

Top Energy Limited

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Application for an Exemption pursuant to Section 90 Electricity Industry Act 2010

Date: 12 December 2019

Applicant: **Top Energy Limited**
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Applicant's contact: **Russell Shaw**
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Top Energy Limited
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Application: Pursuant to section 90 (1) of the Electricity Industry Act 2010 (**Act**), application is hereby made to the Electricity Authority (**Authority**) for exemptions in respect of Section 76 under Part 3 of the Act.

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Background

1. On 7 October 2017 the Authority granted Top Energy Limited (**Top Energy**) an exemption from the requirements to comply with arm's-length rules 9 and 10 in respect of Top Energy's geothermal generation at Ngawha Springs geothermal plant owned by its wholly owned subsidiary Ngawha Generation Limited (**NGL**)(**Ngawha Exemption**). The generation capacity to which the Ngawha Exemption applied reflected the existing nameplate capacity of 32 MW and the proposed expansion of the existing plant. The Ngawha Exemption was granted for a period of 10 years to 1 November 2027.
2. On 11 November 2019, the Ngawha Exemption was amended to apply to nameplate capacity of 75 MW and the expiry date was extended to 31 July 2052.
3. The Ngawha Exemption only applies to the geothermal generation at Ngawha Springs. At the time of the original application for the Ngawha Exemption, a further exemption application in respect of diesel/bio diesel generators was made by Top Energy. That application was subsequently separated from the application relating to the Ngawha Springs generation by the Authority and was not progressed by Top Energy.
4. This application revives the original application for an exemption in respect of the ownership and operation of diesel/bio diesel generators by Top Energy for network support purposes.

Urgency

5. Top Energy requests that the application is dealt with as a matter of urgency. It believes it is appropriate for it to be treated with urgency, because in the absence of an exemption for the ownership and operation of these generators, from June 2020 when the Ngawha Expansion is expected to be in the course of commissioning, it will not be possible for Top Energy to operate the generators it currently owns and operates, without breaching section 76 of the Act. Accordingly, Top Energy will not be able to maintain supply to approximately 12,000 remote electricity consumers when network failure occurs or maintenance is required (approximately 10, 8 hour shutdowns per annum).
6. The need for urgency has not arisen through inactivity on Top Energy's part. As the Authority is aware, Top Energy is currently in the course of expanding its existing geothermal generation capacity at Ngawha Springs. In light of the original terms of the exemption granted by the Authority in respect of the expanded generation at Ngawha, it was not appropriate for Top Energy to rely on the exemption and it determined that the expanded capacity at Ngawha would be connected to the national grid. As a consequence, the connected generation capacity of Top Energy would allow Top Energy to use of diesel/bio diesel generators to manage supply in circumstances of network outage without being required to comply with the corporate separation and arm's-length rules. Top Energy therefore went ahead with acquisition of the diesel/bio diesel generators and these will become available for use on Top Energy's network from late February 2020.
7. In July 2019, after discussions with Transpower, it became apparent that the costs of connecting the expanded capacity from Ngawha to the national grid were prohibitive and materially adverse to the interests of electricity consumers in Top Energy's distribution network area. It was therefore necessary for Top Energy to seek an amendment to the Ngawha Exemption. This was granted by the Authority on 11 November 2019.

Introduction

8. The circumstances in which network companies operate in New Zealand are rapidly changing. Network companies must now examine whether the construction of new lines and replacement lines is appropriate and whether other means of managing reliability and security of supply obligations can be more effectively and economically efficiently adopted. As the Authority will be

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- aware, Eastland, Unison and PowerCo already operate diesel generators for network support purposes. None of these entities have the generation capacity that Top Energy (through NGL) has.
9. Specifically, in the context of a largely rural radial line network where various parts of the network supply energy to a few thousand and (often) less customers, the use by network companies of strategically installed diesel or bio diesel generators to maintain supply when planned or unplanned outages have interrupted supply, has become the standard tool for use by network companies for restoring supply. The use of such generators is now proving to be a more effective and economically efficient method of dealing with network construction and maintenance issues than simply constructing more lines.
 10. If generation is used for network purposes, it makes little practical or economic sense to corporately separate that generation from the network company, and yet where the capacity thresholds are breached, that is what section 76 of the Act requires. Additionally, that generation is required to be operated at arm's length in those circumstances, which again, when it is being operated for network purposes, makes little economic sense.
 11. Top Energy's circumstances are unique in that few network companies own generation with the capacity of Ngawha. However, the Ngawha Exemption applies only to the Ngawha generation and a further exemption is required by Top Energy to operate the diesel/bio diesel generators.

Confidentiality

12. No Confidentiality in respect of any information in this application is sought.

Exemption in respect of the operation by Top Energy of diesel/bio diesel generators for network security of supply and peak demand purposes

13. Application is hereby made to the Authority under Section 90 (1) (a) of the Act by Top Energy for an exemption from the requirements to comply with section 76 (1) (corporate separation) and section 76 (2) (arm's-length rules) but only in respect of the diesel/bio diesel generators Top Energy has purchased and intends to use for the purposes of maintaining supply when planned or unplanned outages would otherwise interrupt supply and to sell any resulting incidental generation on the wholesale market as set out below:
14. In respect of 3.65 MW diesel/bio diesel generation located at Taipa, an exemption to Top Energy to operate such generation as follows:
 - (a) In respect of 3.65 MW for the purposes of network support in circumstances of an unplanned network outage; and/or
 - (b) In respect of 3.65 MW for the purposes of network support in circumstances of a planned network outage;

Note 1: Resource Consents for the generators at Taipa only allow them to be run for planned and unplanned network outages.

Note 2: It is not intended, and the Network Development Plan does not make provision for, the building of a second 33kV line to the Taipa Zone Substation. This backup generation is therefore intended to stay in location for the life of the generation asset.
15. In respect of 8.16 MW diesel/bio diesel generation located at Bonnetts Road, Kaitia an exemption to Top Energy to operate such generation as follows:
 - (a) In respect of 8.16 MW for the purposes of network support in circumstances of an unplanned network outage; and/or
 - (b) In respect of 8.16 MW for the purposes of network support in circumstances of a planned network outage; and/or
 - (c) In respect of 8.16 MW, the ability to sell such generation into the wholesale market with the intention of taking advantage, as a price taker, of prices at the time so as to, in effect, lower the costs of delivered energy to consumers in the Far North as a result of Top

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Energy's capped regulatory revenue. In this respect it should be noted that this relates to price peaks and not demand peaks arising from network constraints. The network area concerned has no capacity constraints and has sufficient capacity headroom to accommodate future demand.

- (d) For a period of time until the second 110kV line to Pamapurua (Kaitaia) grid substation is built and the existing Kaikohe to Kaitaia line is refurbished.
16. In respect of 3.06 MW diesel/bio diesel generation located at Top Energy's Kaitaia Depot an exemption to Top Energy to operate such generation as follows:
- (a) In respect of 3.06 MW for the purposes of network support in circumstances of an unplanned network outage; and/or
 - (b) In respect of 3.06 MW for the purposes of network support in circumstances of a planned network outage; and/or
 - (c) In respect of 3.06 MW, the ability to sell such generation into the wholesale market with the intention of taking advantage, as a price taker, of prices at the time so as to, in effect, lower the costs of delivered energy to consumers in the Far North as a result of Top Energy's capped regulatory revenue. In this respect it should be noted that this relates to price peaks and not demand peaks. The network area concerned has no capacity constraints and has sufficient capacity headroom to accommodate future demand.
 - (d) For a period of time until the second 110kV line to Pamapurua (Kaitaia) grid substation is built and the existing Kaikohe to Kaitaia line is refurbished.
17. In respect of 2.0 MW diesel/bio diesel generation located at Omanaia an exemption to Top Energy to operate such generation as follows:
- (a) In respect of 2.0 MW for the purposes of network support in circumstances of an unplanned network outage; and/or
 - (b) In respect of 2.0 MW for the purposes of network support in circumstances of a planned network outage; and/or
- Note: It is not intended, and the Network Development Plan does not make provision for, the building of a second 33kV line to the Omanaia Zone Substation. This backup generation is therefore intended to stay in location for the life of the generation asset.
18. In respect of 1.0 MW diesel/bio diesel generation located at Pukenui an exemption to Top Energy to operate such generation as follows:
- (a) In respect of 1.0 MW for the purposes of network support in circumstances of an unplanned network outage; and/or
 - (b) In respect of 1.0 MW for the purposes of network support in circumstances of a planned network outage; and/or
- Note: The Network Development Plan does not make provision for the reinforcement of this part of the network with lines. This backup generation is therefore intended to stay in location for the life of the asset.
19. All electricity generated by such diesel/bio diesel generators, will be sold into the wholesale electricity market. As the amounts generated will be small, spasmodic and usually unpredictable, the price received for these volumes will be determined by the ruling price set by the market.

Background to the applications

Top Energy

20. As the Authority knows, Top Energy carries on the business of distribution business as defined in the Act. It owns and operates the local distribution network in the Far North region. The area reticulated is approximately 6,800 square kilometres. The geographic boundary is approximately 20 kilometres north of Whangarei at Hukerenui and generally equates to the Far North District

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Council territorial authority. A total of 32,000 consumers are supplied by 4,016 kilometres of lines with an Regulated Asset Base of \$260 million. It also has the geothermal generation at Ngawha.

21. The area in which Top Energy's distribution network is located is economically disadvantaged in comparative terms, with relatively low household incomes relative to the national average. The customer density is 7.7 per kilometre of line compared to the national average of 12.2 customers per kilometre of line. Many consumers on the Top Energy network live in energy poverty.
22. Top Energy is a regulated electricity distribution business as defined in the Commerce Act 1986. Although it is owned entirely by the Trustees of the Top Energy Consumer Trust, the Trustees of that trust are not elected by consumers. Top Energy is therefore not an exempt electricity distribution business and is subject to both the information disclosure regulatory regime and the default price-quality path regulatory regime under Part 4 of the Commerce Act.
23. Further information on Top Energy is already held by the Authority as a result of its application in respect of the expanded generation capacity at Ngawha, and which is reflected in the authority's Decision 3. For the purposes of this application, the information relating to Top Energy contained in the application for the Ngawha Exemption and the application for amendment of that exemption as set out in the application dated 27 August 2019, to the extent necessary, is hereby incorporated by reference, in this application.
24. In addition to that information, Top Energy provides the following information which specifically relates to the diesel/bio diesel generator exemption now applied for.
25. As part of its network assets, Top Energy currently owns 3.65 MW (nameplate) diesel generation located at Taipa and which is used to maintain supply in the local area when supply through fixed lines has been lost for either planned or emergency unplanned work.
26. Top Energy has acquired (but not yet brought into operation) further diesel/bio diesel generators with a combined aggregate of 14.22 MW (nameplate). Such generators, as is the case with the existing 3.65 MW diesel generator at Taipa, will be used solely for the purpose of maintaining network supply when planned and unplanned outages on the network occur or to lower the delivered cost to consumers at peak times. Top Energy intends to construct a second 110kV line between Kaikohe and Kaitia. Construction of the 110kV line has been delayed by challenges by landowners to the consents granted to Top Energy by the Crown under section 186 of the Public Works Act. There is no certainty when these appeals will be decided or whether they will be decided in Top Energy's favour. In the meantime, Top Energy must provide the best levels of service that it can to its customers.
27. In short, these generators will improve the security of supply to geographically remote areas, reduce the costs of maintaining reliable supply to such areas, address the risk of obsolescence of new line assets arising from technological advances as well as enabling Top Energy to manage peak demand on its network.
28. The Taipa generation is located at Taipa because Top Energy's network extends beyond that point as a radial line which serves 4,108 consumers. If supply through Top Energy's fixed radial line is lost to that area, the generator is used to supply those customers. Since its installation in 2012, there have been 17 instances of lost supply during which it has operated to maintain supply. In total, the electricity generated through the Taipa Generator since installation has been 99MWh.
29. The additional generators will be located around the Top Energy network because:
 - (a) 8 x Generators will be co sited at Bonnetts Rd as a generation farm to provide backup supply for 4417 customers on the Top Energy fixed radial lines. If the supply is lost to that area, the generator is used to supply those customers.
 - (b) 3 x Generators will be co sited at the Kaitia Depot to provide backup supply for 1,657 customers on the Top Energy fixed radial lines. If the supply is lost to that area, the generator is used to supply those customers.

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- (c) 3 x Generators:
 - (i) 2 generators will be located at Omanaia in the interim until the 33kV line is rebuilt, during which time they will provide backup supply for 1,534 customers on the Top Energy fixed radial lines. If the supply is lost to that area, the generator is used to supply those customers.
 - (ii) 1 generator will be installed at Pukenui to provide backup supply for 1,138 customers on the Top Energy fixed radial lines. If the supply is lost to that area, the generator is used to supply those customers.
- 30. Top Energy anticipates that these generators will run only between 16 and 25 hours per annum for planned and unplanned outages and potentially another 45 hours per annum to reduce the delivered cost of energy to consumers.

Requirement for the exemptions sought

- 31. Section 76 (1) of the Act provides that:
"the person or persons who carry on the business of distribution must carry on that business in a different company from the company that carries on the business of a connected generator or a connected retailer."
- 32. Section 76(2) of the Act provides that:
"Every person who is involved in a distributor, and every person who is involved in a connected generator or a connected retailer, must comply, and ensure that the persons businesses comply, with the arm's-length rules."
- 33. A connected generator is defined in section 76(3) in relation to a distributor means a generator
 - (a) that has a total capacity of more than 50 MW of generation that is connected to any of the distributors network's; and
 - (b) in respect of which the distributor, or any other person involved in the distributor is involved.
- 34. Currently, Top Energy's generation is made up of the 3.65 MW diesel generator used for network support and the current 32 MW, but proposed 75 MW once the expansion is commissioned, generated at Ngawha.
- 35. Top Energy has acquired and intends to operate additional diesel/bio diesel generators with an aggregate nameplate capacity of 14.22MW giving a combined aggregate diesel/biodiesel generator capacity of 17.87 MW.
- 36. The ownership and operation of these generators will mean that Top Energy owns generation capacity greater than 50 MW. The requirements of section 76 (1) and (2) of the Act require corporate separation and compliance with the arm's-length rules in respect of the ownership and operation of this diesel/bio generation. However, since their use will be restricted to network support, it is not appropriate, sensible, or economically efficient to locate these assets away from the network business. It is important that the management operating the network are also in charge of decisions relating to the need/desirability of running the diesel/bio diesel generation. Accordingly, an exemption from the section 76 (1) and (2) requirements is required.

Benefits of granting the exemptions sought

- 37. Top Energy had previously intended to construct a second 110kV line between Kaikohe and Kaitaia as referred to in paragraph 26. Given the lack of certainty referred to, Top Energy provide the best levels of service that it can to its customers and meet its regulatory supply obligations by other means. The use of diesel/bio diesel generators as an alternative to building a second line for security of supply purposes is currently more cost effective and has become a standard practice in New Zealand. Top Energy's modelling of the capital and operating costs of the diesel/bio-diesel option (including the much greater cost of the variable operating costs of the units) indicate that the economic life of second 33kV lines must exceed 30 years.

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Matters to be taken into account in considering application

38. The Authority has stated that it will consider whether granting an exemption would be contrary to the purpose of Part 3 and the Authority's objective set out in section 15 of the Act. The Authority will also take into account the following:

- *would the exemption promote, or not inhibit, competition in the electricity industry?*
- *would the exemption permit any involvement in a distributor and a generator or a retailer that may create incentives or opportunities to inhibit competition in the electricity industry?*
- *would the exemption, in respect of a business or involvement, create incentives or opportunities for a distributor to cross-subsidise the connected generator or a directly connected generator of over 250MW?*
- *would the exemption, in respect of a business or involvement, permit a relationship between a distributor and a retailer or generator which is not at arm's-length?*

Relevant markets

39. The Authority has determined that it will consider the relevant markets in the electricity industry. It is clear from Decision 3 and previous decisions in respect of applications under section 90 of the Act that the relevant markets are:

- (a) the national electricity generation and wholesale market (**National Wholesale Market**);
- (b) the electricity retail market corresponding with Top Energy's network (**Local Retail Market**); and
- (c) the electricity distribution market that corresponds with Top Energy's network (**Local Distribution Market**).

40. In Decision 3 the Authority referred to the existence of an additional market in respect of the provision of support services for distribution networks to maintain supply when planned and unplanned outages occur, support the quality of supply and reduce peak demand and to manage transmission charges or defer network investment (**Network Support Services Market**) and that there are potential participants who are prepared to compete in this market.
41. Top Energy does not agree that a market of this nature exists in the Far North region. Based on its experience there is no supplier which is prepared to offer these services to Top Energy.
42. Generators to support planned outages are available for hire in New Zealand and Top Energy accepts that these hire generators are able to be used where sufficient advance bookings can be made. However, hire generators are not always available even for planned outages. Top Energy has encountered circumstances where all hire generators were booked and not available. During the Rugby World Cup held in New Zealand in 2015 for example, no generators were available for hire in New Zealand. External events and circumstances of this nature therefore mean that there are no circumstances where reliance on hire generators provides an acceptable assurance of the availability of back up generation.
43. Top Energy has been unable to locate a generator hire entity that is prepared to guarantee generator availability for all planned network outages.
44. Even if generators are available at any point in time, they must be transported from Auckland to the Far North location at which they are required. This adds considerable cost to the overall cost of providing back-up electricity supply.
45. In addition, no generator hire entity has agreed with Top Energy to provide guaranteed generator availability for unplanned network outages on the Top Energy network. As well, the hire of generators for unplanned outages is operationally unsustainable. The delivery time for such equipment would be at least 4-6 hours, not including the organisational time required to bring a unit to a point ready for departure from Auckland. In almost all circumstances, the fault will be restored before the generation support arrives on site.

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46. As a result, while, at best, generator hire entities provide ad hoc generation back up, this potential supply of back up generation does not provide the assurance of availability that Top Energy requires to meet the supply quality requirements under the default price and quality path.
47. Top Energy has sought alternative network support generation from other electricity sector participants for both planned and unplanned outages. None of those participants approached by Top Energy were prepared to provide such services. Top Energy understands that this is the case because the returns that were previously available under the Avoided Cost of Transmission pricing regime are no longer available and the provision of this service is therefore no longer economically viable.
48. Despite the Authority's view that there are persons prepared to provide network support for network outages, the reality is that from discussions Top Energy has held with other network companies and gentailers, it has been unable to secure such services.
49. Even if some participants were willing to provide the services, the costs of the provision of those services would, as a result of the matters outlined above, be prohibitive. This means that the costs of the provision of any network support would far exceed the costs of Top Energy owning and operating diesel generation to provide this support on an entirely on demand basis.
50. Accordingly, Top Energy considers that there is no Network Support Services Market for planned or unplanned outages and does not provide any further information or make any submission relating to those services for the purposes of this application.

In respect of each of these markets would the exemption promote, or not inhibit, competition?

51. In light of the above, this application addresses only those actual markets, which in Top Energy's submission, might be impacted by this application.

National Wholesale Market

52. The diesel/bio-diesel generation will be sold into the National Wholesale Market. Based on anticipated hours of operation of the diesel/bio diesel generation at a maximum of 160 hours per annum, generation of up to 3,000 MWhr per annum would be produced. This amount in a national market of over 44,380 GWh will be so small, that there will be no material promotion of competition in this market.

Local Retail Market

53. The ability to use diesel/bio diesel generation at times of network unavailability and for managing peak demand should be positive from the perspective of the Local Retail Market. This is because the operation of the diesel generation assets will improve resilience and reliability on Top Energy's distribution network and reduce capital expenditure on the network. In turn, this will mean retailers can have greater confidence in continuity of supply which in turn should promote competition in the local retail market.

Local Distribution Market

54. As has been determined previously by the Authority in relation to Top Energy's application in respect of the generation capacity at Ngawha, Top Energy, as the local electricity distributor, is a natural monopoly within its own distribution network area and any exemption could not, and would not, affect the level of existing competition or scope for potential competition within this market. If the units are permitted to run at times of peak wholesale market then there is an opportunity to reduce the delivered cost of energy to consumers. This is a result of the regulated lines business being revenue capped, any additional net lines revenue will be netted off against this cap reducing the cost per customer.

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In respect of each of these markets would the exemption permit any involvement in a distributor and a generator that may create incentives or opportunities to inhibit competition in the electricity industry?

National wholesale Market

55. All the diesel/bio diesel generation assets owned by Top Energy will only be used to provide network resilience and security at times of planned and unplanned outages on parts of Top Energy's distribution network or to lower the delivered cost of energy to Far North consumers. There is no intention that this generation will run except where network issues give rise to supply continuity issues. Market prices will only have an input to running the units during extreme market prices and Top Energy will be a price taker in any event.
56. The costs of fuel to run the diesel/bio diesel generation will likely be in the order of \$300 per hour. In addition, fixed maintenance costs will be incurred. Although the electricity generated will be sold into the National Wholesale Market, the likely amount which will be received under normal circumstances will represent less than one third of that cost. As a result, the likely payment for generation produced by the diesel/bio diesel generators will not incentivise the running of the generation except at times of peak pricing in the market. In reality, the costs of running the generation are a natural disincentive to run the generation for any longer period than is necessary to maintain supply while that part of the network is the subject of an outage.
57. Based on its historical data, Top Energy expects the generation produced on a per annum basis by the diesel/bio diesel generators to be approximately 2,600 MWh.
58. Given the infrequency of outages and the very small supply area involved relative to the overall wholesale market, the impact would be immaterial.

Local Retail Market

59. The generation produced by the diesel/bio diesel generators will be sold by Top Energy into the National Wholesale Market and not to an end use customer on Top Energy's network. Accordingly, the granting of the exemption will not create incentives or opportunities to inhibit competition in this market.

Local Distribution Market

60. As determined in Decision 3, and referred to in paragraph 54, the granting of the exemption in respect of additional generation capacity in Top Energy's network will neither promote nor inhibit competition in this market.

Would the exemption in respect of a business or involvement or interest, create incentives or opportunities for a distributor to cross subsidise a connected generator namely NGL?

61. The use of the diesel/bio diesel generation does not create any opportunity to cross subsidise a connected generator. Top Energy will have paid for the generation to enable it to perform its obligation to maintain supply. The generators are network assets, are part of Top Energy's Regulated Asset Base and used solely for network purposes. The costs of acquisition and the costs incurred in running the generation are met by Top Energy itself, within the Regulatory Price Cap.

Would the exemption in respect of a business or involvement permit a relationship between a distributor and a generator which is not at arm's length?

62. Top Energy will own and make decisions as to when the network unavailability requires the diesel/bio diesel generation to run. Accordingly, the operation of that generation is solely the decision of Top Energy. NGL has and will have no involvement in the decisions whether to run the generation and is entirely unconnected to Top Energy in relation to those decisions. As a

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consequence, the exemption granted will not permit a relationship between a distributor and a generator in relation to that generation which is not at arm's-length.

Declaration

63. The required declaration is attached.

Further Information

64. For further information, relating to this application, please contact in the first instance, the applicant's contact as set out on the front page.

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DECLARATION

This application is made by **TOP ENERGY LIMITED (Company)**

The Company hereby confirms that:

- all information requested by the Electricity Authority is provided;
- all relevant information known to the applicant is provided; and
- all information provided is true and correct as at the date of this application.

The company undertakes to advise the Authority immediately of any material change in circumstances relating to the application.

Top Energy Limited

Date: 12TH DECEMBER 2019

Signed by:

Russell Shaw

Chief Executive Officer

I am the Chief Executive Officer of the Company and am duly authorised to make this application.

Date: 12TH DECEMBER 2019

Signed by:

Russell Shaw

Chief Executive Officer