The ZIP OutPost System

Detailed Description for Potential Purchasers

ZIP has developed the OutPost automated reporting system to enable timely and cost-effective transfer of field data from landscape-scale (i.e. 1,000 ha+) predator-free projects.

The OutPost system comprises:

- **ZIP MagNodes**, which are electronic nodes that detect the status of a trap and use LoRa (low-powered radio) technology to report the status along lines of trap nodes to a satellite base station;

- **ZIP satellite base station(s)** that receive data from the lines of MagNodes and transmit the data to the Iridium satellite network; and

- A **ZIP webserver**, known as Trapline, which receives the data transmitted from the satellite network and enables users to view the data via a website customised for each project.

We are currently supplying the ZIP OutPost system for use with the ZIP PosStop, to enable the remote inspection of a network of these live capture leghold traps - which can reduce the labour costs associated with servicing the network by over 90%.

We are also using the system in conjunction with a new rat and stoat trap that we are developing. Alternatively, the OutPost system can be retro-fitted to other suitable predator traps, including wooden housed DOC200s and live capture cage traps for animals such as possums.

ZIP warrants that the products we supply will be free of defects (in materials or manufacture) for a period of two years from the date of delivery. For more information, see our website for ZIP Products and Services – terms and conditions.

Technical Specifications

- LoRa operates on a radio frequency between 918-928 MHz. A ZIP technician will determine the best frequency, or combination of frequencies, for your site (using a terrain map of the site and planned network layout).

- MagNode transmission distance is dependent on a range of factors, including terrain, vegetation density and local radio interference. In optimal environments, MagNodes can transmit 200-250 metres. With undulating terrain or medium density vegetation, transmission distance would typically be 80-150 metres. In high density vegetation or heavily undulating terrain, transmission distance may be reduced to 30-70 metres between individual nodes. Radio towers or other transmitting features around towns and cities can also impact on the communication distance between individual MagNodes.

- The MagNodes use lithium thionyl chloride batteries, which are included. Under normal operating conditions, these have an expected life of 3-4 years. The batteries in each ZIP MagNode unit can be replaced at a cost of $60 + GST per node, provided the node itself is still viable.
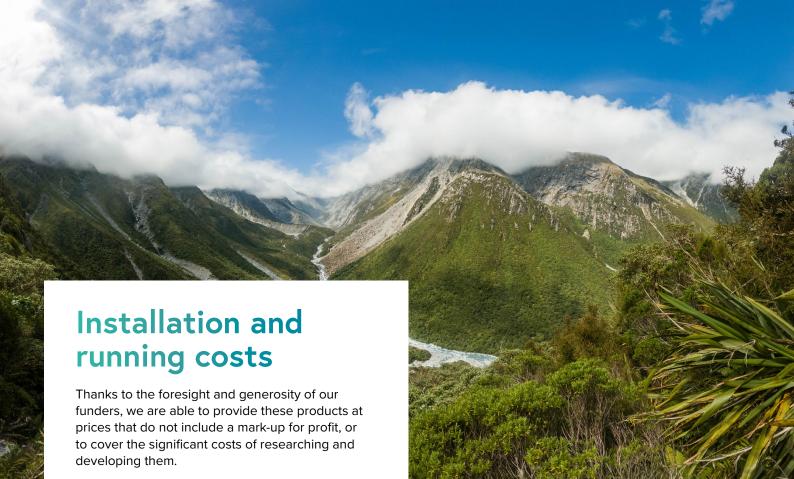

Evaluation/planning process and costs

While the installation of a ZIP OutPost remote reporting system can significantly reduce the costs of servicing a predator free network of devices, the initial installation and ongoing running costs of the system are not insignificant. It's important therefore that the suitability of the OutPost system for your project is carefully evaluated and, where suitable, planned and communicated to help ensure the best possible results and outcomes for your project.

We use a four-step process to help to do this:

1. If you would like more information about whether the ZIP OutPost system could help you to achieve your predator-free conservation goals, then please contact us at products@zip.org.nz. A member of our team will contact you to discuss your project.

2. If we each agree that the OutPost is a potentially suitable option for your project, then a ZIP technician would undertake a 2–3 day site visit to meet with you and your project team and field-check the suitability of the OutPost system for your site and project. We would not charge you for the technician's time for this visit, but you would need to cover the cost of their travel and accommodation.

3. If, after the visit, ZIP and your project team agree that the OutPost system would be suitable for your project, ZIP will prepare a report that describes a proposed design and estimate of the costs of the OutPost system for your specific site. It's important that we work together on preparing this report, because doing so enables ZIP to understand your specific requirements, and helps you to understand what an OutPost system would look like, what you would need to do to run the system, and what ZIP will do to support you. You will need to pay half the cost of preparing the report, which will be $2,000-5,000 + GST, depending on the size and complexity of your site.

4. If, after considering the proposed design and cost of the OutPost system, your project team decides to purchase the system, then we will work together to document the deliverables, timeline and our respective responsibilities.

Installation and running costs

Thanks to the foresight and generosity of our funders, we are able to provide these products at prices that do not include a mark-up for profit, or to cover the significant costs of researching and developing them.

There are four different types of costs associated with installing and running a ZIP OutPost system, which are outlined below.

1. System components: POA, depending on the number of components required

The cost of the components depends on the size and nature of your unique predator free project.

> *For illustrative purposes, an OutPost system that comprised a network of 500 ZIP PosStop leghold traps ($50 per unit), that included 550 MagNodes ($120 per unit) and 5 satellite base stations ($1,100 per unit) would cost approximately $96,500 (plus GST and freight).*

The environment at your site will determine the final design and number of components required. For example, additional spacer MagNodes are often required to bridge the radio gap between trap locations.

2. Custom webserver: $10,000 + GST

This fee covers the development and establishment by ZIP of a webserver that enables remote reporting of your unique network of traps. Through the web server you will be able to check line status, record captures/data and assign staff responsible for daily system servicing and maintenance.

The webserver will help you to manage your requirements under the Animal Welfare Act 1999 (s.36) to check traps within 12 hours of sunrise, and meets the MPI guidelines (2016) for good practice for remote monitoring of live capture traps for vertebrates[1].

The software supporting the webserver is regularly updated, and continues to improve in response to feedback from users.

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1 https://www.mpi.govt.nz/dmsdocument/27894-remote-monitoring-of-live-capture-traps-for-vertebrates

3. Installation and training: $5,000 + GST (minimum)

It is not possible to install and run a ZIP OutPost system without prior training from a ZIP team member. A ZIP technician will visit your site to install some of the components and, while doing so, train your team to install, use, and maintain the system. This visit will usually take two full days. The charge covers all ZIP costs including planning, travel, accommodation, on-site support from our team and any remote support you require from a technician.

The training is usually provided to one or two of your key team members who can then teach others involved with the project. The training and initial installation process typically involves:

Day One:

- an overview of LoRa (low-powered radio) communication

- a breakdown on the components of the system and how the technology works

- assistance downloading, setting up and operating the required cell phone application (note, this works on Android phones only)

- a field day with a small number of devices to demonstrate how to establish a line with PosStops and MagNodes, set up a satellite base station and turn on the system

- a webserver session on how to read the webserver, input trap lines and new satellite base stations, identify and respond to jobs, and track statistics from capture data.

Day Two:

- review the trap line data from the previous day's installation

- continue establishing actual trap lines within your network

- advice on optimal trap set up, location, tree selection and luring

- looking at problem shooting, how to identify errors in the nodes or satellite base stations and how to respond to these errors

- advice on the long-term maintenance of trap lines

- a wider look at your project as a whole, and answering your questions related to trapping, luring, animal behaviour and defending predator free spaces from reinvasion.

We recommend one further site visit (at similar cost) to support your team once they have begun to use your system. Once you've had some experience using the system, there are several techniques that can assist with maintaining or extending trap lines. The ZIP technician can review the design, optimise the layout of the traps and nodes, continue to train your team, and fine-tune the system.

Throughout the life of your project, a ZIP technician is available to visit your site to train new staff or, if required, to help you to extend the network.

4. Running the service: $450/month + GST (minimum)

There are two ongoing service costs: ZIP support and Iridium data charges.

1. The ZIP support cost is $400/month + GST, which covers the following services:

   - initial daily monitoring of the system by ZIP to help ensure that reports of traps that have been triggered (i.e. "logged jobs") are closed within legislative timeframes (as per your obligations under the Animal Welfare Act 1999), and to identify any potential issues that need your (or our) attention

   - responding to your email or phone enquiries

   - customising the system to meet your particular requirements (e.g. as a result of changes to your network of traps, or to add additional fields to the webserver).

2. Accessing the Iridium network costs $50/month/satellite base station + GST. ZIP will set up and manage your access to the Iridium network and add the Iridium service charge to our monthly invoice for running the OutPost service.

All of the costs referred to above are current as at October 2021.