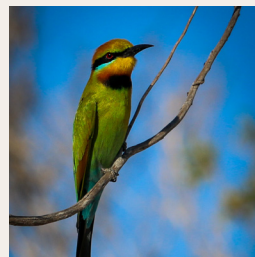


Shaw River Riparian Weed Management Report

Prepared for Pilbara Mesquite Management Committee

October 2023



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1 Introduction

1.1 Project Background

Parkinsonia is a declared pest under the *Western Australian Biosecurity and Agricultural Management Act 2007* (BAM Act) and a Weed of National Significance. During the early 1900's Parkinsonia was introduced to many locations in the Pilbara as an ornamental tree. This species is long-lived and highly invasive favouring moist riparian habitats. Parkinsonia has spread through several Pilbara river systems where it forms dense, impenetrable strands of thorny vegetation. These impenetrable stands impact stock access to water ways, alter the fire regime and impact water flow dynamics. Parkinsonia also reduces cultural and ecological values by limiting Traditional Owner access to the river and changing the diversity and health of the system.

The Pilbara Environmental Offsets Fund (PEOF) delivers projects to improve environmental values required to be offset under State and Commonwealth environmental legislation. In 2023, PEOF engaged the Pilbara Mesquite Management Committee (PMMC) to oversee the management of *Parkinsonia aculeata* (Parkinsonia) along the upper reaches of the Shaw catchment extending 140km from the commencement of the infestation at Bamboo Springs, through Hillside and Panorama Stations (project area). The project area is separated into five sections, section A in the south through to section E in the north. The project area is outlined in Figure 1.

The Pilbara Mesquite Management Committee, on behalf of PEOF, engaged Pilbara Environmental Pty Ltd (Pilbara Environmental) to conduct Parkinsonia management across the project area during 2023 (the project). Pilbara Environmental is a registered weed control contractor as required by the Department of Health (Reg. no. 2412). All weed control works conducted during the project were undertaken according to the *Health (Pesticides) Regulations 2011 (WA)*.

1.2 Objectives

The scope of work was to:

- Control *Parkinsonia aculeata* (Parkinsonia) within the Shaw River System (within the project area).
- Record spatial data including tracklogs of weed treatment/survey effort and point locations for each Parkinsonia individual treated.
- Monitor the outcomes following Parkinsonia control (effectiveness monitoring) to facilitate an adaptive management approach and evaluate whether the project is achieving its stated aims.

This report details the methods, results and key recommendations following the Parkinsonia management conducted during the 2023 program.

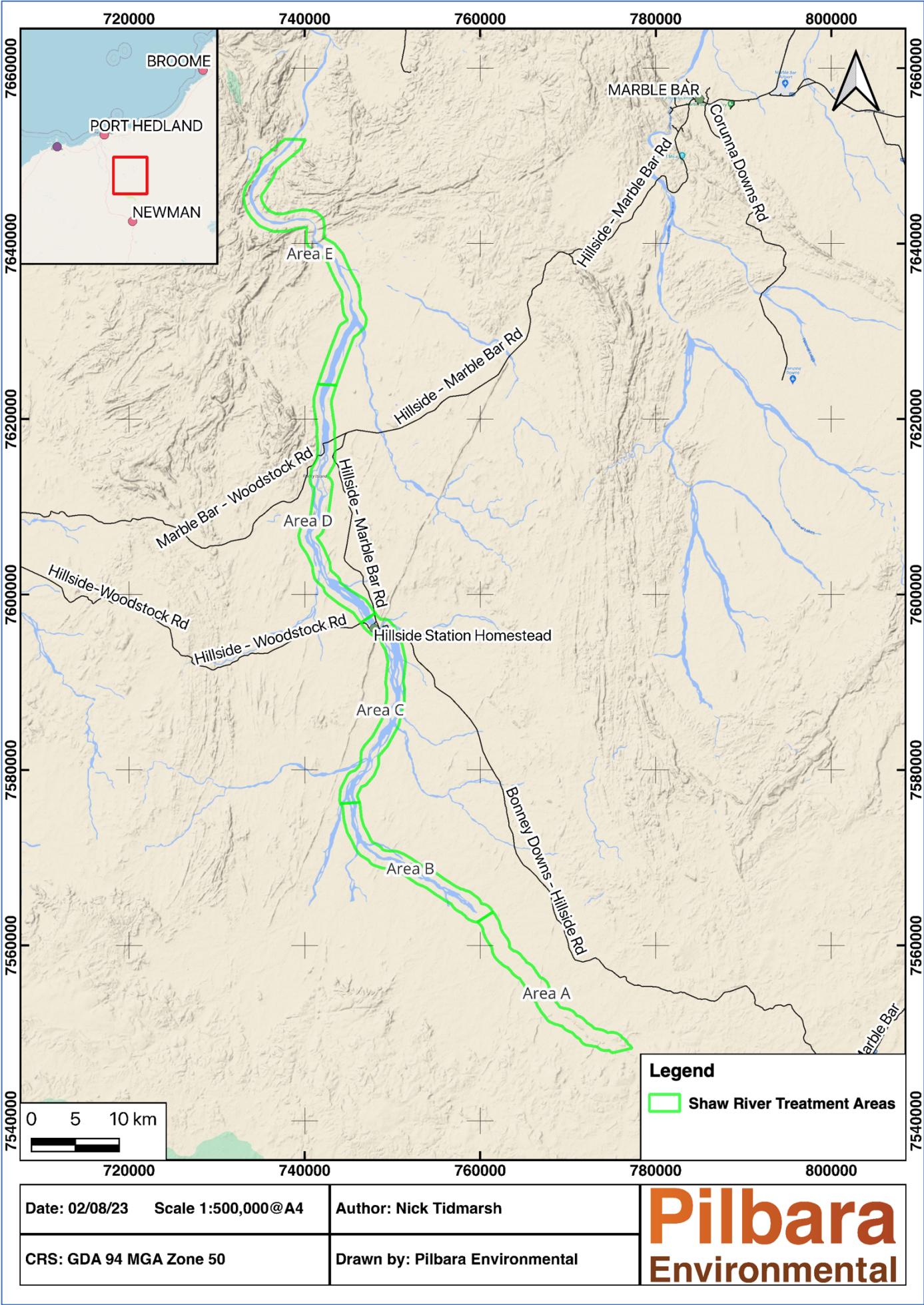


Figure 1 Overview of project area

1.3 Climate

Rainfall can impact the timing and efficacy of various aspects of weed management. As such mean monthly rainfall and max temperature data for the Marble Bar Weather Station (Station 4106), located 70 km northeast of the Hillside Station homestead, is presented for the 12 months preceding the completion of field works. During this period (November 2022 – October 2023) a total of 461.6 mm of rain was recorded compared to the long-term mean rainfall of 393.5 mm.

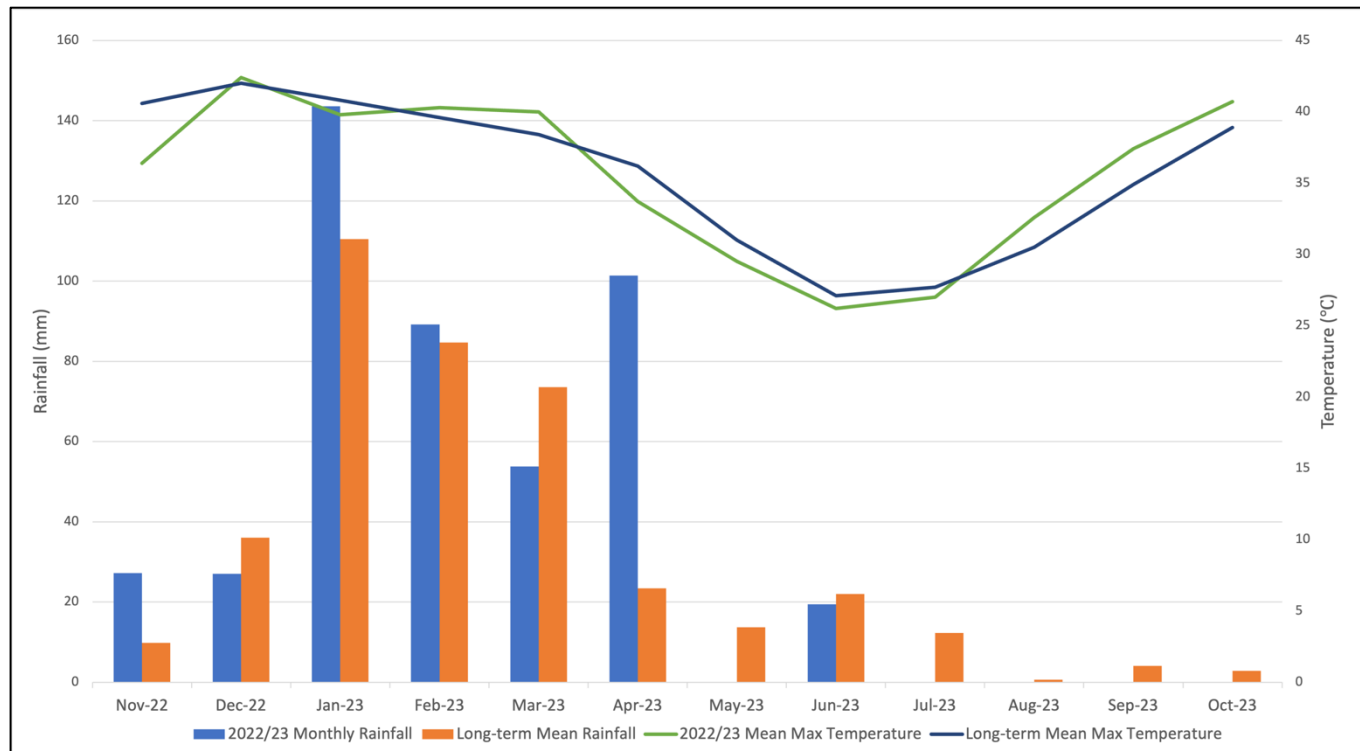


Figure 2 Rainfall and temperature data for the 12 months preceding completion of field work (Marble Bar Weather Station)

2 Methodology

2.1 Health, Safety, Community and Environment

Personnel working on the program were guided by Pilbara Environmental's 'Health, Safety, Environment and Community (HSEC) Management Plan'. The following key HSEC documents were also utilised.

- **Vehicle Pre-Start Forms:** Daily inspection of the work vehicle and equipment to ensure works are conducted safely and without delay due to vehicle/equipment malfunction.
- **Job Hazard Analysis (JHA):** JHA's were prepared specifically for these works and used a likelihood/consequence risk matrix to assess the hazards inherent in the program and identify controls to reduce and manage risks.
- **Spraying Records:** Records were kept of all works done including herbicides used, methods and spraying conditions.

Digital forms were created in Fulcrum to allow for the vehicle pre-starts and spraying records to be completed on smart phones reducing the need for paper usage.

All necessary safety gear including a chemical spill kit, PPE kits, satellite phone and herbicide Safety Data Sheets were located within the vehicle. Daily scheduled calls were made to the project manager at the completion of each days work.

2.2 Data Management

Tracklogs and individual Parkinsonia treatment locations were recorded using a Garmin (GPSMap 64) GPS unit (accuracy +/- 3m, GDA94 datum). All field data was downloaded onto a MacBook Air each day and backed up on remote servers. Data were viewed on QGIS3 software during the control trips to track progress and identify areas that require further exploration.

2.3 Equipment and Herbicides

A Toyota Hilux 4WD vehicle equipped to mine site specification was used to service these works. A 3-seater Polaris Diesel Ranger was used to access remote sections of the project area. A 200L diesel cartage tank with an electric powered bowser was mounted to the Polaris to transport diesel into the remote areas.

Garlon was used to treat the Parkinsonia at a rate of 0.25% using diesel as a carrier.

2.4 Summary of Works

The works were conducted over 120 personnel days from the 7th of May to the 22nd of September 2023. The focus of the works during 2023 was Area A. The majority of Area A was completed (Figure 3) along with an area covering Area C and Area D (Figure 4). Areas in between were not treated due to access issues. Personnel conducted traverses over target areas at 15m – 30m intervals.

2.4.1 Treatment

Parkinsonia individuals treated were basal sprayed using Garlon at a rate of 2.5% in diesel utilising 15L knapsack sprayers. Larger trees with a diameter of more than 10cm were basal sprayed up to a height of 1m, smaller trees were treated up to a height of 0.5m. Prior to treatment any debris of sticks, leaves and sand was cleared away from around the stem and base of the plant to ensure application of herbicide was not impeded. All individuals were sprayed to the point of run off. Following each treatment an inspection was conducted within 5m of the drip line for Parkinsonia seedlings.

During the 2023 program 3, 777 adult and juvenile Parkinsonia individuals were treated. The number of Parkinsonia seedlings treated was not recorded. A total of 1, 870L of diesel and 45.4L of Garlon was utilised during 2023.

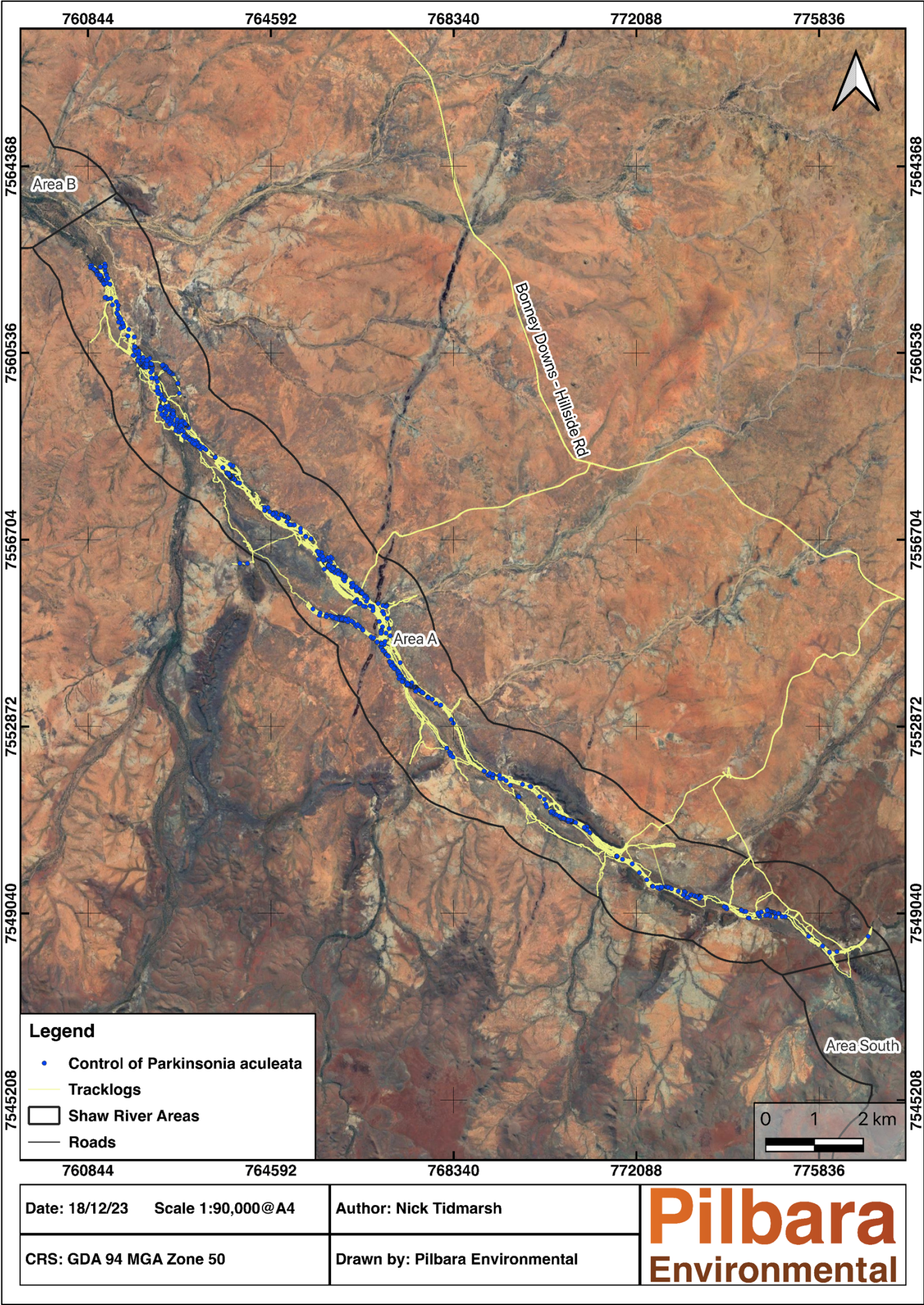


Figure 3 Map showing survey effort and Parkinsonia treated (Area A)

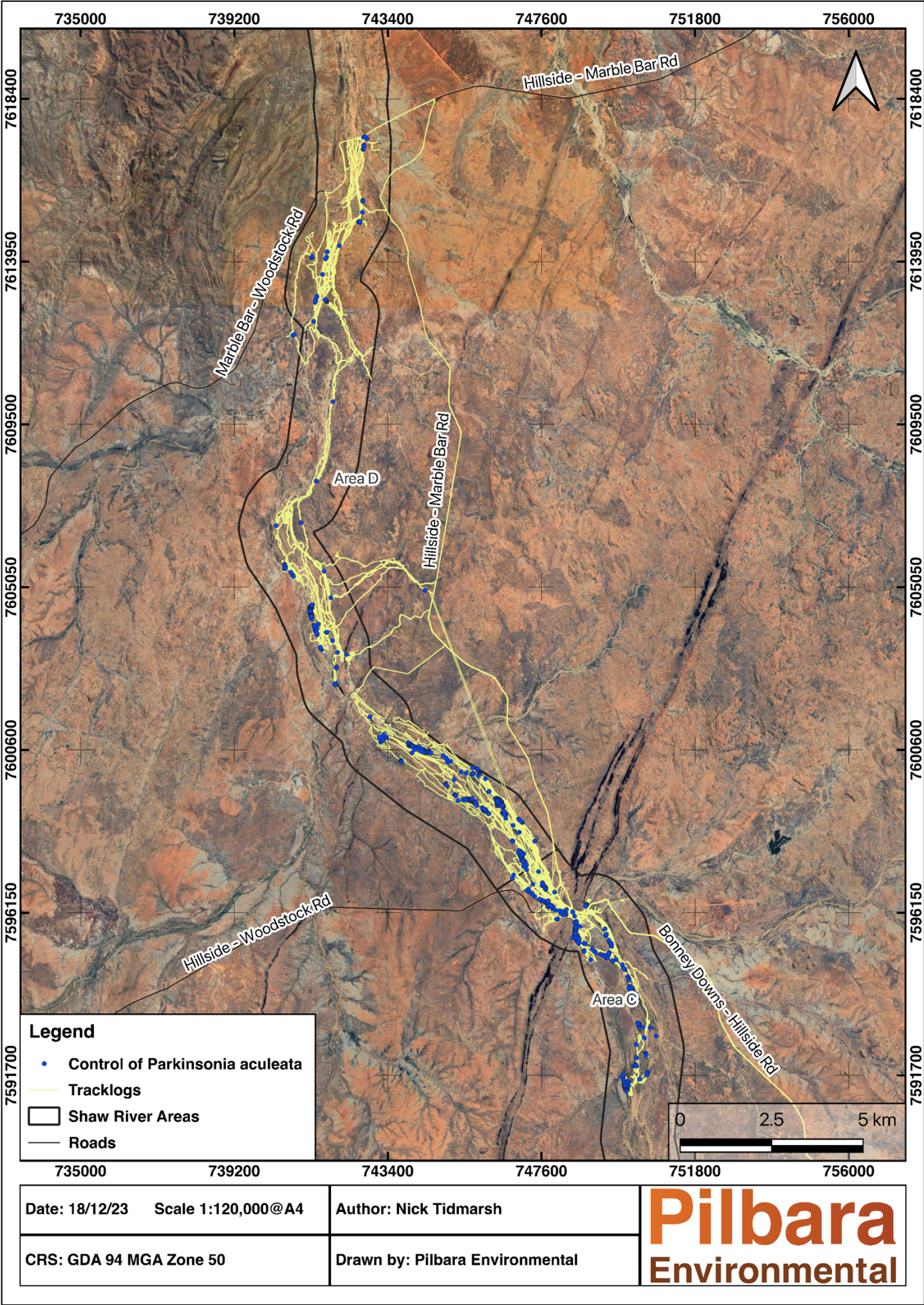


Figure 4 Map showing survey effort and Parkinsonia treated (Area C/D)

3 Recommendations

Based on the 2023 treatment program the following recommendations are made:

- Explore options for increasing the accessibility of Area B.
- Prioritise Area B during the 2024 treatment program.
- During the 2024 program conduct the effectiveness monitoring (follow up) prior to commencing management in Area B in order to allow for an adaptive management approach.
- Discuss the value in capturing seedling data as well as juvenile/adult data.