



# Groundwater Dependent Vegetation Tool Development

Request for Proposals

Guidelines and Assessment Process

November 2020

## Contact Person

Paula Fievez, Head of Partner Engagement  
[pfievez@frontiersi.com.au](mailto:pfievez@frontiersi.com.au)

# GDV TOOL DEVELOPMENT CALL FOR PROPOSALS

## Background

### The Problem

Mining companies must monitor the potential impact of mine dewatering on groundwater-dependent vegetation (GDV) as a compliance requirement. Mine dewatering is the removal of unwanted groundwater from a mine to allow rock and mineral extraction from beneath the water table. In some circumstances, this can affect the health of GDV in the vicinity, as many plant species rely upon a stable water-table for seasonal water requirements. Mapping the spatial distribution of GDV species at the tenement scale, and appropriately selecting monitoring sites to facilitate assessment of dewatering impacts on GDV, requires comprehensive knowledge and extensive time to set up. While earth observation data has been trialled to monitor the effects of dewatering on GDV health, its potential is still emerging, and no routine or user-friendly tool yet exists.

### The Research

An initial project (Stage 1) conducted by Curtin University researchers, in consultation with mining companies (Roy Hill Iron Ore and BHP), used a knowledge-based approach to reduce the “search area for GDV. The research team successfully trialled the model at three discrete locations in the southeast Pilbara region. Initial validation statistics indicated that the model predicts GDV at an accuracy exceeding 86%, and the team believe with further improvements model accuracies of >95% could be attained.

Stage 1 enabled the rapid collection of a significant amount of sampling, which is being used in a Stage 2 project currently underway to assist data-driven modelling for prioritisation of ground-based response by folding together multiple remotely sensed data sources. The Stage 2 project will also include near real time detection of GDV health decline by utilising 40 years of image data. These outputs will assist prioritisation of ground-based response and better inform dewatering strategies.

The Stage 1 project was delivered as a Jupyter notebook, designed to run on the Digital Earth Australia Sandbox, hosted by Geoscience Australia. This notebook can be found at [https://github.com/lewistrotter/GDV\\_TOOL/](https://github.com/lewistrotter/GDV_TOOL/). This can be leveraged by developers of an operational tool (this project).

As part of Stage 2, the project is seeking to develop and deploy a user-friendly tool to operationalise the Curtin University research. The development of the GDV Tool is a component of the Stage 2 FrontierSI Collaborative Research Project and will therefore need to meet overall Stage 2 project timelines. The timelines for development and recommended approach are outlined below.

### Stage 2 End-user Consultation Process

The project team conducted a two-part stakeholder consultation process. Stakeholder Consultation 1 sought to understand the workflows in which project participants use Earth Observation data for GDV detection and monitoring. This information has helped inform the technical requirements the software needs and options for development of a suitable solution.

Stakeholder Consultation 2 was then undertaken where development options were reviewed, and feedback sought from project parties to help inform the future development.

## Request for Proposals

On behalf of the project parties, FrontierSI has issued this Request for Proposals for the development of the GDV Tool. Details relating to this call are outlined in this document, and other relevant documents can be found on the FrontierSI website from <https://frontiersi.com.au/gdv> include:

- **Requirements Document**  
The Requirements document provides an overview of functional and non-functional requirements along with feedback from end-users solicited from a series of stakeholder consultation workshops.
- **EOI Response Template**  
The EOI Response Template must be completed and submitted by the closing date to be considered.
- **FrontierSI Standard Consultancy Agreement**  
Proponents will be asked if they agree to the terms in the FrontierSI Standard Consultancy Agreement to be considered. Please review the terms prior to completing the EOI Response.

## Project Timeframes

The development of the GDV Tool is considered as one part of Work Package 3 within a FrontierSI Collaborative Research Project. A project Agreement has been executed with an outline of the project timeline and deliverables. The timeline for development (this project) and preferred approach is provided below.

| Timing                    | Activity/Deliverable   |
|---------------------------|--|
| March 2021                | Contracting of Vendor  |
| April- September 2021     | Develop application involving a series of sprint cycles to develop the interface iteratively. This timing aligns with the Curtin University research workplan. |
| 30 September 2021         | Deliver Minimal Viable Product demonstrating GDV likelihood layer  |
| October 2021 – March 2022 | Continue to develop application involving a series of print cycles to implement complete functionality.  |
| 31 March 2022             | Deliver fully developed GDV tool.  |

It is important to note that development will be conducted in close collaboration with Curtin University researchers because timing of the development of the models will be conducted in parallel with the GDV tool development.

## Budget

A fixed budget of \$80,000 (Excl GST) has been allocated for this development. Proponents are therefore requested to provide proposals which adhere to this budget and timeline.

## Contract

The successful respondent will be required to enter a contract to provide the deliverables in accordance with its Proposal in the form of a FrontierSI Standard Consultancy Agreement.

## Lodgement of Proposals

Closing Date for EOI submissions: 5:00pm AEDT, December 4, 2020

Proposals can be submitted to [pfievez@frontiersi.com.au](mailto:pfievez@frontiersi.com.au)

## Contact Person

Please refer all requests for information about the Request for Proposals process to the following Contact Person:

Name: Paula Fievez

Email: [pfievez@frontiersi.com.au](mailto:pfievez@frontiersi.com.au)

## Selection Process

Selection of an industry organisation will be through a two-stage process run by FrontierSI to enable organisations to express interest with a low degree of effort ensuring that those not well aligned do not waste effort. Interested parties will be asked to register their interest in the development of the GDV Tool by submission of an EOI.

Following this initial EOI submission, projects will be shortlisted, with the successful shortlisted applicants required to submit a more detailed proposal addressing the project requirements to FrontierSI. Proposals will be assessed by a panel made up of FrontierSI and project partner organisations.

The timeline for the assessment process is as follows:

| Activities   | Timing        |
|--|---------------|
| <b>EOI Response due 5pm AEDT</b>   | Dec 4, 2020   |
| Review EOI and shortlist submissions                                     | Dec 18, 2020  |
| Notify proponents and request full proposals from shortlisted applicants | Dec 21, 2020  |
| <b>Full Proposal Response due 5pm AEDT</b>                               | Jan 29, 2021  |
| Review full proposals  | Feb 12, 2021  |
| Agreement from Project Steering Committee                                | Feb 12, 2021  |
| <b>Notify proponents</b>   | Feb 14, 2021  |
| Commence project   | April 1, 2021 |

## Assessment Process

### Stage 1

For the assessment of the EOI submissions, there will be independent assessors who will individually score the applications using an excel based scoring template. Criteria will be scored using a 0-3 scoring scale. The criteria and scoring system are outlined below:

| Ref                        | Criteria  | Weight | 0  | 1   | 2   | 3   |
|----------------------------|---|--------|--|---|---|---|
| <b>Go/No Go Criteria</b>   |   |        |  |   |   |   |
| 1.                         | Is the proponent willing to agree to contract terms of the FrontierSI Standard Consultancy Agreement  | Yes/No | If yes, then proceed to # 2<br>If no, then the proposal cannot proceed                 |   |   |   |
| 2.                         | Does the proposal meet budget constraints?  | Yes/No | If yes, then proceed to assessable criteria<br>If no, then the proposal cannot proceed |   |   |   |
| <b>Assessable Criteria</b> |   |        |  |   |   |   |
| 3.                         | Appropriate system architecture to deliver required functionality including the ability to integrate with other tools (e.g. ArcPro, ArcGIS Online, GoogleEarth Engine, EMapper) | 25%    | Not appropriate and unlikely to meet requirements                                      | Minimally appropriate and minimal likelihood to meet requirements | Moderately appropriate and moderately likelihood to meet requirements | Highly appropriate and high likelihood to meet requirements |
| 4.                         | Demonstrated track record delivering similar projects for the mining sector <b>and or</b> in developing tools ingesting large volumes of satellite data                         | 25%    | No track record demonstrated   | Minimal track record demonstrated                                 | Moderate track record demonstrated                                    | Significant track record demonstrated                       |
| 5.                         | Extent to which the project approach is sound and appropriate to meet project timelines   | 25%    | No logical approach articulated  | Minimal logical approach articulated                              | Moderate logical approach articulated                                 | Significant logical approach articulated                    |
| 6.                         | Extent to which the proponent offers a viable ongoing operating model for continued service and support and cost of that ongoing service and support                            | 25%    | No viable model articulated  | Minimal viable model articulated                                  | Moderate viable model articulated                                     | Significant viable model articulated                        |
|                            |   | 100%   |  |   |   |   |

### Stage 2

The shortlisted proponents will then be asked to complete an expanded proposal template to submit for assessment. Assessment of the shortlisted proposals will follow the same format as stage 1, however criteria may be modified depending on lessons learned from assessing stage 1.