevent present weeds from reaching seeding maturity and further encroaching on adjacent high-value areas (biobank site and ecologically sensitive areas containing threatened plant species). All works should be restricted to the operational area and not extend into the biobank site or identified ecologically sensitive areas. Slashing should only be conducted when weed species are not in flower to prevent further spread. Appropriate slashing time is during winter for most species.

Priority	Action	Action description	Current performance assessment
4	Slashing of invasive grasses to prevent seeding.	Management of invasive grasses such as Rhodes Grass and African Love Grass through regular mowing or slashing. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Slashing has been adopted to manage the regrowth of invasive grasses (African Lovegrass, Grader Grass) within the RALP in ballast and gravel areas. Some areas beyond the Georges River bridge are yet to be managed. Slashing should be used to manage large expanses of exotic grassland to prevent seeding events. However, as native grasses become established, extreme care must be taken, and indiscriminate slashing must be avoided. A contractor with knowledge of native species should be employed to carry out this task, in failing that, an ecologist should be on site to monitor weed remediation.
5	Reduce cover of weeds within the RALP	Reduction of weed cover by applying control methods commensurate with the Operational Flora and Fauna Management Plan (Arcadis 2019).	Works should involve targeted slashing of mature plants and removing flowering and seed heads to minimise seeding. Targeted slashing has been previously employed to control weed colonisation on soft batters. However, it must be continued to limit the re-colonisation of weeds within the RALP. Future weed control actions will focus on removing and reducing the cover of priority and key weed species and suppressing the further colonisation of common weeds, which is consistent with the rehabilitation methodology proposed by Spray Grass Solutions and Cumberland Plain Seeds.
6	Remove herbaceous and woody weeds within the operational area and trunk drainage infrastructure.	Reduction in herbaceous and woody weeds by applying control methods commensurate with the Operational Flora and Fauna Management Plan (Arcadis 2019)	Weed cover has generally remained low within trunk drainage infrastructure and at the north-eastern extent of the MIP East operational facility.

APPENDIX D RECOMMENDED ACTIONS CATALOGUE

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
April 2020	Eradicate priority weeds species, including Bridal Creeper, Alligator Weed, Lantana, Fireweed and African Olive	Completed	Most instances of these weeds have been removed from the RALP. Small instances of Fireweed occur, however these are being managed by the current weed remediation works within the RALP.
April 2020	Remove key and aggressive weed species within RALP, including Golden Wreath Wattle, Moth Vine, Castor Oil Plant, Small-leafed Privet, Grader Grass and Balloon Vine	Commenced	Grader Grass has been observed colonising remediated areas within the RALP. This species should be removed to prevent further colonisation and infestations. Golden Wreath Wattle, Moth Vine and Castor Oil Plant on the southern side of the RALP in the area between the operational boundary and the East Hills line rail corridor. Consideration should be given to the management of these areas to reduce encroachment into recently remediated areas.
June 2020	Planning should commence to revegetate soft batters and undeveloped areas within the MPE operational facility with native species in accordance with the approved Urban Design and Landscaping Plan (Arcadis 2019a, Arcadis 2020)	Commenced	Revegetation has commenced for remediated areas using a hydro-mulch containing a seed palette commensurate with the UDLP (Arcadis 2020). Previous instances of native seed setting have been colonized by weed species within the RALP and should be cleared and re-set with a native seed mix as soon as practical.
December 2020	Exotic species, specifically <i>Medicago polymorpha</i> (Burr Medic), should be removed from grassland on either side of the RALP at its eastern extent, closest to the operational area.	Commenced	Targeted manual removal, including slashing, has been conducted for exotic species outside the RALP fencing. A qualified bush regeneration contractor should be used to avoid impacts on

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
			native species. Strictly no herbicide should be used in this area, and works should not extend beyond the RALP construction envelope. Where possible, contractors should not access/pass through adjacent areas.
December 2021	Collect litter scattered through the RALP and in adjacent areas	Commenced	Litter remains in the RALP and adjacent areas.
December 2021	Control aggressive weed species Coolatai Grass and Paterson's Curse within the RALP	Commenced	New instances of aggressive weed species Coolatai Grass and Paterson's Curse within the RALP should be removed as soon as practicable to avoid the spread of these species into ecologically sensitive areas adjacent to the RALP.
February 2022	Continued targeted slashing of woody and herbaceous weeds within the RALP.	Completed	Majority of large woody weeds have been removed from the RALP. Continue regular slashing of large woody weeds to remove the fertile seed head and discourage further germination of these weeds within the RALP should occur.
December 2022	Prioritise weed remediation works for priority and key weed species which have experienced accelerated growth in recent months.	Commenced	Areas of particularly high biomass of priority and key weed species should be prioritised for weed remediation works in coming months to avoid mass seeding events.
	Begin remediation of soft batters which have slipped following extreme rainfall events in recent weeks	Not started	Areas within the operational facility, including a number of areas within the RALP, require urgent batter remediation in areas of batter slipping.
December 2022	Begin weed remediation of gravel and ballast areas along RALP	Commenced	Removal of all vegetation in gravel and ballast areas due along RALP using slashing and

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
			herbicide due to safety concerns of train operators and prevent spread of weeds.
December 2022	Continue weed remediation works along the soft batters within the RALP.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
February 2023	Continue weed remediation works along the soft batters within the RALP beyond Georges River bridge.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
April 2023	No weed remediation has occurred since February 2023. Expected to recommence in June 2023, in same areas that have previously been remediated.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
June 2023	Continue weed remediation works along the soft batters within the RALP	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
December 2023	Toolijooa Environmental Restoration inducted as primary weed control contractors. Weed remediation recommenced throughout the RALP	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.

APPENDIX E REMEDIATION PROGRESS PHOTOGRAPHS



April 2021



December 2023



August 2025



April 2021



December 2023



August 2025



April 2021



December 2023



August 2025



April 2021



December 2023



August 2025



April 2021



December 2023



August 2025



April 2021



December 2023



August 2025



April 2021



December 2023



August 2025

APPENDIX F FLORA SPECIES INVENTORY

Scientific name	Common name	Exotic	Priority/key weed
<i>Acacia falcata</i>	Hickory Wattle		
<i>Acacia parramattensis</i>	Parramatta Wattle		
<i>Acacia saligna</i>	Golden Wreath Wattle	*	
<i>Alternanthera philoxeroides</i>	Alligator weed	*	Priority
<i>Alternanthera pungens</i>	Khaki Weed	*	
<i>Araujia sericifera</i>	Moth Vine	*	
<i>Asparagus asparagoides</i>	Bridal Creeper	*	Priority
<i>Atriplex semibaccata</i>	Creeping Saltbush		
<i>Austrodanthonia spp.</i>	-		
<i>Avena spp.</i>	Oats	*	
<i>Bidens pilosa</i>	Cobbler's Pegs	*	
<i>Brassica rapa</i>	Field Mustard	*	
<i>Briza maxima</i>	Quaking Grass	*	
<i>Briza minor</i>	Shivery Grass	*	
<i>Cenchrus clandestinus</i>	Kikuyu Grass	*	
<i>Centaureum spp.</i>	-	*	
<i>Chloris gayana</i>	Rhodes Grass	*	Key
<i>Chloris truncata</i>	Windmill Grass		
<i>Cirsium vulgare</i>	Spear Thistle	*	
<i>Convolvulus erubescens</i>	Pink Bindweed		
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	*	
<i>Cyclosporum leptophyllum</i>	Slender Celery	*	
<i>Cynodon dactylon</i>	Common Couch		
<i>Cymbopogon refractus</i>	Barbed Wire Grass		
<i>Cyperus eragrostis</i>	Umbrella Sedge	*	
<i>Daviesia ulicifolia</i>	Gorse Bitter Pea		
<i>Dichanthium sericeum</i>	Queensland Bluegrass		
<i>Dichondra repens</i>	Kidney Weed		
<i>Echium plantagineum</i>	Paterson's Curse	*	Key
<i>Eragrostis brownii</i>	Brown's Lovegrass		
<i>Eragrostis curvula</i>	African Lovegrass	*	Key
<i>Euchiton spp.</i>	-		
<i>Ficinia nodosa</i>	Knobby Club-rush		
<i>Foeniculum vulgare</i>	Fennel	*	
<i>Glycine clandestina</i>	-		

Scientific name	Common name	Exotic	Priority/key weed
<i>Hardenbergia violacea</i>	False Sarsaparilla		
<i>Hypochoeris radicata</i>	Catsear	*	
<i>Indigofera australis</i>	Australian Indigo		
<i>Juncus usitatus</i>	-		
<i>Lantana camara</i>	Lantana	*	Priority
<i>Lachnagrostis filiformis</i>	Blown Grass		
<i>Lactuca serriola</i>	Prickly Lettuce	*	
<i>Linum trigynum</i>	French Flax	*	
<i>Lolium perenne</i>	Perennial Ryegrass	*	
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush		
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	*	
<i>Ludwigia peruviana</i>	Peruvian water primrose	*	Priority
<i>Medicago polymorpha</i>	Burr Medic	*	
<i>Melilotus alba</i>	Bokhara	*	
<i>Melinis repens</i>	Red Natal Grass	*	Key
<i>Modiola caroliniana</i>	Red-flowered Mallow	*	
<i>Olea europaea</i> subsp. <i>cuspidate</i>	African Olive	*	Priority
<i>Paspalum dilatatum</i>	Paspalum	*	
<i>Persicaria decipiens</i>	Slender Knotweed		
<i>Phytolacca octandra</i>	Inkweed	*	
<i>Plantago lanceolata</i>	Lamb's Tongues	*	
<i>Portulaca oleracea</i>	Common Purslane		
<i>Rumex crispus</i>	Curled Dock	*	
<i>Senecio madagascariensis</i>	Fireweed	*	Priority
<i>Setaria parviflora</i>	-	*	
<i>Sida rhombifolia</i>	Paddy's Lucerne	*	Key
<i>Solanum nigrum</i>	Black-berry Nightshade	*	
<i>Solanum sisymbriifolium</i>		*	
<i>Sonchus oleraceus</i>	Common Sowthistle	*	
<i>Tagetes minuta</i>	Stinking Roger	*	
<i>Themeda quadrivalvis</i>	Grader Grass	*	Key
<i>Themeda triandra</i>	-		
<i>Trifolium arvense</i>	Haresfoot Clover	*	
<i>Trifolium repens</i>	White Clover	*	
<i>Trifolium michelianum</i>	Bolansa Clover	*	
<i>Verbena bonariensis</i>	Purpletop	*	

Scientific name	Common name	Exotic	Priority/key weed
<i>Verbena rigida</i> var. <i>Rigida</i>	Veined Verbena	*	

MIP BI-MONTHLY WEED MONITORING REPORT – OCTOBER 2025

Introduction

Arcadis has been commissioned to conduct bi-monthly weed monitoring surveys within the operational areas of Moorebank Precinct East (MPE) and Moorebank Precinct West (MPW). These areas together are known as the Moorebank Intermodal Precinct (MIP).

The MPE operational facility includes the Import and Export Terminal (IMEX), Rail Access Land Package (RALP), warehouses, distribution facilities and freight village, and stormwater trunk drainage infrastructure and landscaping areas. The MPW operational facility includes the landscaped vegetation along Bushmasters Avenue (Figure 1).

Regular monitoring of the MIP operational facilities will inform the land manager of weed cover, and the presence of any weeds listed as 'priority' for the Greater Sydney Local Land Services region under the *Biosecurity Act 2015*.

The schedule for the bi-monthly weed monitoring inspections for the 2025-26 monitoring year are detailed in Table 1. This document will be treated as live throughout the monitoring year and will be updated at the end of each inspection.

Table 1 Schedule for bi-monthly weed inspections

Inspection month	Date completed
June 2025	25/06/2025
August 2025	27/08/2025
October 2025	05/11/2025
December 2026	TBC
February 2026	TBC
April 2026	TBC

Background

Arcadis has been monitoring the MPE operational facility for weed occurrence since April 2020. The RALP, which includes the MPE operational RALP, has seen significant change and works over the time Arcadis has conducted weed monitoring. Additionally, works conducted in MPW in 2023/24 have changed the layout and vegetation spread in the RALP. Several weed remediation events have occurred since the inception of weed monitoring, detailed below in Table 2.

Table 2 Summary of weed events throughout monitoring history

Timing	Summary of events	Weed contractor
Spring 2020	Weeds removed from batters and revegetated with native species, as per the Urban Design and Landscaping Plan (UDLP) for MPE	Spray Grass Solutions

Timing	Summary of events	Weed contractor
	Cumberland Plain Seeds were procured to provide technical oversight of revegetation effort	
December 2021	- As per recommendations from Spray Grass Solutions and Cumberland Plain Seeds, the monitoring methodology was changed - Changes included reporting on cover on 'priority' weeds species and key weeds specific to the project.	
December 2022 to June 2023	- Weed remediation works commenced - Priority weed species were targeted - Native species were identified throughout the RALP to avoid accidental removal.	P&E Services
December 2023 to present	- Weed remediation works continued - Regular maintenance of priority weed species via slashing, hand removal and herbicide spraying	Toolijooa Environmental Restoration

Methodology

Arcadis ecologist Kate Mauger attended the MIP operational area on 5 November 2025. Monitoring involved traversing the MIP operational facility on foot, surveying landscaped areas, stormwater infrastructure and soft batters adjoining the RALP for increases in weed abundance of the identified species in Appendix A and Appendix B. The areas surveyed are presented in Figure 1.

The weather on the 5 November was sunny, with a maximum temperature of 28°C, and the weather recorded at Holsworthy Aerodrome (station 066161) (BOM 2025).

Study Limitations

The data presented within this report is restricted to what was observed and recorded by the attending Arcadis ecologists during the site assessment on 5 November 2025.

Monitoring of weeds was restricted to the operational facility; weeds were not assessed within the bounds of the active construction areas surrounding new warehouses or other infrastructure.

Surveys were not undertaken in areas extending beyond the junction between the QUBE RALP and the Southern Sydney Freight Line (SSFL).



Legend

- MPW operational boundary
- Weed monitoring survey extent

1:15,000 at A4
GDA2020 MGA Zone 56
Date issued: November 21, 2025
Imagery: Esri



C:\Users\emaz4669\ARCADIS\30228596 - Moorebank Logistics Precinct 2 - 02 GIS\A_Current\B_Maps\Ecology\MPE_OperationalMonitoring\WeedMonitoring_2022_v2.aprx
Created by : EM Updated by : QA by : NB

Figure 1. Survey extent within the MPI operational facility

Results

Results of the weed monitoring surveys during the October/November 2025 survey are summarised below in Table 3. Weed records, previously recorded threatened flora species records, and instances of native species within the survey extent are shown in Figure 2.

Progress photographs of monitoring locations are provided in Appendix E and a complete flora species inventory in Appendix F.

Table 3 Summary of weed abundances across all inspection areas in MPI, for the current survey

Inspection area	Weed abundances for current survey	Photo of inspection area
Moorebank Precinct East (MPE)		
Rail Access Land Package (RALP)	• Weed growth continuous to be suppressed, particularly in the areas immediately adjacent to the BioBank site. Large instances of native grasses (<i>Themeda triandra</i>) are growing substantially • Steep areas along berms are being avoided for slashing due to safety concerns. Additionally, the small amounts of exotic vegetation are currently stabilising these berms, and will be targeted once construction is finalised in the MPW areas.	

Inspection area	Weed abundances for current survey	Photo of inspection area
IMEX building and adjacent drainage infrastructure	• <i>Acacia falcata</i> (Hickory Wattle) continue to grow unimpeded by weeds.	

Inspection area	Weed abundances for current survey	Photo of inspection area
Warehouse areas	- Majority of this area has now been claimed by the Moorebank Avenue Upgrade project and is unable to be surveyed adequately - Occurrences of weeds in the warehouse area and the adjacent drainage infrastructure is restricted to scattered individuals of <i>Senecio madagascariensis</i> (Fireweed), <i>Plantago lanceolata</i> (Plantain), <i>Trifolium arvense</i> (Clover) and exotic grasses like <i>Chloris gayana</i> (Rhodes Grass), <i>Sporobolus africanus</i> (Parramatta Grass), <i>Paspalum urvillei</i> (Giant Paspalum) and <i>Ehrharta erect</i> (Panic Veldtgrass).	

Inspection area	Weed abundances for current survey	Photo of inspection area
Eastern boundary drainage infrastructure	- Majority of this area has now been claimed by the Moorebank Avenue Upgrade project and is unable to be surveyed adequately - Drainage infrastructure dominated by <i>Bulboschoenus fluviatilis</i> (Marsh club-rush) whilst other are dominated by <i>Typha orientalis</i> (Bulrush). Where space is present between stands of these native emergent species small clumps of <i>Persicaria decipiens</i> (Slender Knotweed), <i>Daviesia ulicifolia</i>, <i>Ficinia nodosa</i> (Knotted Club-rush), <i>Carex tereticaulis</i> and <i>Juncus usitatus</i> are present. Other native species such as <i>Imperata cylindrica</i> and <i>Lomandra longifolia</i> were observed in the drainage channels. - Areas of erosion still present.	 The photograph shows a grassy field with a fence line running across it. In the foreground, there is a concrete base for a utility pole. The background features a cloudy sky and some distant structures.

Inspection area	Weed abundances for current survey	Photo of inspection area
Moorebank Precinct West (MPW)		
Landscaped areas along Bushmasters Avenue	- Landscapes vegetation is in good condition, with minor weed incursions - Weed species present include <i>Sonchus oleraceus</i> (Common Sowthistle), <i>Chloris virgata</i> (Rhodes Grass), <i>Bidens pilosa</i>, <i>Conyza bonariensis</i> (Fleabane), <i>Cyclosporum leptophyllum</i> (Slender Celery), and <i>Tagetes minuta</i> (Stinking Roger). - Areas with limited to no landscaped vegetation are particularly susceptible to weed incursion from cleared areas (see adjacent photo)	

Inspection area	Weed abundances for current survey	Photo of inspection area
APZ area – northern MPW	• Suppression of <i>Medicago polymorpha</i> and other herbacious weeds occuring in this area (<i>Sonchus oleraceus</i> (Common Sowthistle), <i>Circium vulagre</i>) • Methods include slashing and hand removal around native species • Large stands of the native shrub <i>Dodonea viscosa</i> are growing unimpeded.	

Sediment basins adjacent
to BioBank site

- Spot spraying, and hand pulling of weeds occurring along boundary of basins and BioBank site
- No significant increases in weed coverage were observed around the basin outlet points



Inspection area	Weed abundances for current survey	Photo of inspection area
		

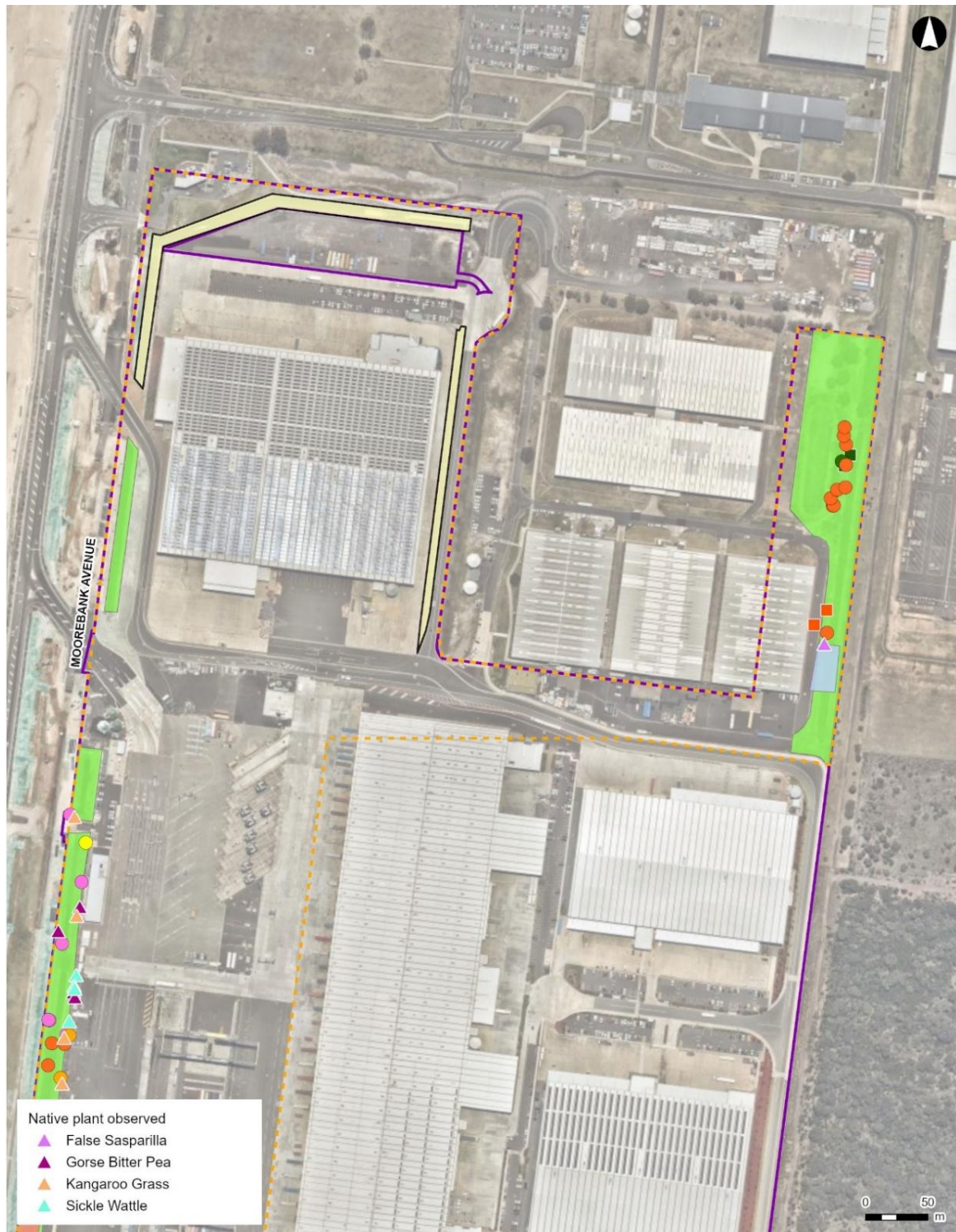


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (1 of 8)

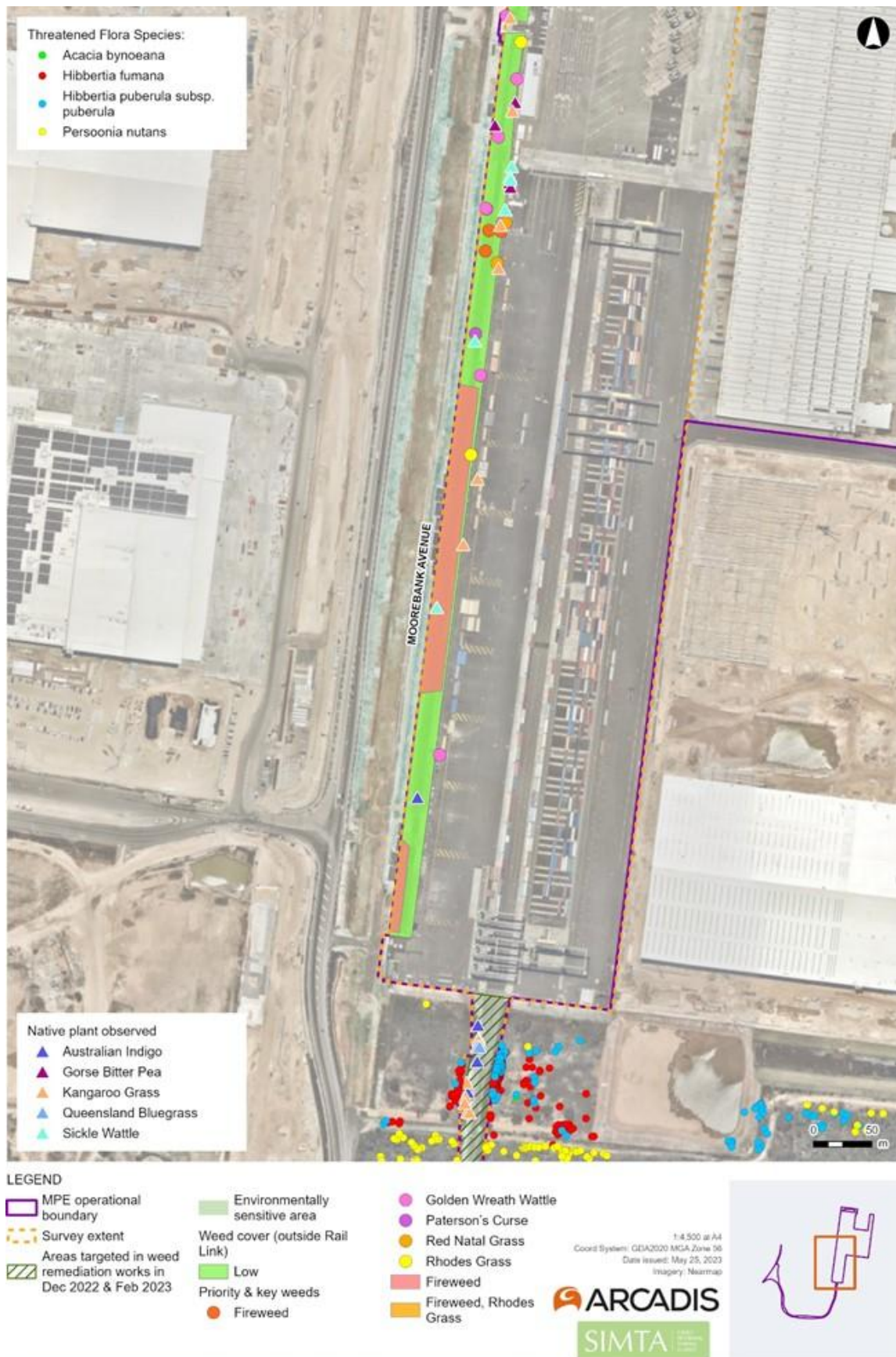


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (2 of 8)

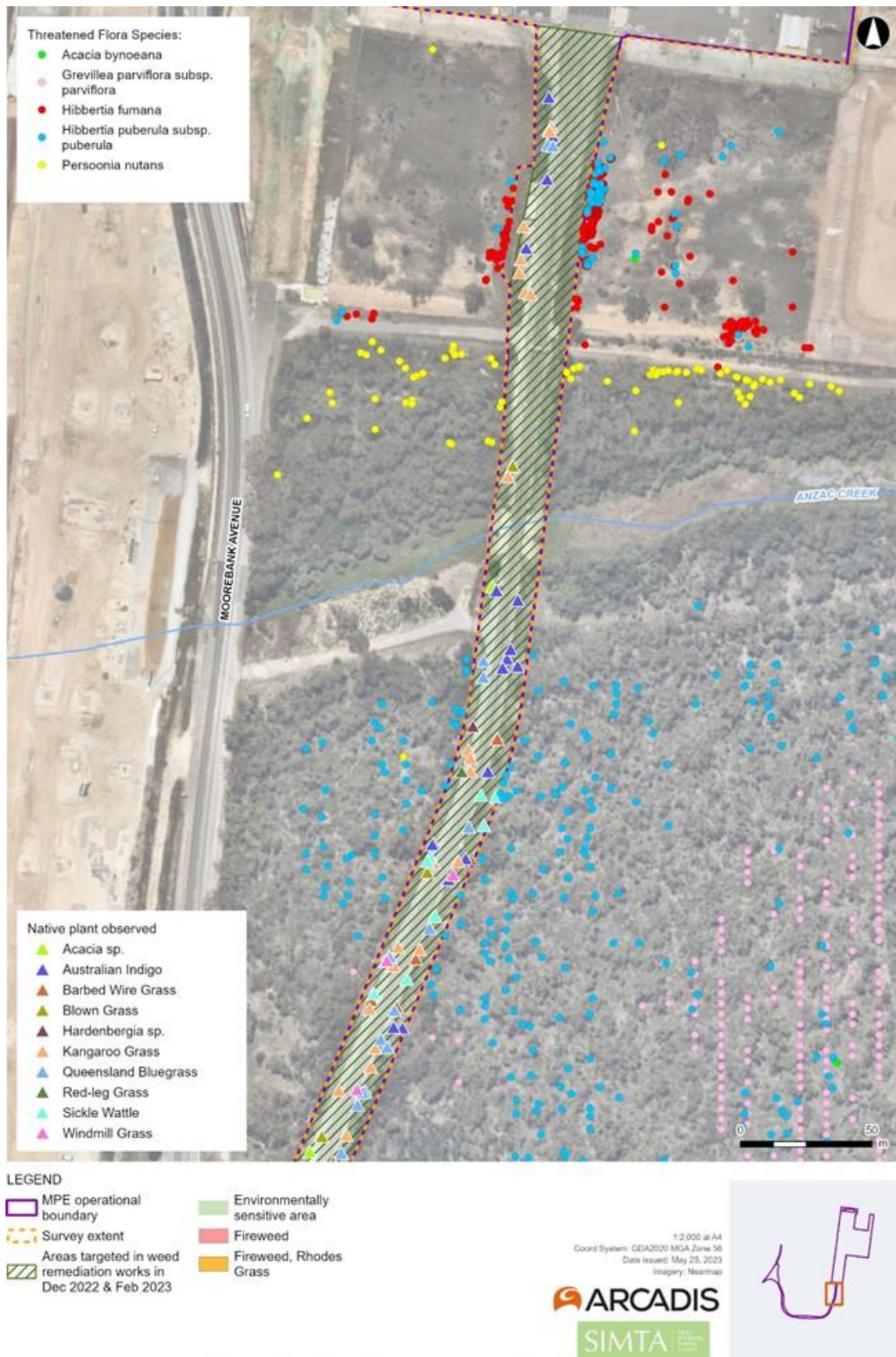


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (3 of 8)

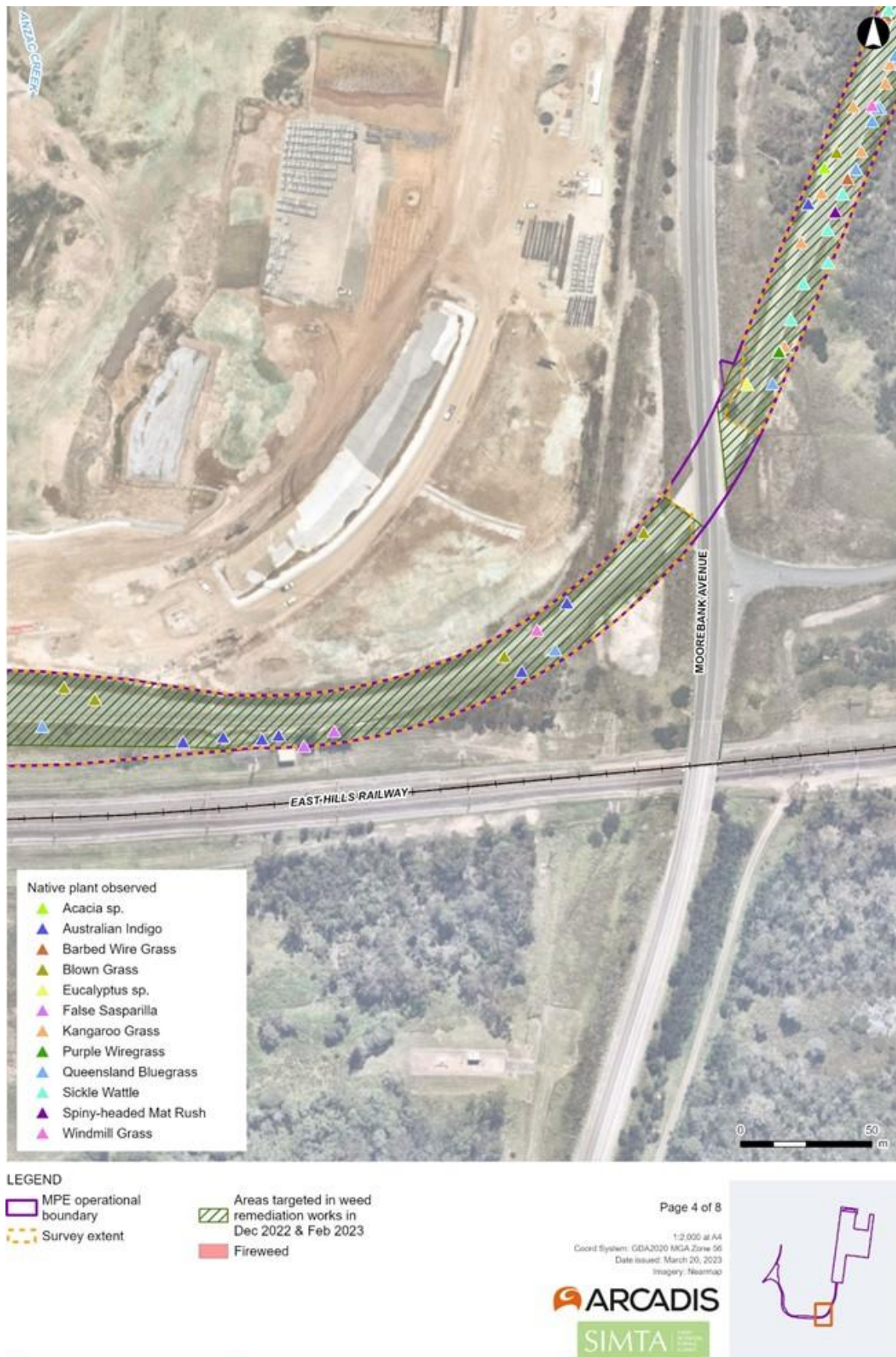


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (4 of 8)



Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (5 of 8)

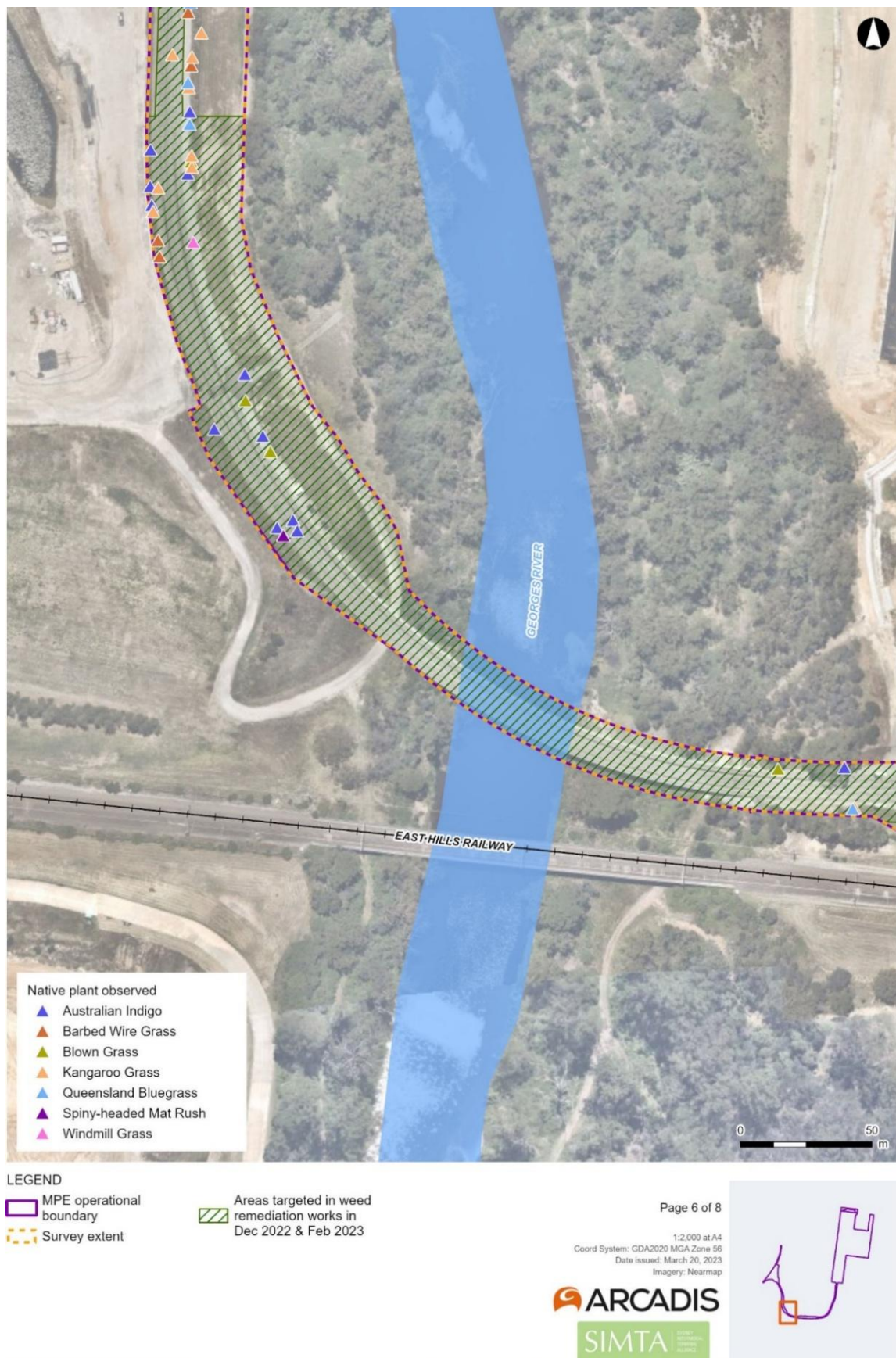


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (6 of 8)

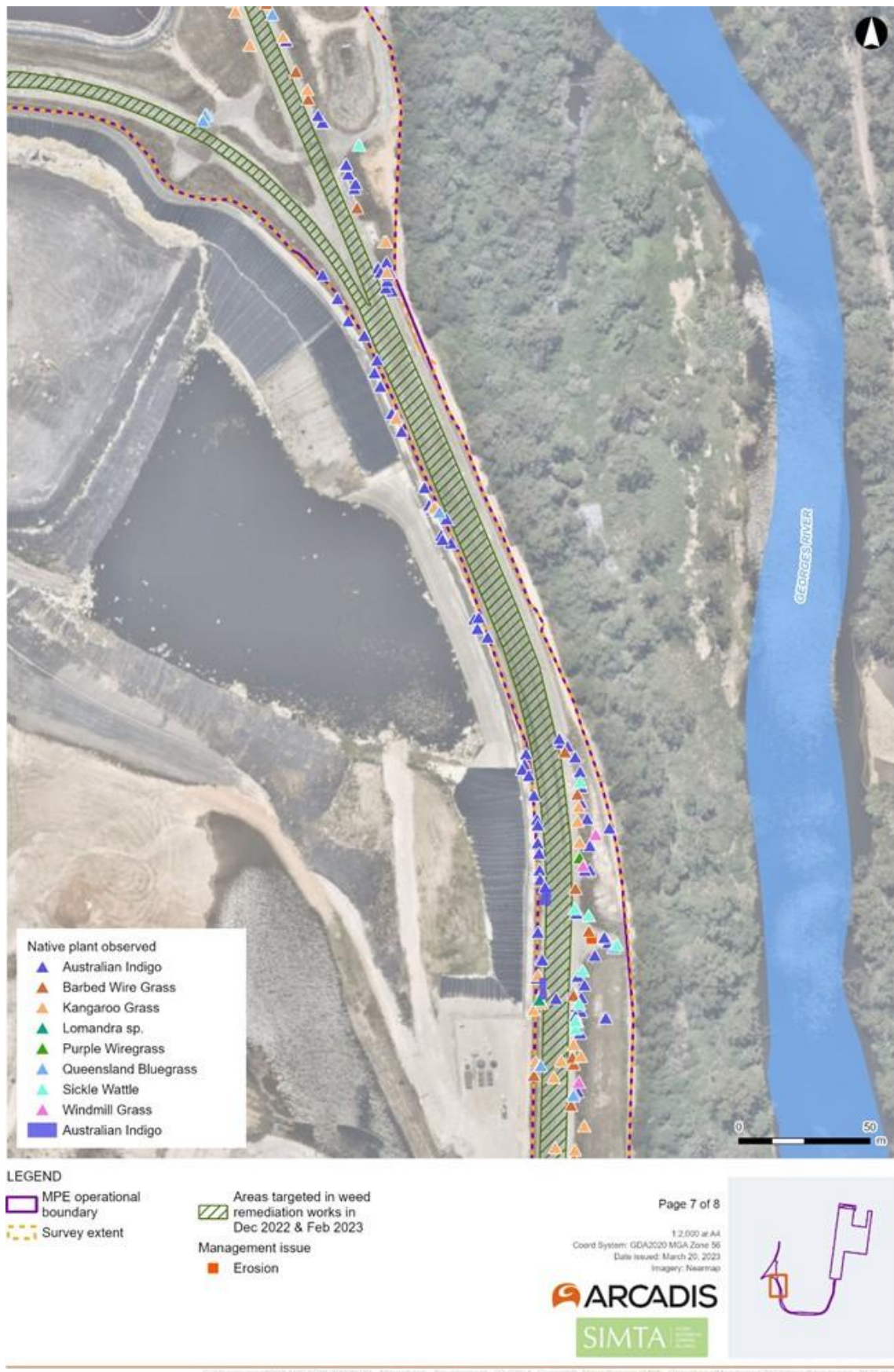


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (7 of 8)

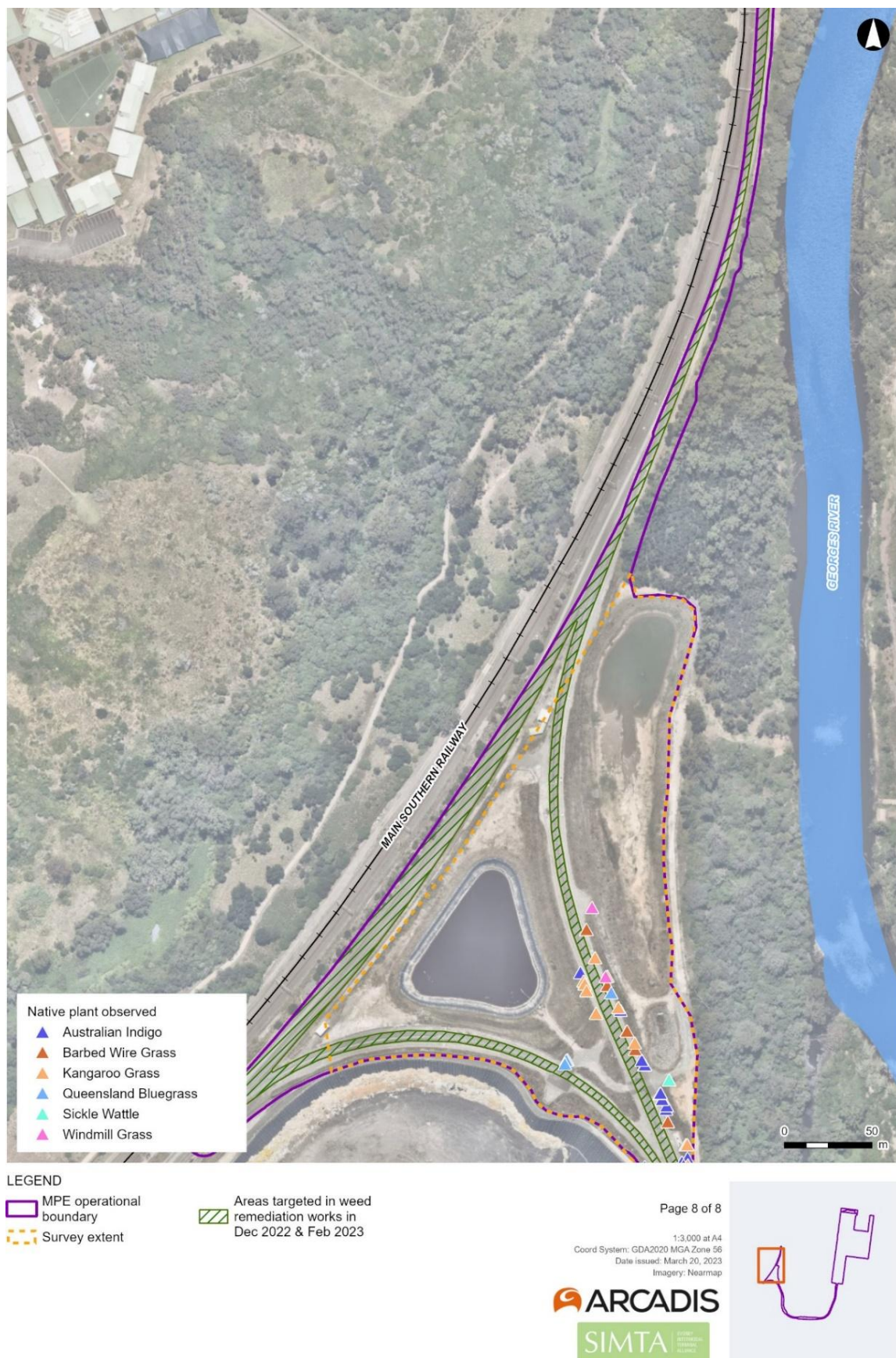


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (8 of 8)

Recommendations

Weed monitoring and weed remediation works should continue throughout the 2025/26 monitoring year. Table 4 summarises the recommendations for weed remediation within the MIP. Additionally, the weed remediation works being conducted by Toolijooa in the RALP have been compared against the criteria in Appendix C and are considered to be consistent.

Recommended actions documented in previous weed monitoring reports are included in Appendix D. The catalogue has been reviewed and updated to reflect works which have been completed and is considerate of the revegetation methodology proposed by Spray Grass Solutions and Cumberland Plain Seeds.

Table 4 Recommended actions for weed remediation in the MIP

Area	Recommendation
All areas	Targeted weed remediation to continue during the 2025/26 monitoring year and is to be conducted using the same methods and at the same locations as previously conducted
Rail Access Land Package (RALP)	Weed remediation works will focus on controlling priority and key weed species (Appendix A and Appendix B)
	Suppression of environmental weeds and encroachment into areas of bushland should occur where possible
	Hand weeding should be conducted for individuals, whereas slashing and herbicide spraying should be adopted to target larger patches of weeds. However, extreme care must be taken when conducting any weed management within the RALP, as many native grasses have become established
	Hand weeding is only feasible on annual species such as <i>Themeda quadrivalvis</i> (Grader Grass) and <i>Senecio madagascariensis</i> (Fireweed) due to their relatively small root system
	Contractors should identify the extent of the works zone and discuss 'No Go' zones with all involved in the works. Weeding must be restricted to identified weeds and native species to be retained should be identified prior to works commencing
	Priority and aggressive weed species outside revegetated RALP areas should be removed. Weeds that should be targeted include <i>Senecio madagascariensis</i> (Fireweed)
	- Large patches of <i>Eragrostis curvula</i> (African Lovegrass), <i>Chloris gayana</i> (Rhodes Grass) and <i>Themeda quadrivalvis</i> (Grader Grass) between the RALP and the East Hills train line should be slashed regularly to prevent seeding events (Figure 2 (5 of 8)). This will reduce the colonisation of these grasses into revegetation areas - Slashing should only occur when plants are not seeding to prevent further spread. As more native species become established in these areas, slashing may impact their growth; therefore, non-targeted slashing should be avoided - Application of herbicide within the RALP and in areas adjacent to the Moorebank biobank site should be conducted to prevent overspray (off-target poisoning). If herbicide application occurs, recommended herbicides for tussock grass, <i>Chloris gayana</i> (Rhodes Grass) and <i>Eragrostis curvula</i> (African Lovegrass), include glyphosate or flupropanate, while plants are actively growing during summer and spring. Native vegetation outside the

Area	Recommendation
	RALP fence must not be impacted by herbicide during weed remediation works No herbicide spraying should be conducted outside the RALP, specifically adjacent to ecologically sensitive areas south of the MPE Operational facility (Figure 2). Manual weed remediation works in ecologically sensitive areas should not extend beyond the construction envelope of the RALP. If further clarification is necessary, the project ecologist should be consulted
	Batters that currently have limited vegetation cover should be colonised by a native seed mix as soon as practical. This will ensure that these areas are not colonised by weed species and will further reduce erosion during heavy rainfall events
	Continue to collect litter from within the RALP and in adjacent areas
IMEX building and adjacent drainage infrastructure	Soft batters within the trunk drainage system and retention basin/swale at the north-eastern extent of the facility should be inspected for weed growth. Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan
Warehouse areas	Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan
Eastern boundary drainage infrastructure	- Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan - Erosion in the drainage infrastructure should be controlled by planting additional native ground cover species to maintain batters during heavy rainfall events
Landscaped areas along Bushmasters Avenue	- Continued maintenance of these landscaped areas should be maintained at a frequency that does not increase the current abundance of identified weed species. This is pertinent for areas where landscaped species have died back, and bare ground is more abundant - Areas adjacent to cleared areas in the MPW operational area should be sprayed for weeds to limited the potential for spreading
APZ area – northern MPW	Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan
Sediment basins adjacent to BioBank site	Weed levels should be controlled through herbicide application, slashing and hand weeding. Weed remediation works should be conducted in accordance with the approved Weed Management Plan

References

Arcadis (2019a) Urban Design and Landscape Plan. Moorebank Precinct East Stage 1

Arcadis (2019b) Operational Flora and Fauna Management Plan. Moorebank Logistics Park – East Precinct

Arcadis (2019c) Landscape Vegetation Management Sub Plan. Moorebank Precinct East Stage 2

Arcadis (2020) MPE Operational – Weed Monitoring Report December 2020

Arcadis (2020) Urban Design and Landscape Plan. Moorebank Precinct East Stage 2

Bureau of Meteorology (BOM) (2021) Climate Data Online. Weather and Climate: Holsworthy Aerodrome NSW (station 066161) <http://www.bom.gov.au/climate/dwo/IDCJDW2161.latest.shtml>

NSW Department of Primary Industries (DPI) (accessed 2021) NSW WeedWise. priority weeds for the Greater Sydney. <https://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=3>

APPENDIX A PRIORITY WEED PROFILES



Lantana (*Lantana camara*)



Fireweed (*Senecio madagarsensis*)



Alligator Weed (*Alternanthera philoxeroides*)



African Olive (*Olea europea* subsp. *cuspidata*)



Lantana (*Lantana camara*)



Fireweed (*Senecio madagarsensis*)



Bridal Creeper (*Asparagus asparagoides*)



Peruvian Primrose (*Ludwigia peruviana*)

APPENDIX B KEY WEED PROFILES



Rhodes Grass (*Chloris gayana*)



Patterson's Curse (*Echium plantaganium*)



African Love Grass (*Eragrostis curvula*)



Coolatai Grass (*Hyparrhenia hirta*)



Grader Grass (*Themeda quadrivalvis*)



Red Natal Grass (*Melinis repens*)

APPENDIX C WEED REMEDIATION WORKS TRACKING

Priority	Action	Action description	Current performance assessment
1	Eradicate 'priority' weeds	Target 'priority' weed species through manual removal and herbicide treatment. Herbicide application should consider timing (i.e., applying herbicide when weeds are actively growing) and best practice methodologies. Areas outlined by coloured polygons in Figure 2 should be prioritised.	One priority weed species are present within the RALP: <i>Senecio madagascariensis</i> (Fireweed). These should be removed as a priority. Progress has been made through remediation works within the RALP. Continued management must be undertaken to work towards eradication.
2	Removal of key and aggressive weed species	Key weed species, including African Lovegrass, Rhodes Grass, Paterson's Curse, Coolatai Grass and Grader Grass, should be removed from revegetated areas of soft batter. Aggressive weed species, including Moth Vine and Castor Oil Plant, should be removed from all operational areas using a combination of manual and herbicide control. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Key weed species, including Rhodes Grass, African Lovegrass, Coolatai Grass, Paterson's Curse, and Grader Grass, are colonising soft batters in the RALP. These weeds should be removed. Progress has been made through remediation works within the RALP. Continued management must be undertaken to work towards eradication.
3	Suppress further colonisation of environmental weeds and encroachment into areas of bushland	Control of exotic species adjacent to the biobank site and ecologically sensitive areas. Manual removal should be adopted in areas adjacent to threatened flora locations. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Weed growth is stabilising through continued weed management on soft batters adjacent to the biobank site and ecologically sensitive areas. Manual removal, including routine slashing, is being used to prevent present weeds from reaching seeding maturity and further encroaching on adjacent high-value areas (biobank site and ecologically sensitive areas containing threatened plant species). All works should be restricted to the operational area and not extend into the biobank site or identified ecologically sensitive areas. Slashing should only be conducted when weed species are not in flower to prevent further spread. Appropriate slashing time is during winter for most species.

Priority	Action	Action description	Current performance assessment
4	Slashing of invasive grasses to prevent seeding.	Management of invasive grasses such as Rhodes Grass and African Love Grass through regular mowing or slashing. Areas outlined by coloured polygons in Figure 2 should be prioritised.	Slashing has been adopted to manage the regrowth of invasive grasses (African Lovegrass, Grader Grass) within the RALP in ballast and gravel areas. Some areas beyond the Georges River bridge are yet to be managed. Slashing should be used to manage large expanses of exotic grassland to prevent seeding events. However, as native grasses become established, extreme care must be taken, and indiscriminate slashing must be avoided. A contractor with knowledge of native species should be employed to carry out this task, in failing that, an ecologist should be on site to monitor weed remediation.
5	Reduce cover of weeds within the RALP	Reduction of weed cover by applying control methods commensurate with the Operational Flora and Fauna Management Plan (Arcadis 2019).	Works should involve targeted slashing of mature plants and removing flowering and seed heads to minimise seeding. Targeted slashing has been previously employed to control weed colonisation on soft batters. However, it must be continued to limit the re-colonisation of weeds within the RALP. Future weed control actions will focus on removing and reducing the cover of priority and key weed species and suppressing the further colonisation of common weeds, which is consistent with the rehabilitation methodology proposed by Spray Grass Solutions and Cumberland Plain Seeds.
6	Remove herbaceous and woody weeds within the operational area and trunk drainage infrastructure.	Reduction in herbaceous and woody weeds by applying control methods commensurate with the Operational Flora and Fauna Management Plan (Arcadis 2019)	Weed cover has generally remained low within trunk drainage infrastructure and at the north-eastern extent of the MIP East operational facility.

APPENDIX D RECOMMENDED ACTIONS CATALOGUE

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
April 2020	Eradicate priority weeds species, including Bridal Creeper, Alligator Weed, Lantana, Fireweed and African Olive	Completed	Most instances of these weeds have been removed from the RALP. Small instances of Fireweed occur, however these are being managed by the current weed remediation works within the RALP.
April 2020	Remove key and aggressive weed species within RALP, including Golden Wreath Wattle, Moth Vine, Castor Oil Plant, Small-leafed Privet, Grader Grass and Balloon Vine	Commenced	Grader Grass has been observed colonising remediated areas within the RALP. This species should be removed to prevent further colonisation and infestations. Golden Wreath Wattle, Moth Vine and Castor Oil Plant on the southern side of the RALP in the area between the operational boundary and the East Hills line rail corridor. Consideration should be given to the management of these areas to reduce encroachment into recently remediated areas.
June 2020	Planning should commence to revegetate soft batters and undeveloped areas within the MPE operational facility with native species in accordance with the approved Urban Design and Landscaping Plan (Arcadis 2019a, Arcadis 2020)	Commenced	Revegetation has commenced for remediated areas using a hydro-mulch containing a seed palette commensurate with the UDLP (Arcadis 2020). Previous instances of native seed setting have been colonized by weed species within the RALP and should be cleared and re-set with a native seed mix as soon as practical.
December 2020	Exotic species, specifically <i>Medicago polymorpha</i> (Burr Medic), should be removed from grassland on either side of the RALP at its eastern extent, closest to the operational area.	Commenced	Targeted manual removal, including slashing, has been conducted for exotic species outside the RALP fencing. A qualified bush regeneration contractor should be used to avoid impacts on

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
			native species. Strictly no herbicide should be used in this area, and works should not extend beyond the RALP construction envelope. Where possible, contractors should not access/pass through adjacent areas.
December 2021	Collect litter scattered through the RALP and in adjacent areas	Commenced	Litter remains in the RALP and adjacent areas.
December 2021	Control aggressive weed species Coolatai Grass and Paterson's Curse within the RALP	Commenced	New instances of aggressive weed species Coolatai Grass and Paterson's Curse within the RALP should be removed as soon as practicable to avoid the spread of these species into ecologically sensitive areas adjacent to the RALP.
February 2022	Continued targeted slashing of woody and herbaceous weeds within the RALP.	Completed	Majority of large woody weeds have been removed from the RALP. Continue regular slashing of large woody weeds to remove the fertile seed head and discourage further germination of these weeds within the RALP should occur.
December 2022	Prioritise weed remediation works for priority and key weed species which have experienced accelerated growth in recent months.	Commenced	Areas of particularly high biomass of priority and key weed species should be prioritised for weed remediation works in coming months to avoid mass seeding events.
	Begin remediation of soft batters which have slipped following extreme rainfall events in recent weeks	Not started	Areas within the operational facility, including a number of areas within the RALP, require urgent batter remediation in areas of batter slipping.
December 2022	Begin weed remediation of gravel and ballast areas along RALP	Commenced	Removal of all vegetation in gravel and ballast areas due along RALP using slashing and

Month of logging	Recommended action	Status (Not started, Commenced, Complete)	Comments
			herbicide due to safety concerns of train operators and prevent spread of weeds.
December 2022	Continue weed remediation works along the soft batters within the RALP.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
February 2023	Continue weed remediation works along the soft batters within the RALP beyond Georges River bridge.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
April 2023	No weed remediation has occurred since February 2023. Expected to recommence in June 2023, in same areas that have previously been remediated.	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
June 2023	Continue weed remediation works along the soft batters within the RALP	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.
December 2023	Toolijooa Environmental Restoration inducted as primary weed control contractors. Weed remediation recommenced throughout the RALP	Commenced	Future weed remediation works should include targeted slashing and spraying of priority and key weed species, whilst avoiding native species by hand weeding within a one metre buffer zone of native individuals.

APPENDIX E REMEDIATION PROGRESS PHOTOGRAPHS



April 2021



December 2023



October/November 2025



April 2021



December 2023



October/November 2025



April 2021



December 2023



October/November 2025



April 2021



December 2023



October/November 2025



April 2021



December 2023



October/November 2025



April 2021



December 2023



October/November 2025



April 2021



December 2023



October/November 2025

APPENDIX F FLORA SPECIES INVENTORY

Scientific name	Common name	Exotic	Priority/key weed
<i>Acacia falcata</i>	Hickory Wattle		
<i>Acacia parramattensis</i>	Parramatta Wattle		
<i>Acacia saligna</i>	Golden Wreath Wattle	*	
<i>Alternanthera philoxeroides</i>	Alligator weed	*	Priority
<i>Alternanthera pungens</i>	Khaki Weed	*	
<i>Araujia sericifera</i>	Moth Vine	*	
<i>Asparagus asparagoides</i>	Bridal Creeper	*	Priority
<i>Atriplex semibaccata</i>	Creeping Saltbush		
<i>Austrodanthonia spp.</i>	-		
<i>Avena spp.</i>	Oats	*	
<i>Bidens pilosa</i>	Cobbler's Pegs	*	
<i>Brassica rapa</i>	Field Mustard	*	
<i>Briza maxima</i>	Quaking Grass	*	
<i>Briza minor</i>	Shivery Grass	*	
<i>Cenchrus clandestinus</i>	Kikuyu Grass	*	
<i>Centaureum spp.</i>	-	*	
<i>Chloris gayana</i>	Rhodes Grass	*	Key
<i>Chloris truncata</i>	Windmill Grass		
<i>Cirsium vulgare</i>	Spear Thistle	*	
<i>Convolvulus erubescens</i>	Pink Bindweed		
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	*	
<i>Cyclospermum leptophyllum</i>	Slender Celery	*	
<i>Cynodon dactylon</i>	Common Couch		
<i>Cymbopogon refractus</i>	Barbed Wire Grass		
<i>Cyperus eragrostis</i>	Umbrella Sedge	*	
<i>Daviesia ulicifolia</i>	Gorse Bitter Pea		
<i>Dichanthium sericeum</i>	Queensland Bluegrass		
<i>Dichondra repens</i>	Kidney Weed		
<i>Echium plantagineum</i>	Paterson's Curse	*	Key
<i>Eragrostis brownii</i>	Brown's Lovegrass		
<i>Eragrostis curvula</i>	African Lovegrass	*	Key
<i>Euchiton spp.</i>	-		
<i>Ficinia nodosa</i>	Knobby Club-rush		
<i>Foeniculum vulgare</i>	Fennel	*	
<i>Glycine clandestina</i>	-		

Scientific name	Common name	Exotic	Priority/key weed
<i>Hardenbergia violacea</i>	False Sarsaparilla		
<i>Hypochoeris radicata</i>	Catsear	*	
<i>Indigofera australis</i>	Australian Indigo		
<i>Juncus usitatus</i>	-		
<i>Lantana camara</i>	Lantana	*	Priority
<i>Lachnagrostis filiformis</i>	Blown Grass		
<i>Lactuca serriola</i>	Prickly Lettuce	*	
<i>Linum trigynum</i>	French Flax	*	
<i>Lolium perenne</i>	Perennial Ryegrass	*	
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush		
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	*	
<i>Ludwigia peruviana</i>	Peruvian water primrose	*	Priority
<i>Medicago polymorpha</i>	Burr Medic	*	
<i>Melilotus alba</i>	Bokhara	*	
<i>Melinis repens</i>	Red Natal Grass	*	Key
<i>Modiola caroliniana</i>	Red-flowered Mallow	*	
<i>Olea europaea subsp. cuspidate</i>	African Olive	*	Priority
<i>Paspalum dilatatum</i>	Paspalum	*	
<i>Persicaria decipiens</i>	Slender Knotweed		
<i>Phytolacca octandra</i>	Inkweed	*	
<i>Plantago lanceolata</i>	Lamb's Tongues	*	
<i>Portulaca oleracea</i>	Common Purslane		
<i>Rumex crispus</i>	Curled Dock	*	
<i>Senecio madagascariensis</i>	Fireweed	*	Priority
<i>Setaria parviflora</i>	-	*	
<i>Sida rhombifolia</i>	Paddy's Lucerne	*	Key
<i>Solanum nigrum</i>	Black-berry Nightshade	*	
<i>Solanum sisymbriifolium</i>		*	
<i>Sonchus oleraceus</i>	Common Sowthistle	*	
<i>Tagetes minuta</i>	Stinking Roger	*	
<i>Themeda quadrivalvis</i>	Grader Grass	*	Key
<i>Themeda triandra</i>	-		
<i>Trifolium arvense</i>	Haresfoot Clover	*	
<i>Trifolium repens</i>	White Clover	*	
<i>Trifolium michelianum</i>	Bolansa Clover	*	
<i>Verbena bonariensis</i>	Purpletop	*	

Scientific name	Common name	Exotic	Priority/key weed
<i>Verbena rigida</i> var. <i>Rigida</i>	Veined Verbena	*	

MIP BI-MONTHLY WEED MONITORING REPORT – DECEMBER 2025

Introduction

Arcadis has been commissioned to conduct bi-monthly weed monitoring surveys within the operational areas of Moorebank Precinct East (MPE) and Moorebank Precinct West (MPW). These areas together are known as the Moorebank Intermodal Precinct (MIP).

The MPE operational facility includes the Import and Export Terminal (IMEX), Rail Access Land Package (RALP), warehouses, distribution facilities and freight village, and stormwater trunk drainage infrastructure and landscaping areas. The MPW operational facility includes the landscaped vegetation along Bushmasters Avenue (Figure 1).

Regular monitoring of the MIP operational facilities will inform the land manager of weed cover, and the presence of any weeds listed as 'priority' for the Greater Sydney Local Land Services region under the *Biosecurity Act 2015*.

The schedule for the bi-monthly weed monitoring inspections for the 2025-26 monitoring year are detailed in Table 1. This document will be treated as live throughout the monitoring year and will be updated at the end of each inspection.

Table 1 Schedule for bi-monthly weed inspections

Inspection month	Date completed
June 2025	25/06/2025
August 2025	27/08/2025
October 2025	05/11/2025
December 2026	12/12/2025
February 2026	TBC
April 2026	TBC

Background

Arcadis has been monitoring the MPE operational facility for weed occurrence since April 2020. The RALP, which includes the MPE operational RALP, has seen significant change and works over the time Arcadis has conducted weed monitoring. Additionally, works conducted in MPW in 2023/24 have changed the layout and vegetation spread in the RALP. Several weed remediation events have occurred since the inception of weed monitoring, detailed below in Table 2.

Table 2 Summary of weed events throughout monitoring history

Timing	Summary of events	Weed contractor
Spring 2020	Weeds removed from batters and revegetated with native species, as per the Urban Design and Landscaping Plan (UDLP) for MPE	Spray Grass Solutions

Timing	Summary of events	Weed contractor
	Cumberland Plain Seeds were procured to provide technical oversight of revegetation effort	
December 2021	- As per recommendations from Spray Grass Solutions and Cumberland Plain Seeds, the monitoring methodology was changed - Changes included reporting on cover on 'priority' weeds species and key weeds specific to the project.	
December 2022 to June 2023	- Weed remediation works commenced - Priority weed species were targeted - Native species were identified throughout the RALP to avoid accidental removal.	P&E Services
December 2023 to present	- Weed remediation works continued - Regular maintenance of priority weed species via slashing, hand removal and herbicide spraying	Toolijooa Environmental Restoration

Methodology

Arcadis ecologist Kate Mauger attended the MIP operational area on 12 December 2025. Monitoring involved traversing the MIP operational facility on foot, surveying landscaped areas, stormwater infrastructure and soft batters adjoining the RALP for increases in weed abundance of the identified species in Appendix A and Appendix B. The areas surveyed are presented in Figure 1.

The weather on the 12 December was rainy, with a maximum temperature of 23°C, and the weather recorded at Holsworthy Aerodrome (station 066161) (BOM 2025).

Study Limitations

The data presented within this report is restricted to what was observed and recorded by the attending Arcadis ecologists during the site assessment on 12 December 2025.

Monitoring of weeds was restricted to the operational facility; weeds were not assessed within the bounds of the active construction areas surrounding new warehouses or other infrastructure.

Surveys were not undertaken in areas extending beyond the junction between the QUBE RALP and the Southern Sydney Freight Line (SSFL).



Legend

- MPW operational boundary
- Weed monitoring survey extent

1:15,000 at A4
GDA2020 MGA Zone 56
Date issued: November 21, 2025
Imagery: Esri



C:\Users\emaz4669\ARCADIS\30228596 - Moorebank Logistics Precinct 2 - 02 GIS\A_Current\B_Maps\Ecology\MPE_OperationalMonitoring\WeedMonitoring_2022_v2.aprx
Created by : EM Updated by : QA by : NB

Figure 1. Survey extent within the MPI operational facility

Results

Results of the weed monitoring surveys during the December 2025 survey are summarised below in Table 3. Weed records, previously recorded threatened flora species records, and instances of native species within the survey extent are shown in Figure 2.

Progress photographs of monitoring locations are provided in Appendix E and a complete flora species inventory in Appendix F.

Table 3 Summary of weed abundances across all inspection areas in MPI, for the current survey

Inspection area	Weed abundances for current survey	Photo of inspection area
Moorebank Precinct East (MPE)		
Rail Access Land Package (RALP)	• Weed growth continuous to be suppressed, particularly in the areas immediately adjacent to the BioBank site. Large instances of native grasses (<i>Themeda triandra</i> and <i>Dichanthium</i> sp.) are growing substantially • Steep areas along berms are being avoided for slashing due to safety concerns. Additionally, the small amounts of exotic vegetation are currently stabilising these berms, and will be targeted once construction is finalised in the MPW areas.	

Inspection area	Weed abundances for current survey	Photo of inspection area
IMEX building and adjacent drainage infrastructure	• <i>Acacia falcata</i> (Hickory Wattle) continue to grow unimpeded by weeds. • No significant instances of weed growth in the landscaped areas, which may spill into the drainage infrastructure	

Inspection area	Weed abundances for current survey	Photo of inspection area
Warehouse areas	- Majority of this area has now been claimed by the Moorebank Avenue Upgrade project and is unable to be surveyed adequately - Occurrences of weeds in the warehouse area and the adjacent drainage infrastructure is restricted to scattered individuals of <i>Senecio madagascariensis</i> (Fireweed), <i>Plantago lanceolata</i> (Plantain), <i>Trifolium arvense</i> (Clover) and exotic grasses like <i>Chloris gayana</i> (Rhodes Grass), <i>Sporobolus africanus</i> (Parramatta Grass), <i>Paspalum urvillei</i> (Giant Paspalum) and <i>Ehrharta erect</i> (Panic Veldtgrass).	

Inspection area	Weed abundances for current survey	Photo of inspection area
Eastern boundary drainage infrastructure	- Majority of this area has now been claimed by the Moorebank Avenue Upgrade project and is unable to be surveyed adequately - Drainage infrastructure dominated by <i>Bulboschoenus fluviatilis</i> (Marsh club-rush) whilst other are dominated by <i>Typha orientalis</i> (Bulrush). Where space is present between stands of these native emergent species small clumps of <i>Persicaria decipiens</i> (Slender Knotweed), <i>Daviesia ulicifolia</i>, <i>Ficinia nodosa</i> (Knotted Club-rush), <i>Carex tereticaulis</i> and <i>Juncus usitatus</i> are present. Other native species such as <i>Imperata cylindrica</i> and <i>Lomandra longifolia</i> were observed in the drainage channels.	

Inspection area	Weed abundances for current survey	Photo of inspection area
Moorebank Precinct West (MPW)		
Landscaped areas along Bushmasters Avenue	- Landscapes vegetation is in good condition, with minor weed incursions - Weed species present include <i>Sonchus oleraceus</i> (Common Sowthistle), <i>Chloris virgata</i> (Rhodes Grass), <i>Bidens pilosa</i>, <i>Conyza bonariensis</i> (Fleabane), <i>Cyclosporum leptophyllum</i> (Slender Celery), and <i>Tagetes minuta</i> (Stinking Roger). - Areas with limited to no landscaped vegetation are particularly susceptible to weed incursion from cleared areas (see adjacent photo)	

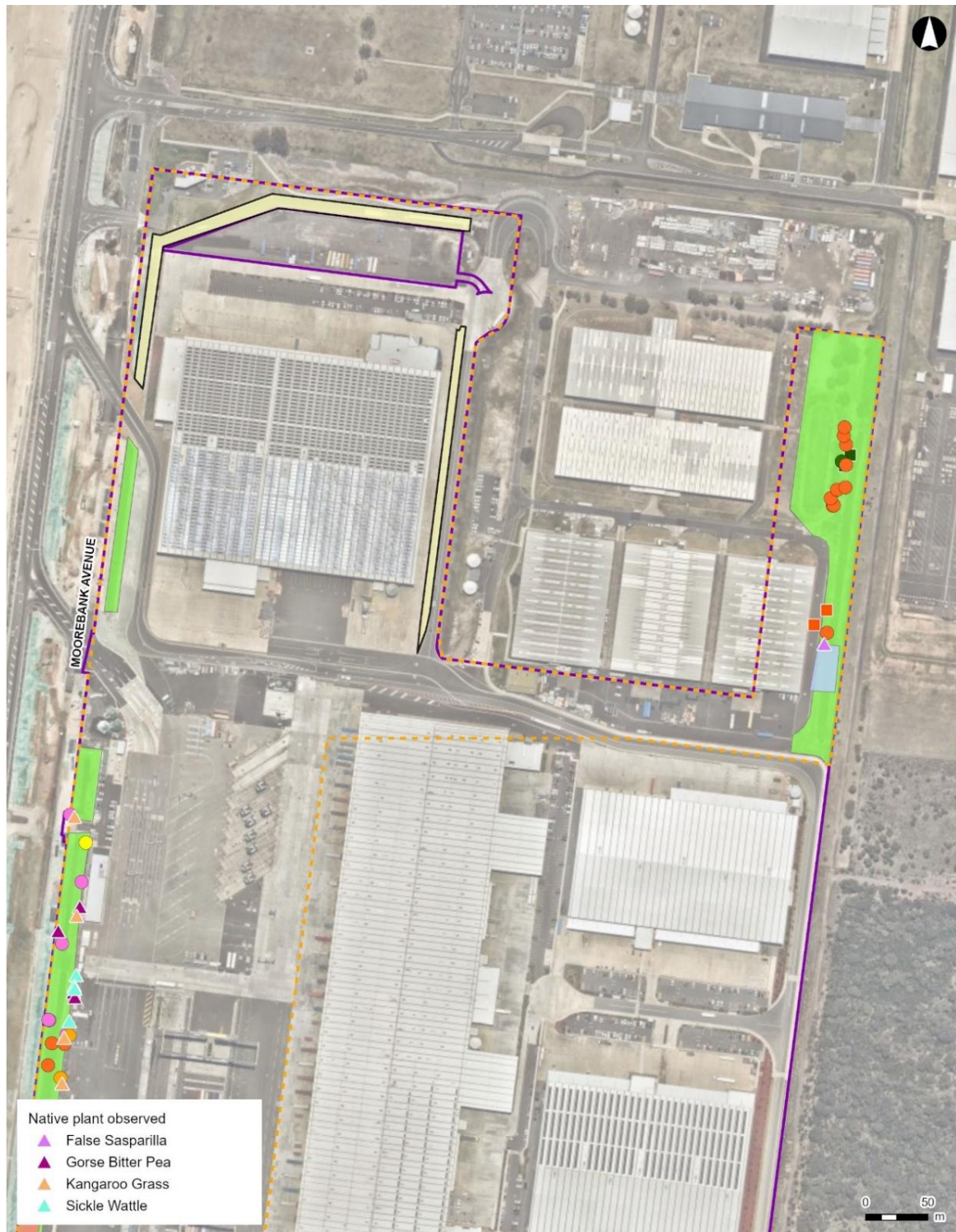
Inspection area	Weed abundances for current survey	Photo of inspection area
APZ area – northern MPW	• Suppression of <i>Medicago polymorpha</i> and other herbacious weeds occuring in this area (<i>Sonchus oleraceus</i> (Common Sowthistle), <i>Circium vulagre</i>) • Methods include slashing and hand removal around native species • Large stands of the native shrub <i>Dodonea viscosa</i> are growing unimpeded.	

Sediment basins adjacent
to BioBank site

- Spot spraying, and hand pulling of weeds occurring along boundary of basins and BioBank site
- No significant increases in weed coverage were observed around the basin outlet points



Inspection area	Weed abundances for current survey	Photo of inspection area
		



LEGEND

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> MPE operational boundary (solid purple line) Survey extent (dashed red line) Areas targeted in weed remediation works in Dec 2022 & Feb 2023 (green hatched area) Management issue (orange square) Erosion (orange square) | <ul style="list-style-type: none"> Damage to native veg (dark green square) Weed cover (outside Rail Link) <ul style="list-style-type: none"> Low (light green square) None (yellow square) Priority & key weeds <ul style="list-style-type: none"> African Lovegrass (green circle) | <ul style="list-style-type: none"> Fireweed (orange circle) Golden Wreath Wattle (pink circle) Paterson's Curse (purple circle) Red Natal Grass (yellow circle) Rhodes Grass (yellow circle) Fireweed (pink square) Large-leaf Pennywort (blue square) |
|--|--|---|

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1:4,500 at A4
Coord System: GDA2020 MGA Zone 56
Date issued: March 20, 2023
Imagery: Nearmap

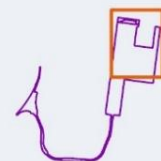


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (1 of 8)

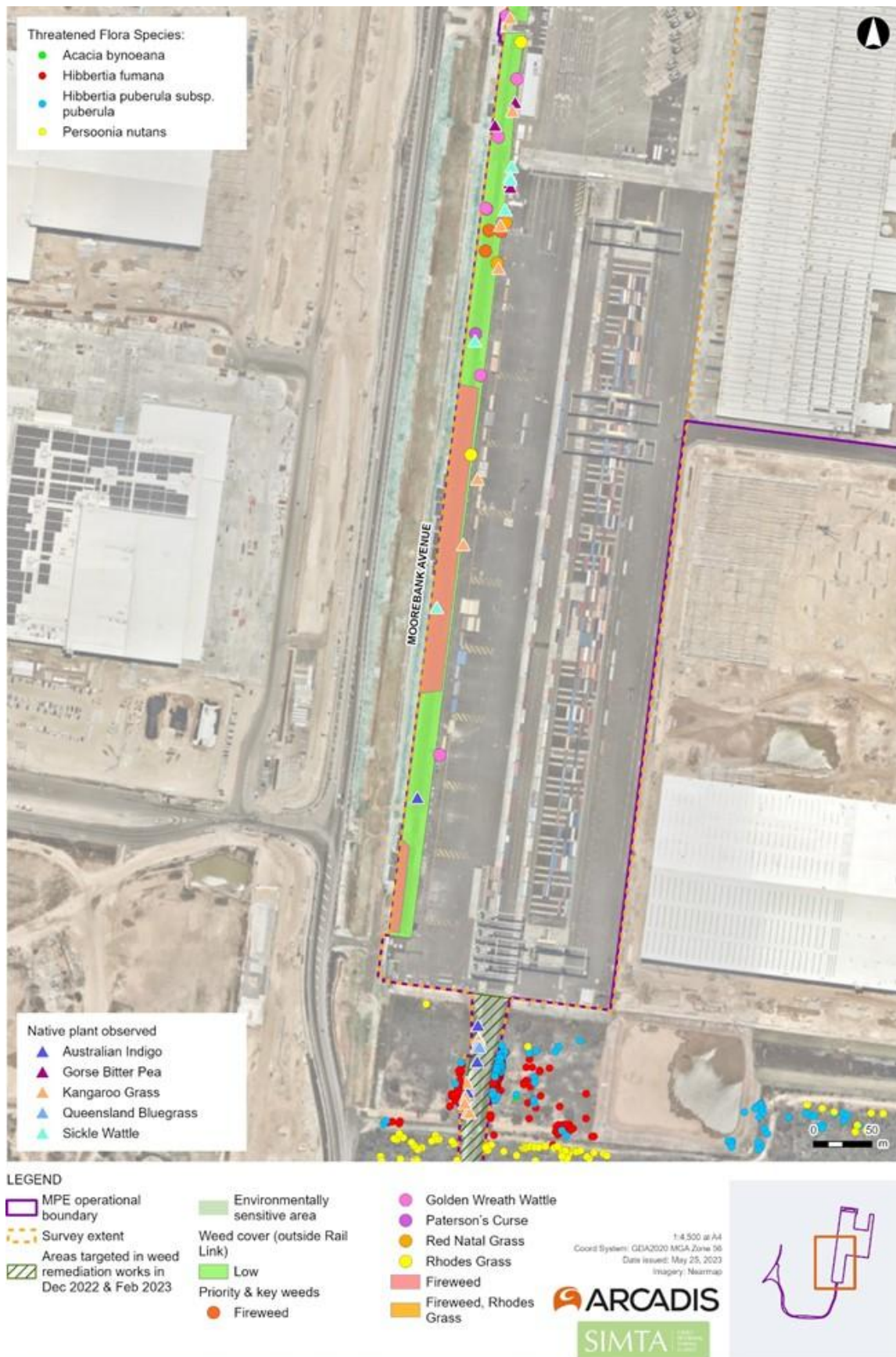


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (2 of 8)

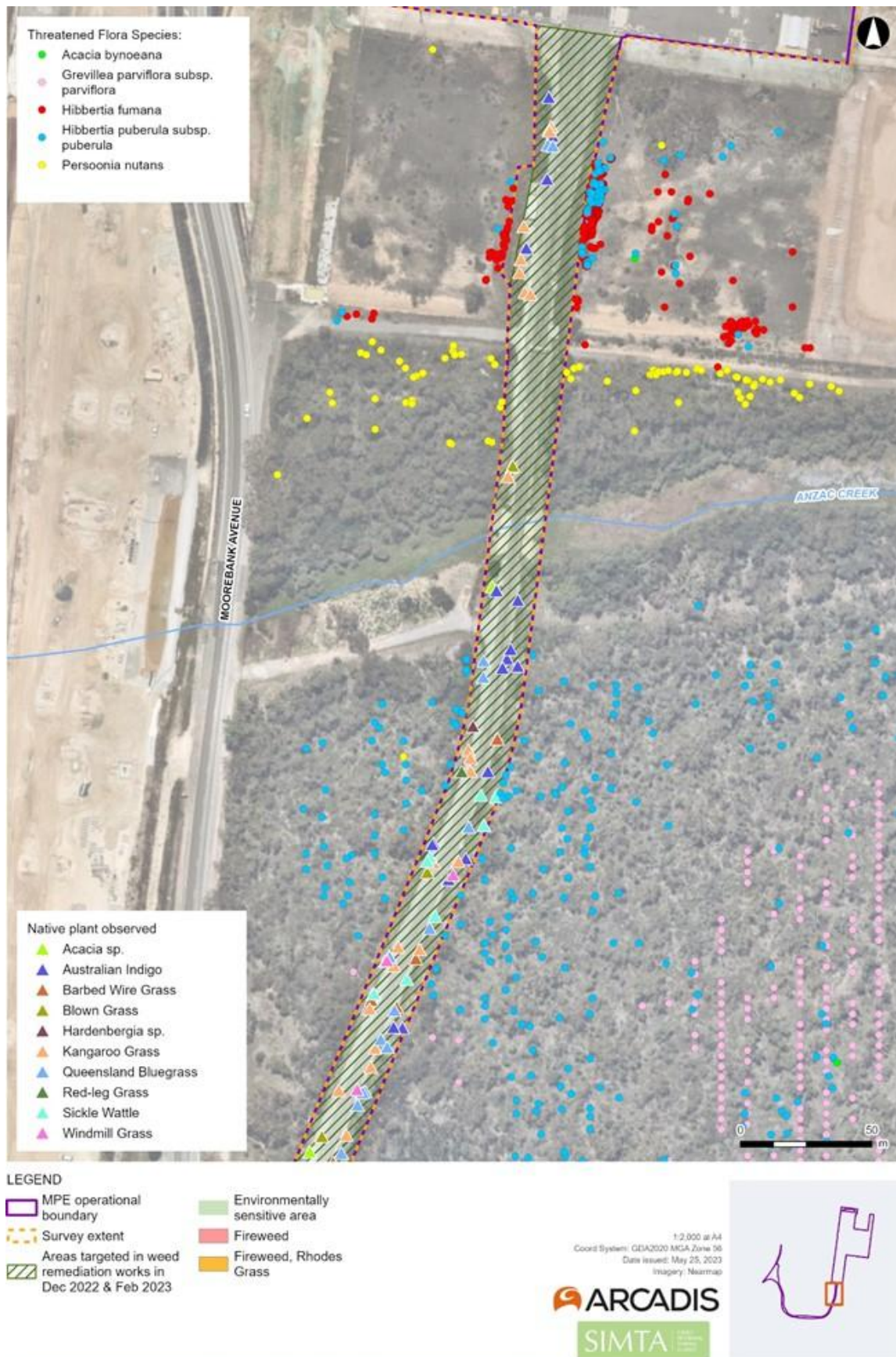


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (3 of 8)

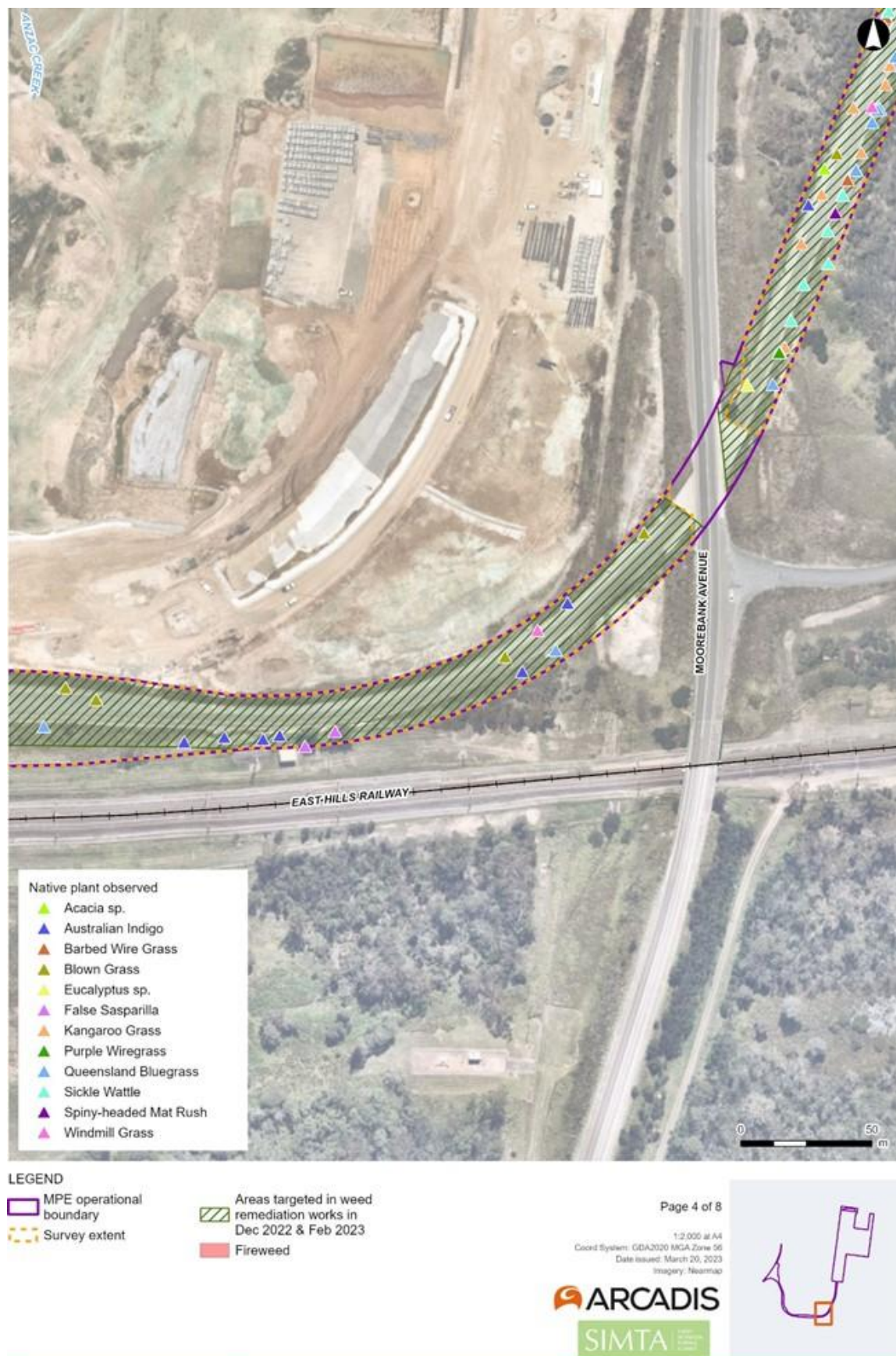


Figure 2 Instances of weeds, native species and threatened flora records in the survey extent and MIP operational boundary (4 of 8)

