



# Call for Expressions of Interest

*Flexibility Trial - Lincoln*



**Our Purpose**  
is to power  
a cleaner  
and brighter  
future for our  
community

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# Section 1: Overview

## 1.1 The opportunity

Given growth in the Lincoln area, Orion is looking to build a new zone substation to the east of Lincoln township. The purpose of this document is to see if there is an opportunity to delay this multi-million-dollar build, saving our customers money, at no sacrifice to the security of power supply to the area.

We wish to determine if potential suppliers of flexibility solutions, also known as non-traditional network support solutions, can assist in managing peak demand in Lincoln. For instance, can batteries in homes and businesses be used to lower loads at peak times, namely 6am to 9am and 5.30pm to 9pm May to October, or can businesses defer some of their power use away from these times? Other opportunities or technologies may also be available. Participants would be compensated for these actions, at an overall lower cost to our customers given the resulting deferral in build of the new zone substation.

Orion is also interested in hearing from Respondents that can potentially offer flexibility support in other parts of the Orion network.

Orion's objective is to provide energy security at a lower cost than new network infrastructure and implement a solution that will also support transition to a lower carbon energy supply.

## 1.2 What we need

Orion is seeking Expressions of Interest (EOI) from suitably qualified suppliers (Respondents) who are interested in providing a flexibility solution in the Lincoln area.

The purpose of this call for EOI is to start engagement with Respondents by inviting Expressions of Interest in participating in any future Request for Proposals (RFP) process. Respondents are to submit high level information on their capability, the nature of their proposed solution and indicative basis of pricing.

This EOI:

- Sets out an overview of the opportunity (Section 1: Overview)
- Provides the timeline and contact details for Respondents (Sections 2.2 and 2.3 respectively)
- Sets out the applicable terms and conditions (Section 2.6)
- Describes our key services Requirements that the proposed solution needs to meet to alleviate the anticipated network constraints (Section 3: Our Requirements)

A separate editable EOI Response Form is available and must be completed by Respondents.

From the RFP process that will result from this EOI, we will be looking to identify one or more suppliers of flexibility services who can deliver the required level of flexibility support. Orion is seeking to develop a trusted, mutual relationship to deliver this project and may include meeting(s) with Respondents as part of our Evaluation of EOI Responses.

We are relatively open to various options regarding the makeup of the solution provided and welcome Responses potentially involving a range of technologies or innovative solutions that can deliver the Requirements defined in [Section 3: Our Requirements](#), and that offer value for money.

### 1.3 What we don't want

In accordance with our sustainability commitment, including minimisation of carbon emissions, we are not seeking a fossil fuel-based solution.

### 1.4 What's important to us

We are looking to identify suppliers of suitable flexibility solutions that can meet our Requirements and deliver the key characteristics of an effective solution as outlined in [Section 3: Our Requirements](#).

Proposed solutions must be reliable and available when required over the Contract period and at the scale required.

Respondents should clearly demonstrate how risks pertaining to deployment and operation of their technology would be managed.

Orion is also looking to achieve the best outcome in the following criteria:

- **Health and Safety of both workers and the public** – Respondents should have an exemplary track record
- **Broader outcomes** – taking an active responsibility for the best outcomes for people, the environment and businesses that may be affected
- **Time critical delivery** – being able to implement solutions and provide resource should an unexpected event occur
- **Value for money** – based on the principles of fairness and shared responsibility, we must be able to demonstrate value for money

Our expectation is that Successful Respondents will be able to demonstrate both expertise and experience in all the above Requirements.

### 1.5 Why you should register your interest

This EOI will lead to the opportunity for suitably qualified Respondents to be invited to submit a proposal when we move to the RFP stage.

There is increasing interest in the use of the proposed type of flexibility solutions as a valuable tool in network management, and further opportunities are likely to become available within Orion's network.

### 1.6 About Orion

Orion owns and operates the electricity distribution network that provides power to central Canterbury. As the third largest electricity distribution network in New Zealand, Orion covers remote rural areas, regional towns, and the city of Christchurch.

The Orion network extends over 8,000 square kilometres across Central Canterbury from the Waimakariri River in the north to the Rakaia River in the south, as shown in Figure 1. The Orion network delivers electricity from the Transpower national grid to more than 215,000 homes and businesses.

Orion is a community owned entity with two shareholders – the Christchurch City Council, through its subsidiary, Christchurch City Holdings Ltd, (89.3%) and Selwyn District Council (10.7%).

Figure 1: Map of Orion region



## Section 2: Key information

### 2.1 Context

This is an open invitation for Respondents to submit an EOI for the supply of a flexibility solution in the Lincoln area.

This EOI is the first step in a multi-step procurement process. Orion will use the information from the EOI to determine our best approach to market.

### 2.2 Our timeline

Our proposed timeline for this EOI process, and the following RFP process, is:

<b>Steps in EOI process:</b>	<b>Date</b>
Publication of EOI	1 November 2022
Supplier briefing	11am 15 November 2022
Deadline for Questions from Respondents	4pm 5 December 2022
<b>EOI closes</b>	<b>4pm 12 December 2022</b>
Respondents advised of EOI outcome	Early February 2023
Release of RFP to selected Respondents	Late February 2023
RFP closes	Late March 2023
Respondents advised of RFP outcome	Late April 2023
Contracts with any Successful Respondents signed	June 2023

Respondents should note this timetable is indicative only and Orion may amend this timetable from the published timetable in accordance with the Terms and Conditions of this EOI. All dates and times are dates and times in New Zealand.

The supplier briefing on Tuesday 15 November at 11am will be held on the Teams video conferencing platform. If you would like to attend this briefing, please email [Stephen.Godfrey@oriongroup.co.nz](mailto:Stephen.Godfrey@oriongroup.co.nz) registering your interest by Thursday 10 November. A Teams invite will then be sent to you.

Orion reserves the right to accept late Expressions of Interest at its sole discretion.

### 2.3 Contact during the period the EOI is open

All enquiries must be directed to our Point of Contact (subject to change by notification from Orion):

**Name:** Stephen Godfrey

**Role:** Project Lead – Lincoln Flexibility Trial

**Email address:** [Stephen.Godfrey@oriongroup.co.nz](mailto:Stephen.Godfrey@oriongroup.co.nz)

Should potential Respondents have any questions in relation to this trial or EOI, please email them to Stephen Godfrey, whose email is above. Unless commercially sensitive issues are discussed, these questions when answered will be posted [here](#). If, after release of this EOI on 1 November and before the closure date for EOI Responses of 12 December, we need to change anything or provide additional information we will let all Respondents know by placing this information on this same website link. Please note that potential Respondents should regularly check this link, to ensure that they stay up to date with all relevant matters. Orion may reject an EOI response if it does not comply with any of the answers posted on this website page.

## 2.4 Developing and submitting your response

1. The EOI sets out the step-by-step process and conditions that apply.
2. Take time to read and understand the EOI document. Develop a strong understanding of our Requirements detailed in [Section 3: Our Requirements](#)
3. If anything is unclear or if you have a question, ask us to explain. Please do so before the Deadline for Questions. Email our Point of Contact (Section 2.3)
4. In submitting your EOI Response, you must use the EOI Response Form (titled “Flexibility Trial - Lincoln EOI Response Form”). The EOI Response Form can be downloaded [here](#).
5. You may attach any other material to support your Response. In our Evaluation of EOIs we may choose to consider or disregard any supporting material not specifically requested.
6. Check you have provided all information requested, and in the format and order asked for.
7. Ensure your EOI Response considers all information, answers to questions, and/or changes to the EOI posted [here](#).
8. Ensure your EOI Response is submitted prior to the Deadline.

## 2.5 Address for submitting your registration

Respondents are to complete the EOI Response Form available on our website.

EOI Responses must be submitted by email to the following address: [Stephen.Godfrey@oriongroup.co.nz](mailto:Stephen.Godfrey@oriongroup.co.nz)

Registrations sent by post or fax, or hard copy delivered to our office, will not be accepted.

## 2.6 Our EOI Process, Terms and Conditions

This EOI is subject to the ROI Process, Terms and Conditions described in the [Government ROI Process, Terms and Conditions](#).

By submitting an Expression of Interest, you agree to be bound by the Terms and Conditions.

## 2.7 Defined terms

These are shown using capitals. You can find all definitions at the back of the EOI Process, Terms and Conditions from the link in Section 2.6.



## Section 3: Our Requirements

### 3.1 Background

Peaks in electricity demand drive the requirement to invest in traditional network capital items such as poles, wires and cables. These peaks only occur for a limited period on a limited number of days per annum. This is typically within the periods of 6am to 9am and 5.30pm to 9pm on cold weekdays in residential areas in the Orion network. There can also be occasional periods of peak demand on Sunday evenings.

Flexibility solutions are a potentially lower cost alternative to meeting these demand peaks compared with investment in traditional network infrastructure.

Lincoln has been chosen as the area in which to establish a flexibility trial because of steady demand growth in the Lincoln area, and the future need for investment there in new infrastructure could potentially be deferred or avoided using a flexibility solution. The Lincoln area also has relatively high uptake of new technology such as electric vehicles, solar PV and battery storage.

This project is being approached as a trial to learn more about what capability exists with potential flexibility suppliers and the feasibility, costs, and benefits of such a solution. While, ideally, the solution will deliver benefits of deferral or avoidance of new capital expenditure on infrastructure, it will also provide knowledge on whether flexibility is a useful solution to Orion generally. Knowledge gained from this trial will be used to inform any future flexibility opportunities in the Orion region.

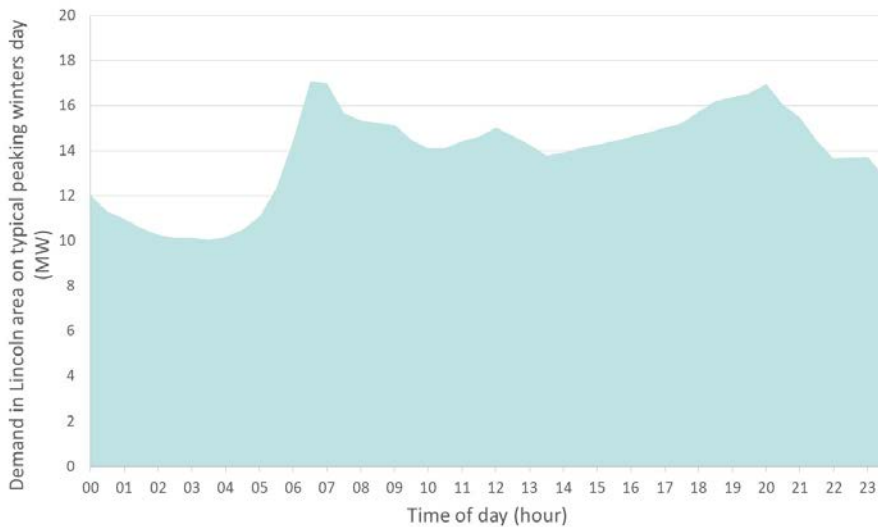
Supply to the Lincoln area is currently by way of 66kV lines from the Islington Grid Exit Point (GXP). This supply is distributed locally through 2 x 10 MVA transformers at Lincoln zone substation and 23 MVA and 10 MVA transformers at Springston zone substation.

There are plans in the future to upgrade the local infrastructure to 2 x 23 MVA transformers at Springston zone substation and 2 x 23 MVA transformers in a newly built zone substation at Greenpark. Greenpark zone substation would be located to the east of Lincoln township, given the direction of residential growth in the area. To enable the Greenpark zone substation, various sub-transmission enabling projects to reinforce the network into the area will also be undertaken by Orion.

The construction of a new zone substation at Greenpark will at some point be required given steady demand growth is occurring in the area with the addition of approximately 130 households per annum, representing an annual growth in demand of approximately 0.5 MVA.

The typical load profile in the Lincoln area from May to October is shown in Figure 2. The increase in residential load is exacerbating the typical peaks around 6am to 9am and 5.30pm to 9pm.

Figure 2: Typical Lincoln May to October weekday profile showing morning and evening



In addition to residential growth, Lincoln University is a major load in the area, and it has the potential to considerably add to the region’s demand as it expands and decarbonises.

If demand growth from Lincoln University is limited, the Greenpark substation build may not occur until later this decade. However, the chance of this occurring is considered minor. This is because we are presently expecting Lincoln University’s peak demand to grow considerably in the next few years.

On balance of probability, we are expecting Greenpark to be built around 2025. Under this scenario, there is the potential that the Greenpark substation can be delayed by a year or more by a flexibility solution.

However, as Lincoln University finalises its own plans, it may be that Lincoln University demand growth will be of such size that the Greenpark substation will need building by Orion in 2025 regardless of whether flexibility in the area is available from suppliers or not (i.e. Lincoln University peak demand growth may be many times bigger than the flexibility available, meaning the Greenpark build must occur in 2025). If this is the case, while Orion will not get any benefit from the deferral of expenditure from any flexibility trial, we will get other learning benefits as discussed above. Consequently, even under this scenario we may still proceed with the Lincoln flexibility trial depending on the price indications of Respondents to this EOI.

## 3.2 Flexibility (Network Support)

### What is flexibility?

Flexibility is the modification of generation and/or consumption patterns, in response to an external signal (e.g. price) to provide a service within the energy system.

Flexibility typically involves the use of one or more of a range of potential options such as:

- Photovoltaic electricity generation (PV) or other renewables-based electricity generation
- Battery storage system
- Aggregated PV/battery storage system
- Aggregated loads such as heating, cooling or irrigation

Other electricity distribution businesses (EDBs) in New Zealand are currently investigating or implementing flexibility solutions and there is also international activity in this area.

### Benefits of flexibility

Flexibility solutions offer several potential benefits including:

- Avoided or deferred cost of traditional network infrastructure
- Reduced charges from Transpower leading to lower customer costs
- Reduced likelihood of power cuts to consumers
- A lower cost solution than building new poles and wires
- Reduced carbon emissions through reduced need for fossil fuel based peak generation
- Helping address power quality issues
- More efficient use of resources and infrastructure in Orion area and nationally

### Key characteristics of an effective flexibility solution

To be effective, flexibility solutions need to have:

- **Capacity** to meet the level of demand required
- **Availability** at the times and locations needed
- **Reliability** to deliver the supply when required
- **Sustainability** to be able to continue to be available, including recharging where relevant from one period of requirement to the next.
- **Lower price** than network build solutions

Additionally, flexibility solutions from a single provider or multiple providers should not cause instability in the network.

## 3.3 Scope, Characteristics and Requirements for Flexibility

### 3.3.1 Quantity, timing, location, and type of flexibility required

Based on network scenario modelling carried out by Orion, the required level of flexibility has been calculated to be 500kW in the period 1 May to 31 October 2025.

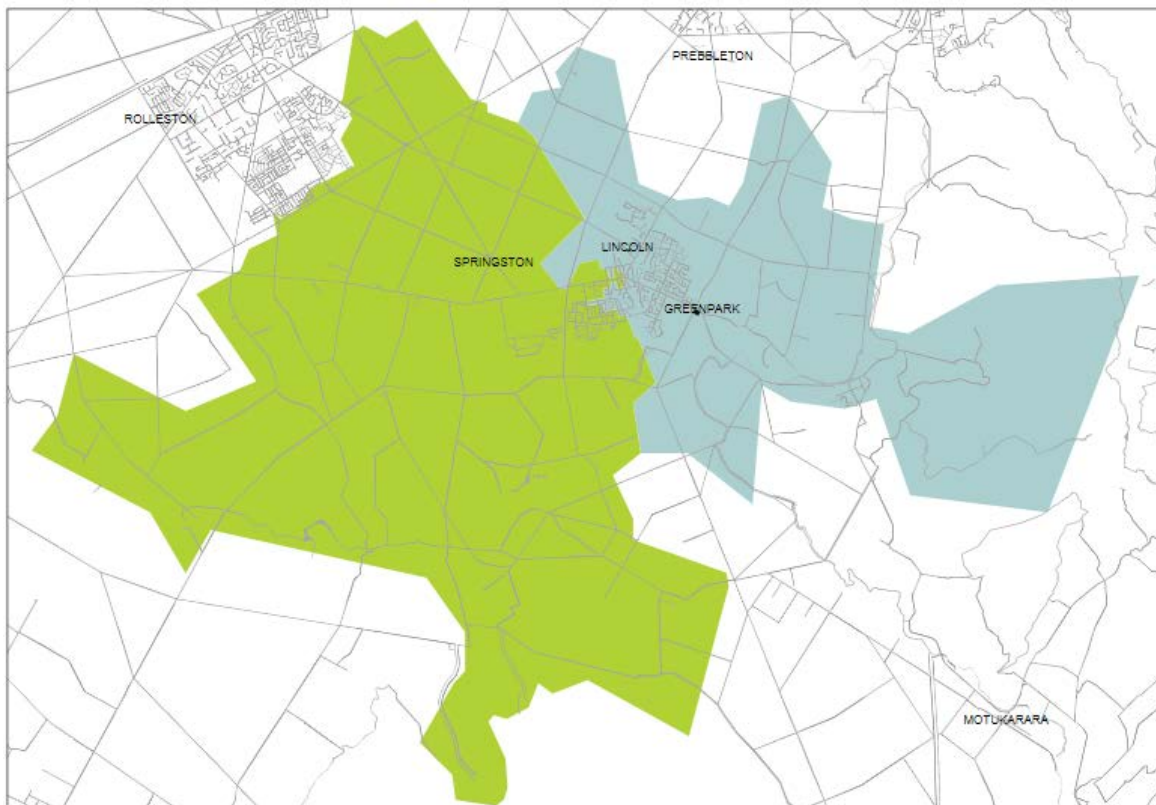
To ensure systems are working effectively by 2025 we are seeking 250kW of support to be available for testing in 2024, starting 1 May 2024 through to 31 October 2024.

Orion is willing to consider solutions capable of delivering the entire level of flexibility required, or a subset of it, subject to a minimum contracted level of support, in both 2024 and 2025, of 100kW per Successful Respondent.

This flexibility will need to be reliably available for a minimum of 4 consecutive ½ hour periods, normally but not exclusively within the periods of 6am to 9am and 5.30pm to 9pm, and reliably available for up to 40 ½ hour periods per annum in each of May to October 2024 and May to October 2025. If flexibility suppliers have solutions that can operate for longer than 4 consecutive ½ hour periods, and still deliver a minimum

contracted level of support of 100kW, they should advise us of this.

Given Orion's network design, Successful Respondents will need to have flexibility support that is geographically located in the either the green or light blue shaded areas shown in the map below. (This map is reproduced in Appendix 1 in larger scale). The green shaded area shows the area that the Springston zone-substation typically feeds, while the light blue shaded area shows the area the Lincoln zone substation feeds. Any flexibility that is located outside the green or light blue highlighted areas shown below will not contribute to the possibility of Greenpark zone substation construction being deferred and thus cannot be included in any potential solution.



It is important to note that any flexibility support located at customer sites that are classified as a Major Customer for pricing/charging purposes by Orion, will not be eligible to receive any payments for flexibility support for those periods where the flexibility support is requested and operated during the time period where a major customer control period is occurring, unless the proposed flexibility is an additional response that does not usually occur during control periods. This is to avoid 'double dipping' during such control periods.

Should the proposed flexibility be an additional response that does not usually occur during Major Customer control periods, the Respondent would need to be able to verify this to Orion's satisfaction to receive any flexibility payment. We also note that it is likely that the majority, if not all, of the up to 40 ½ hour periods we may seek flexibility for are likely to coincide with major customer control periods.

The following customers are classified as Major Customers in the area where flexibility support is requested:

- Lincoln University
- AgResearch
- New World Lincoln

- New Zealand Institute for Plant and Food Research
- Manaaki Whenua - Landcare Research

Respondents should note that Orion does not have, nor currently intend to provide, aggregation services. These must be part of any Response, and be able to be offered by the Respondent, when required.

### 3.3.2 Reliability and response time

Any solution will ideally be activated without advance notice, and so be able to respond in real time. For this trial however we will consider other lead times for notice for operation. Respondents to the EOI should specify what lead time for notice of operation is required, however note that Orion's preference is for shorter periods over longer periods.

Any solution must respond with sufficient capacity whenever required and without exception.

The Contract to be signed with the Successful Respondent(s) will include a penalty for non-delivery which will reflect any costs incurred by Orion and Orion's customers. More details of this will be available at the RFP stage.

### 3.3.3 Technology integration

Orion must have confidence that any flexibility support can be controlled appropriately and reliably.

Successful Respondents will need to provide and operate a suitable communications interface, which must interface with Orion's systems so that the flexibility can be directly or indirectly managed from Orion's operations centre – ideally via Orion's Advanced Distribution Management System (ADMS). The interface will need to provide Orion with visibility into the status of the flexibility resources and their available capacity and/or storage. It must be able to receive event notifications, event instructions or urgent instructions. Other interfaces and data may be required dependent on the type of flexibility provided. Successful Respondents will be required to work with Orion to establish operational requirements of the interface(s).

The interface should be an interface that can be, or is, widely used in the industry and is not bespoke. Orion is open to ways in which an event instruction, and information on flexibility status, is communicated between parties and is willing to consider all international smart grid standards and communication protocols (such as the IEC standards), including ripple, if they comply with Orion's connection and protection standards.

If the proposed flexibility solution is a distributed resource (e.g. home storage batteries) then the Respondent must provide some aggregation capability to ensure efficient coordination between all distributed resources.

### 3.3.4 Pricing

Respondents are to comment on their proposed basis of pricing in their EOI responses. For example, pricing could be based on a fixed monthly or annual fee (an availability payment) and/or a charge per kW available and kWh delivered (a usage payment).

## 3.4 Key outcomes

This project is being developed as a trial to learn about technical and financial aspects associated with

flexibility options that could be implemented in Lincoln and potentially further across the Orion network.

There are several specific outcomes that we are trying to derive from this project, including:

- Identifying what flexibility solutions may be available and suitable
- Testing the implementation and delivery of flexibility solutions
- Measuring the effectiveness of flexibility solutions in terms of delivering the required peak load reduction and deferred capital expenditure
- Informing any future flexibility opportunities elsewhere in the Orion region
- Stimulating the flexibility market
- Developing necessary documentation, Contracts and systems for flexibility solutions.

### 3.5 Contracts and insurance

It is our intention that within the RFP documentation, to be released to short-listed Respondents in late February 2023, as per the proposed timeline detailed in Section 2.2, will be a draft Contract for the provision of the flexibility service. This will allow recipients of the RFP to review Contract Terms and advise of any requested changes. This process will advance the speed with which final Contracts can be signed with any ultimately Successful Respondent. Consequently, given our aim is to advise Respondents of their success with their RFPs in late April 2023, we are envisaging final Contracts could be signed with Successful Respondent(s) in June 2023.

This will allow Successful Respondent(s) a period of at least 10 months to ensure their proposed solution is in place ready for operation from 1 May 2024. As detailed in Section 3.3.1, we are seeking a total of 250kW of support to be available for testing in May to October 2024.

Depending on the success of the trial and the load growth that has occurred in the Lincoln area in the intervening years, we may wish to seek to extend the flexibility service offered by the Successful Respondents into May to October 2026 and beyond. However, we are currently unable to confidently forecast the kW level of flexibility needed in 2026 (it would likely be more than 500kW) and length of time that support would be required in 2026. Hence this extension into 2026 will not be part of any final Contract signed with any Successful Respondent but is merely an indication of potential at this stage. In other words, initial contract length is two years (2024 and 2025).

We will expect Successful Respondent(s) to any RFP to have insurance cover that is suitable in nature and size of cover for the proposed solution. Insurance cover requirements will be built into the final Contract.

## Section 4: Other locations for flexibility

While this EOI is focused on the Lincoln area, we are interested to learn whether Respondents can potentially offer flexibility support in other locations in the Orion region.

Question 9 in the EOI Response Form provides the opportunity for Respondents to identify any flexibility resource that they may potentially be able to offer in other parts of the Orion network.

This can be independent of any resource that may be available to offer in Lincoln, i.e. it is open to Respondents able to offer a solution in Lincoln, or not.

Respondents that can potentially only offer a flexibility solution outside of Lincoln need not provide answers to all the questions in the Response Form. Answers to questions 1, 2, 3 and 9 will be sufficient in that case.

## Section 5: Our evaluation approach

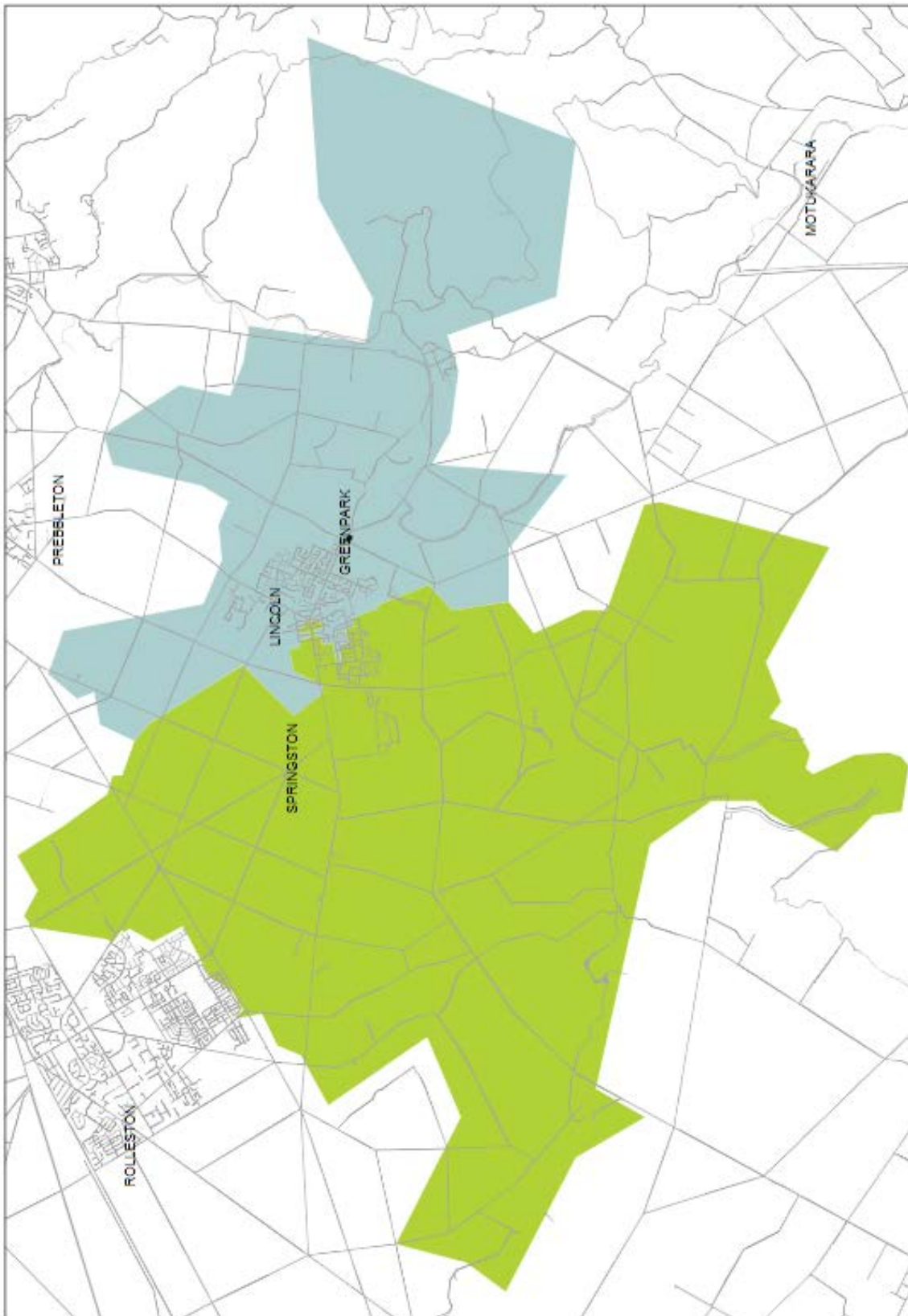
Our Evaluation Approach, used to assess and shortlist Respondents to this EOI, will consider how well Responses meet our Requirements as set out in [Section 3: Our Requirements](#), as well as meeting other Orion objectives such as broader social, environmental, cultural, and economic outcomes and being a zero or low carbon solution.

Orion will evaluate Responses to this EOI on several criteria including, but not necessarily limited to:

1. **Track record** – previous projects where the Respondent has supplied flexibility solutions
2. **Capability of the Respondent to deliver** – technical competencies, specialist/appropriate equipment and demonstrating an understanding of all aspects of a project of this type. This includes Health and Safety management
3. **Capacity of the Respondent to deliver** – the resources available to complete the project as well as resources to address any issues and challenges
4. **Proposed solution** – how the Respondent proposes to structure their solution and what are their plans for delivery and technology integration
5. **Price** – both the quantum of payment and the pricing structure (e.g. availability payment vs usage payment)
6. **Reliability** – how confident Orion is that the proposed solution will meet Orion’s reliability and operational requirements
7. **Broader Outcomes** – how are non-operational factors for the project managed for the best outcomes for all stakeholders.



## Appendix 1: Location map of the area where flexibility is needed



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