

Bundle 1

Applications and supporting documents

Realnz.com

25 March 2022

By email and by courier

Planning, Permissions and Land,
Department of Conservation - Te Papa Atawhai,
Ōtepoti/Dunedin Office,
Level 1, John Wickliffe House,
265 Princes Street,
Dunedin 9016

✉ Lisa Wheeler lwheeler@doc.govt.nz; Judi Brennan jbrennan@doc.govt.nz;
permissions@doc.govt.nz

Attention: Lisa Wheeler

Dear Lisa,

Re: Real Journeys 2022 Te Ana-au Glowworm Caves Concession Application

This letter and the attached documents constitute:

- i. notice in writing to the Minister of Conservation and the Department of Conservation (including the person(s) now performing the functions of the District Conservator Te Anau, and the Regional Conservator Invercargill) of the desire of Real Journeys Ltd (formerly Fiordland Travel Ltd) to take a renewed lease for a further period of 27 years of the land specified in the preamble to the Deed signed on 30 June 1989 (PAC 14-06-02-01), pursuant to clause 17 thereof as added by the Deed dated 10 December 1992; and
- ii. an application to the Minister of Conservation for a concession for 27 years under Part 3B of the Conservation Act 1987, which is made without prejudice to the right to be granted a renewed lease independently of Part 3B.

This document has been prepared under time pressure, so may need to be amended or supplemented in due course.

The attached documents comprise:

- i. Applicant information form 1a;
- ii. Land use: use of public conservation land for private/commercial facility/structure form 3b;
- iii. Guiding/Tourism/Recreation: Watercraft activities form 4b;
- iv. Filming form 5a;
- v. Other activities (not covered in the above forms or in the new activity application forms that combine applicant and activity information) form 7a;
- vi. Aircraft Activities form;
- vii. Easement Application form;
- viii. Land Based Guiding Activities Application Form;
- ix. Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application;

- x. Real Journeys Concession Application Te Ana-au Glowworm Cave site infrastructure plans and photos;
- xi. Lease plan 17.3.22;
- xii. Insider Guide to Te Ana-au Glowworm Cave;
- xiii. Hydro Pipeline Survey;
- xiv. Longitudinal section of hydro pipeline;
- xv. Caves Intersafety Workplace Operational Surveillance Report; and
- xvi. Yanmar Generator Brochure.

As discussed in those documents, we contend that the proposed ongoing use of the Te Ana-au Glowworm Caves for tourism activities, established in 1948, is best addressed through the grant to us of a renewed 'exclusive' lease, with an easement for the hydro intake structures and pipeline. Nevertheless we trust that DOC will not make any decision with respect to the Te Ana-au Glowworm Caves without properly consulting with us; given that we have at least 55 years' experience operating the site and have made very significant investments in respect of it.

Please do not hesitate to contact us if you require any further information or other clarification regarding these matters.

Yours Sincerely



Paul Norris
Chief Conservation Officer
Realnz

Applicant Information Form 1a Notified or Non-notified Process



Department of
Conservation
Te Papa Atawhai

New Zealand Government

Is this the right application form for me?

This **Applicant Information Form 1a** – Notified or Non-notified Process must be completed for **the following longer term applications** (i.e. not one-off applications):

- Grazing
- Land use: Tenanting and/or using existing DOC facility/structure
- Land use: Use of public conservation land for private commercial facility/structure
- Guiding/Tourism/Recreation: Watercraft activities
- Filming
- Sports events
- Marine reserves application form 11a: Structure in a marine reserve

For other activities use the specific activity application forms that combine applicant and activity information or book a pre-application meeting.

How do I complete this applicant information form?

- Complete all sections of this **applicant information form**.
- In addition, you must complete the **activity application form/s** that you wish to undertake.
- DOC encourages electronic applications (e.g. typed Word document), rather than handwritten applications. Electronic applications are easier to read and less likely to be returned to you for clarification.
- If you need extra space, attach or include extra documents and label them according to the relevant section. Record all attachments in the table at the back of the application information form section **F Attachments**.

How do I submit my application?

Email the following to permissions@doc.govt.nz:

- **Completed applicant information form 1a**
- **Completed activity application form**
- Any other relevant attachments.

If I need help, where do I get more information?

- Check the [DOC webpage for the activity you are applying](#)¹ for.

¹ <https://www.doc.govt.nz/get-involved/apply-for-permits/apply-for-a-permit/>
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- Arrange a pre-application meeting (either face to face or over the phone) by contacting the [Department of Conservation Office](#)² closest to where the activity is proposed. You can use [DOC maps](#)³ to identify which District Office you should contact. Or arrange a meeting with any of our [four offices that process concessions](#)⁴ – choose the one closest to where the activity is proposed.
- If your application covers multiple districts, contact the office nearest most of the locations you are applying for, or nearest to locations you have a specific question about.

What happens next?

Once your application forms are received, your application will be assessed by DOC. If your application is complete, DOC will begin processing.

If your application is incomplete it will be returned to you for more information.

Why does DOC ask for this information?

The questions in this application information form and the activity application form/s are designed to cover the requirements set out in conservation legislation. Your answers allow us to assess:

- Your most up-to-date details so that DOC can contact you about your application.
- Your qualifications, resources, skills and experience to adequately conduct the activity on public conservation land.
- Your creditworthiness will help determine whether DOC should extend credit to you and set up a DOC customer accounts receivable credit account for cost recovery. To make this assessment DOC will supply your information to a credit checking agency.

Note:

- Personal information will be managed by DOC confidentially. For further information check [DOC's privacy and security statements](#)⁵.
- Information collected by DOC will be supplied to a debt collection agency in the event of non-payment of payable fees.

What fees will I pay?

You may be required to pay a **processing fee** for this application regardless of whether your application is granted or not. You may request an estimate of the processing fees for your application. If you request an estimate, DOC may require you to pay the reasonable costs of the estimate prior to it being prepared. DOC will not process your application until the estimate has been provided to you. In addition, if you are granted a guiding concession on public conservation land you may be required to pay annual **activity and management fees**. These fees are listed on the [DOC webpage for the activity you are applying](#)⁶ for.

DOC will invoice your processing fees after your application has been considered. If your application is large or complex, DOC may undertake billing at intervals periodically during processing until a decision is made. If you withdraw your application DOC will invoice you for the costs incurred up to the point of your withdrawal.

² www.doc.govt.nz/footer-links/contact-us/office-by-name/

³ <http://maps.doc.govt.nz/mapviewer/index.html?viewer=docmaps>

⁴ <https://www.doc.govt.nz/get-involved/apply-for-permits/contacts>

⁵ <https://www.doc.govt.nz/footer-links/privacy-and-security/>

⁶ <https://www.doc.govt.nz/get-involved/apply-for-permits/apply-for-a-permit/>

Your application will set up a credit account with DOC. See the checklist at the end of the form for the terms and conditions you need to accept for a DOC credit account.

Will my application be publicly notified?

Your application will be publicly notified if:

- It is a license with a term of more than 10 years.
- It is a lease.
- After having regard to the effects of the activity, DOC considers it appropriate to do so.

Public notification will increase the time and cost of processing of your application.

What does DOC require if my application is approved?

If your application is approved DOC requires:

- **Insurance** to indemnify the Minister of Conservation against any claims or liabilities arising from your actions. The level of insurance cover will depend on the activity.
- A copy of your **safety plan** audited by an external expert (e.g. Health and Safety in Employment (Adventure Activity) Regulations 2011 audit or a DOC listed organisation). See the [Safety Plan](#)⁷ information on the DOC website for further information.

Note: DOC/Minister can vary the concession if the information on which the concession was granted contained material inaccuracies. DOC may also recover any costs incurred.

⁷ <https://www.doc.govt.nz/get-involved/apply-for-permits/managing-your-concession/safety-plans/>

A. Applicant details

Legal status of applicant (tick)	<input type="checkbox"/> Individual (Go to 1)	
	<input checked="" type="checkbox"/> Registered company (Go to 2)	<input type="checkbox"/> Trust (Go to 2)
	<input type="checkbox"/> Incorporated society (Go to 2)	<input type="checkbox"/> Other e.g. Educational institutes (Go to 2)

1	Applicant name (individual)		
	Phone		Mobile phone
	Email		
	Physical address		Postcode
	Postal address (if different from above)		Postcode

2	Applicant name (full name of registered company, trust, incorporated society or other)		Real Journeys Limited	
	Trading name (if different from applicant name)		Realnz	
	NZBN if applicable (to apply go to: https://www.nzbn.govt.nz)	9429040267098	Company, trust or incorporated society registration number	154923
	Registered office of company or incorporated society (if applicable)		14 Captain Roberts Road, Te Anau 9600	
	Company phone	032497816	Company website	www.realnz.com
	Contact person and role		Fiona Black – Manager Concessions and Consents	
	Phone		Mobile phone	
	Email		Fiona.black@realnz.com	
	Postal address	P.O. Box 1, Te Anau	Postcode	9640
	Street address (if different from postal address)	14 Captain Roberts Road, Te Anau	Postcode	9600

B. Pre-application meeting

Have you had a pre-application meeting or spoken to someone in DOC?

No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>

- If yes record the:

Date of DOC pre-application meeting	14 October 2021
Name of DOC staff member	Judi Brennan, Permissions Manager, Vicki Crosbie, Permissions Team Leader, and Lisa Wheeler, Senior Permissions Advisor
Name of person who had the pre-application meeting with DOC	Mathew Day, General Manager Corporate Affairs, Realnz; Paul Norris, Chief Conservation Officer, Realnz; and Fiona Black, Concessions & Consents Manager, Realnz.

C. Activity applied for

Tick the **activity application form** applicable to the activity you wish to undertake on public conservation land. Complete the applicant information form and the activity application form and email them with any attachments to permissions@doc.govt.nz

ACTIVITY APPLICATION FORM*	FORM NO.	TICK
Grazing	2a	<input type="checkbox"/>
Land use: Tenanting and/or using existing DOC facility/structure	3a	<input type="checkbox"/>
Land use: Use of public conservation land for private/commercial facility/structure	3b	<input checked="" type="checkbox"/>
Guiding/Tourism/Recreation: Watercraft activities	4b	<input checked="" type="checkbox"/>
Filming	5a	<input checked="" type="checkbox"/>
Sporting Events	6a	<input type="checkbox"/>
Marine reserves application form: Structure in a marine reserve	11a	<input type="checkbox"/>
Other activities (not covered in the above forms or in the new activity application forms that combine applicant and activity information)	7a	<input checked="" type="checkbox"/>
Aircraft Activities		<input checked="" type="checkbox"/>
Easement		<input checked="" type="checkbox"/>
Land Based Guiding Activities		<input checked="" type="checkbox"/>

D. Are you applying for anything else?

Are you submitting any other application forms in relation to this application?

No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>

- If yes, state which application forms:

E. Background experience of applicant

Provide relevant information relating to your ability to carry out the proposed activity (e.g. details of previous concessions, membership of professional organisations, and relevant qualifications).

In 1954 Les and Olive Hutchins began operating the Manapouri-Doubtful Sound Tourist Company, running four-day excursions to and from Doubtful Sound. In 1966 Les and Olive acquired Fiordland Travel Ltd with its Te Anau Glowworm Caves and Milford Track Lake Transport operation and began trading as Fiordland Travel Limited. [Prior to 1966, the original Fiordland Travel Company operated the caves tours and lake transport from the rediscovery of the cave in 1948. The original company was responsible for the initial visitor access and development of the cave as a tourist attraction. This activity included the development of wharves, cave walkways, cave punts, the original Cavern House and the Hydro. At that time the caves were accessed by a range of company owned vessels including the *M.V. Tawera* which had a history operating on the lake since 1899.]

Continued expansion followed with the acquisition of the vintage steamship "TSS Earnslaw" in Queenstown in 1969 and with the establishment of cruises in Milford Sound in 1970. Since 2002 Fiordland Travel Ltd has operated all its tourism excursions under the 'Real Journeys' brand; in 2004 Stewart Island Experiences was established and in 2006 changed its company name to Real Journeys Limited. In 2013 Real Journeys also purchased Cardrona Alpine Resort and the 155-hectare property at Walter Peak which Real Journeys previously leased. Then in 2015 Real Journeys purchased the International Antarctic Centre in Christchurch and in 2016 Real Journeys took over 100% ownership of Queenstown Rafting and purchased Kiwi Discovery which were also wrapped into the Go Orange brand. In 2018 Go Orange purchased Queenstown Water Taxis and Thunder Jet.

In October 2018 the Wayfare Group was established and each company created or acquired by Real Journeys Limited became wholly owned subsidiaries of the Wayfare Group. Due to the fallout from COVID-19 in early 2021 Go Orange was absorbed into Real Journeys and all Go Orange concessions have been assigned to Real Journeys.

Now late in 2021 Wayfare has become RealNZ and while Cardrona Alpine Resort, Treble Cone and the International Antarctic Centre maintain their individual brands as RealNZ experiences, all the tourism brands including all the Go Orange Products come under the umbrella of RealNZ. Accordingly the RealNZ remains the largest tourism operator in the region with approximate 37 Department of Conservation Concessions / Approvals; several management agreements and operational bases in Christchurch, Milford Sound, Te Anau, Manapouri, Queenstown, Wanaka and Stewart Island.

F. Attachments

Attachments should *only* be used if there is:

- Not enough space on the form to finish your answer
- You have additional information that supports your answer
- You wish to make an additional request of DOC regarding the application.

Label each document clearly and complete the table below.

Section of the application form the attachment relates to	Document title	Document format	Description of attachment
All application forms	Real Journeys Concession application Te Ana-au Glowworm Caves site infrastructure plans and photos	PDF	Site photos, maps to provide an overview to the application
All application forms	Lease plan 17.3.22	PDF	drawing
Easement / Private structures	Hydro pipeline survey	PDF	drawing
Easement / Private structures	Longitudinal section of hydro pipeline	PDF	drawing
Private structures	Yanmar Generator Brochure	PDF	brochure
Private structures	Caves Intersafety Workplace Operational Surveillance Report	PDF	Site safety audit
All application forms	Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application	PDF	EIA
Land-based guiding activities / water craft	Insider guide Te Ana-au Glowworm Cave	PDF	brochure

G. Checklist

Application checklist	Tick
I have completed all sections of this applicant information form relevant to my application and understand that the form will be returned to me if it is incomplete.	<input checked="" type="checkbox"/>
I certify that the information provided in this applicant information form, and any attached additional forms is, to the best of my knowledge, true and correct.	<input checked="" type="checkbox"/>
I have completed the activity application form .	<input checked="" type="checkbox"/>
I have appropriately labelled all attachments and completed section F Attachments .	<input checked="" type="checkbox"/>
I will email permissions@doc.govt.nz my: <ul style="list-style-type: none"> • Completed applicant information form • Completed activity application form/s 	<input checked="" type="checkbox"/>

- Any other attachments.

H. Terms and conditions for a credit account with the Department of Conservation

Have you held an account with the Department of Conservation before?	Tick
No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>
If 'yes' under what name	Real Journeys Limited

In ticking this checklist and placing your name below you are acknowledging that you have read and agreed to the terms and conditions for an account with the Department of Conservation

Terms and conditions	Tick
I/We agree that the Department of Conservation can provide my/our details to the Department's Credit Checking Agency to enable it to conduct a full credit check.	<input checked="" type="checkbox"/>
I/We agree that any change which affects the trading address, legal entity, structure of management or control of the applicant's company (as detailed in this application) will be notified in writing to the Department of Conservation within 7 days of that change becoming effective.	<input checked="" type="checkbox"/>
I/We agree to notify the Department of Conservation of any disputed charges within 14 days of the date of the invoice.	<input checked="" type="checkbox"/>
I/We agree to fully pay the Department of Conservation for any invoice received on or before the due date.	<input checked="" type="checkbox"/>
I/We agree to pay all costs incurred (including interest, legal costs and debt recovery fees) to recover any money owing on this account.	<input checked="" type="checkbox"/>
I/We agree that the credit account provided by the Department of Conservation may be withdrawn by the Department of Conservation, if any terms and conditions (as above) of the credit account are not met.	<input checked="" type="checkbox"/>
I/We agree that the Department of Conservation can provide my details to the Department's Debt Collection Agency in the event of non-payment of payable fees.	<input checked="" type="checkbox"/>

Typed applicant name/s		Date	25 March 2022
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For Departmental use			
Credit check completed			
Comments:			
Signed		Name	
Approved (Tier 4 manager or above)		Name	



The Department recommends that you contact the Department of Conservation Office closest to where the activity is proposed to discuss the application prior to completing the application forms. Please provide all information requested in as much detail as possible. Applicants will be advised if further information is required before this application can be processed by the Department.

This form is to be used when the proposed activity is the building or use of any private or commercial facility or structure on public conservation land managed by the Department of Conservation. Examples may include lease of land to erect an information centre; authorisation to erect a weather station; or construct or lease a private/commercial campground or lodge. This form is to be completed in conjunction with either Applicant Information Form 1a (longer term concession) or Applicant Information Form 1b (one-off concession) as appropriate.

Please complete this application form, attach Form 1a or Form 1b, and any other applicable forms and information and send to permissions@doc.govt.nz. The Department will process the application and issue a concession if it is satisfied that the application meets all the requirements for granting a concession under the Conservation Act 1987.

If you require extra space for answering please attach and label according to the relevant section.

A. Description of Activity

Please describe the proposed activity in detail – where the site is located, please use NZTM GPS coordinates where possible, what you intend to use the building for, whether you intend to make any changes to the infrastructure. If necessary, attach further information including a map, a detailed site plan and drawings of proposal and label Attachment 3b:A.

We are applying for renewal of existing rights to occupy and employ public conservation land (PCL) located at the foot of the Murchison Mountains near the edge of Lake Te Ana-au in the Fiordland National Park, to utilise (including their repair and maintenance) the following infrastructure for the operation of the Te Ana-au Glowworm Caves tours (including under clause 17 (as added) of the Deed signed on 30 June 1989 [PAC 14-06-02-01]). This includes ownership, control, operation, repair, maintenance and management of services and facilities for year round use of the site (as applied for under various concession application forms as part of this overall application) – refer attached Te Ana-au Glowworm Caves site and infrastructure photos.

1. Deadmans Point Navigation Aids; the radar 'Reflector' and automated lighted south of Deadmans Point;
2. Walkway from Te Ana-au Glowworm Caves wharf to Cavern House (over the Tunnel Burn) and the cave entrance;
3. Caves walkway shelter (landward of the caves wharf);
4. Cavern House (visitor briefing area including enclosed diesel fire, interpretation panels, canteen, admin and toilet facilities);
5. The Beech House (another interpretation venue incl enclosed gas fire);
6. Wastewater Treatment Plant including pumps, meter, concrete walled septic tank, holding/pumping tanks, 'air' filtration equipment (to manage odours), piping + Advanced Enviro-Septic (AES) system;
7. Hydroelectric plant including water take infrastructure; pipes as well as for freshwater supply + UV treatment plant + water take infrastructure from the lake (pump + pipe);
8. Backup diesel generator (including batteries, wiring and lighting);
9. The viewing platform in front of Cavern House to provide an area to view Lake Te Ana-au;
10. Viewing platform / walkway over Tunnel Burn at Caves entrance;
11. Cave dam which provides control of water level in the Glowworm Grotto;
12. Walkways within the Te Ana-au Glowworm Caves;
13. Other on site equipment such as in cave emergency supply kits; First Aid, and firefighting equipment;
14. Walkways / tracks in (including railings) and around Cavern House, Beech House and generator/ hydro;
15. Cave punts;
16. Caves entrance protection structures;
17. Other cave health and safety measures – railing / fences; weather station, rock movement detection slides and river level meter etc.;
18. Other cave environment monitoring equipment and Cave site communication equipment;
19. Signage (including safety and interpretation);
20. Also to provide for the use of new and more sustainable technologies to operate the site with greater efficiency; safety and sustainably. For instance the installation of solar panels on the roof of Cavern House so we can use 'solar' power during the main times the hydro is unusable due to low stream flows. Or the installation of a micro-hydrogen generation plant to utilise the excess energy generated by

the hydro which is effectively wasted.

The Hydro plant consists of the following:

- Dam and intake structures (including surge tank and screens);
- Pipeline (combination of PVC, and steel pipes);
- Pelton Wheel;
- Generator and valves; and
- Discharge race.

Water is diverted from the un-named stream via the hydro-pipeline through the Te Ana-au Glowworm Caves hydroelectric generation plant. As “the crow flies” the dam and water diversion structures cover 397.32 metres from the start of the flume to the valve before the hydro plant - refer attached drawing of longitudinal section of pipeline.

- i. The plant has a dam and intake structures upstream where the excess water flowing down the un-named stream bed to Lake Te Anau is diverted down the hydro pipe. The water then passes through a Pelton wheel with a static head of approximately 81 metres to generate power then the water passes out the discharge race into Lake Te Anau. The hydro was installed in the early 1960s and has operated almost continuously since then.
- ii. The speed of the hydro generating plant has been reduced from 1200 RPM to 1000 RPM to reduce the frequency of the AC current to 50 cycles per second in line with NZ standards. The voltage generated is 240v for Cavern House and is reduced to 24v for mainly lighting within the cave for safety reasons.

Figure 1 – Flood debris in Tunnel Burn immediately outside Te Ana-au Glowworm Caves entrance



The Te Ana-au Glowworm Caves tours infrastructure has been and will be continually tweaked and upgraded over the years as some of the groundworks reach their end of life and further health and safety measures are required to ensure the safety of persons on site. Also all of the aforementioned ‘above ground’ infrastructure is located in native bush and on occasion trees need to be trimmed or removed to ensure the safety of the infrastructure and people at the site. In addition, the Tunnel Burn which runs through the Te Ana-au Glowworm Caves (and created the caves) is subject to flood and in extreme floods the infrastructure in the caves can be

damaged along with the external walkways over the Tunnel Burn and Caves entrance protection structures as happened in September 2021 – refer figure 1 and 2 below. Accordingly any concession needs to provide for the remediation of Te Ana-au Glowworm Caves infrastructure as a result of natural hazards.

Figure 2 – September 2021 slip outside Te Ana-au Glowworm Caves entrance

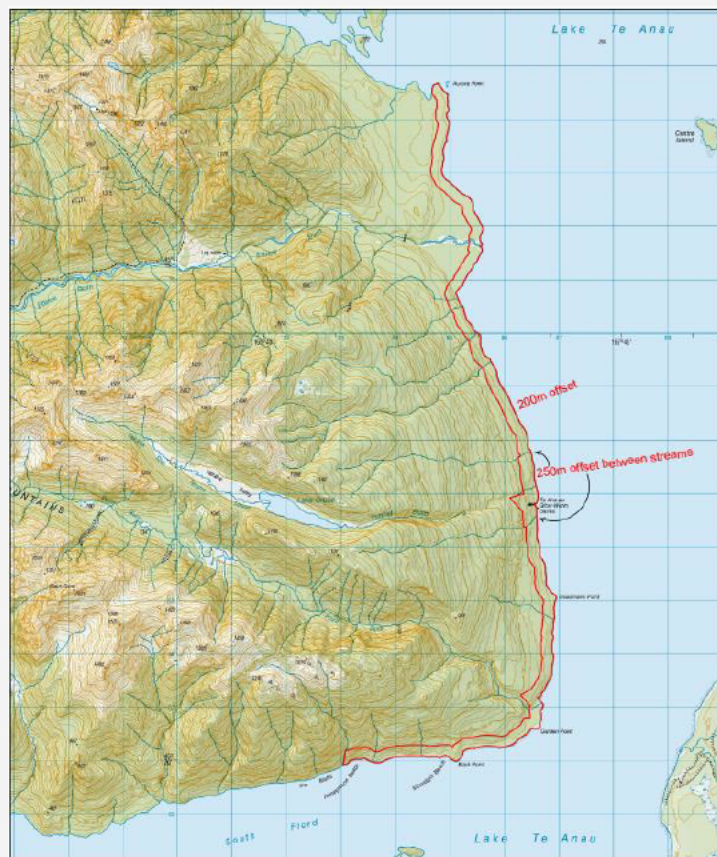


The Te Ana-au Glowworm Caves was located within Takahē Specially Protected Area (Murchison Mountains) – refer figure 3 below. However in 2018 the lake boundary of the Takahē Specially Protected Area was lifted by approximately 200 metres through gazettal; yet the hydro intake and some of the hydro pipeline is still above this ‘new boundary’- refer figure 4.

Figure 3 - Location and extent of Takahe Specially Protected Area



Figure 4 – new Boundary of Takahe Specially Protected Area



The approximate proposed lease area is 13.1 hectares with the northern boundary of the proposed lease area being the northern bank of the 'unnamed stream' which is utilised for the water take for the hydro and Cavern House water supply refer attached drawing (Lease Plan 17.3.22).

B. Alternative sites considered

If your application is to **build, extend or add** to any permanent or temporary structures or facilities on public conservation land, please provide the following details:

- Could this structure or facility be reasonably located outside public conservation land? Provide details of other sites/areas considered.
- Could any potential adverse effects be significantly less (and/or different) in another conservation area or another part of the conservation area to which the application relates? Give details/reasons

No alternative locations have been considered given the Te Ana-au Glowworm Caves are located in the Fiordland National Park and the infrastructure is only in place to support tours through Te Ana-au Glowworm Caves. Cave tours at this site have occurred since their rediscovery in 1948.

C. Larger area

Is the size of the area you are applying for **larger** than the structure/facility **YES** / ~~NO~~

If **yes**, please detail the size difference in the box below, and answer the following 3 questions, if **no** please go on to the next section:

Refer lease plan 17.3.22

Is this necessary for safety or security purposes? **YES** / ~~NO~~

Is this necessary as an integral part of the activity? **YES** / ~~NO~~

Is this essential to carrying on the activity? **YES** / ~~NO~~

If the answer to any of the above is yes, please provide details and attach supporting evidence if necessary and label Attachment 3b:C.

Real Journeys and its predecessor (the Hutchins family owned) Fiordland Travel Limited have been operating the Te An-au Glowworm Caves since 1966. Prior to 1966 the original Fiordland Travel Company operated the caves tour since their rediscovery in 1948. From the outset a sole operator model has been adopted for the protection of the caves, sustainable development and controlling access to the Takahe Specially Protected Area. All infrastructure at the site is privately owned, having been constructed and developed over the years to enable safe visitor access. It has been our experience that the site is most safely operated with effectively an exclusion area either side of the Te Ana-au Glowworm Caves wharf so that there is only one point of entry into the site. That is, we believe it would be unsafe for the public to be able to tie any vessel up along the shoreline near the cave and wander indiscriminately through the site without supervision. This is also due to the range of other karst features including sink holes (many of which are obscured by vegetation and leaf litter) and unmarked cave entrances in and around the lease area which pose significant risks when wandering around the area.

The use of the site and access to the cave itself requires a level of skill and an understanding of the safe operating parameters that the 'general public' simply do not have, consequently there needs to be a fool proof mechanism for controlling access and an exclusive lease has a proven track record in ensuring this control. Specifically, Real Journeys contends that access to the site must be controlled because of its remoteness and because of the numerous hazards associated with the area.

The following are identified hazards connected with the site:

On site land slips and tree avalanches;

Tree falls and falling branches;

A number trip, slip, and fall hazards (plus potential head injuries due to head height obstructions);

Entrapment of personnel (slip across cave entrance or high water level);

Fire at Cavern House, in the surrounding area, Hydro shed / generator, in the Caves;

Blackout in the Caves;

Capsize of punt;

Flooding;

Earthquake; and

Unmarked cave entrances, sink holes and Karst system natural hazards.

D. Exclusive possession

Do you believe you need **exclusive possession** of the public conservation land on which your structure/building is located, ie no one else can use the land during your use of it? **YES** / ~~**NO**~~
(Exclusive occupation requires a lease which requires public notification of the application)

If **yes**, please answer the following 3 questions, if no please go to the next section:

Is exclusive possession necessary to protect public safety? **YES** / ~~**NO**~~

Is exclusive possession necessary to protect physical security of the activity? **YES** / ~~**NO**~~

Is exclusive possession necessary for the competent operation of the activity? **YES** / ~~**NO**~~

Public Safety

The Tunnel Burn which runs through Te Ana-au Glowworm Caves is fed from Lake Orbell and usually the Te Ana-au Glowworm Caves are flooded (and closed) between 10 and 20 days per year. Flood events often involve the Tunnel Burn overtopping the walkways in the caves, making it unsafe to conduct tours. In addition because the entrance into the Te Ana-au Glowworm Caves is very low (refer figures 5 & 6), during many of these flood events, the Tunnel Burn totally fills the caves outlet (that is the Caves entrance) sealing off the Te Ana-au Glowworm Caves as the cave only has one point of personnel egress. Due to the size of the catchment of Lake Orbell and the pulses of heavy rain that come across into this catchment, the Tunnel Burn can rise very quickly. Also when the Tunnel Burn is in flood the river waters are very fast flowing and turbulent, making it more likely people will be swept of their feet.

In many instances when the Te Ana-au Glowworm Caves are flooded, such as when it is continuing to rain, so there is no prospect of the Tunnel Burn receding, there are no Real Journeys staff on site, and it would be extremely unsafe for the public to be wandering around the site (due to the risk of slips) and even more dangerous to enter the cave itself as they could become trapped in the cave, due to the Tunnel Burn rising quickly, especially considering at these times the cave is unlit and the cave is in total darkness.

Further there are a number of other hazards associated with the site such as the infrastructure associated with wastewater treatment, hydro and electrical supply in the caves. That is there is the potential for unsupervised people to be injured if they meddle with the likes of the hydro or the electrical system in the caves.

Figure 5 – Entrance to Te Ana-au Glowworm Caves

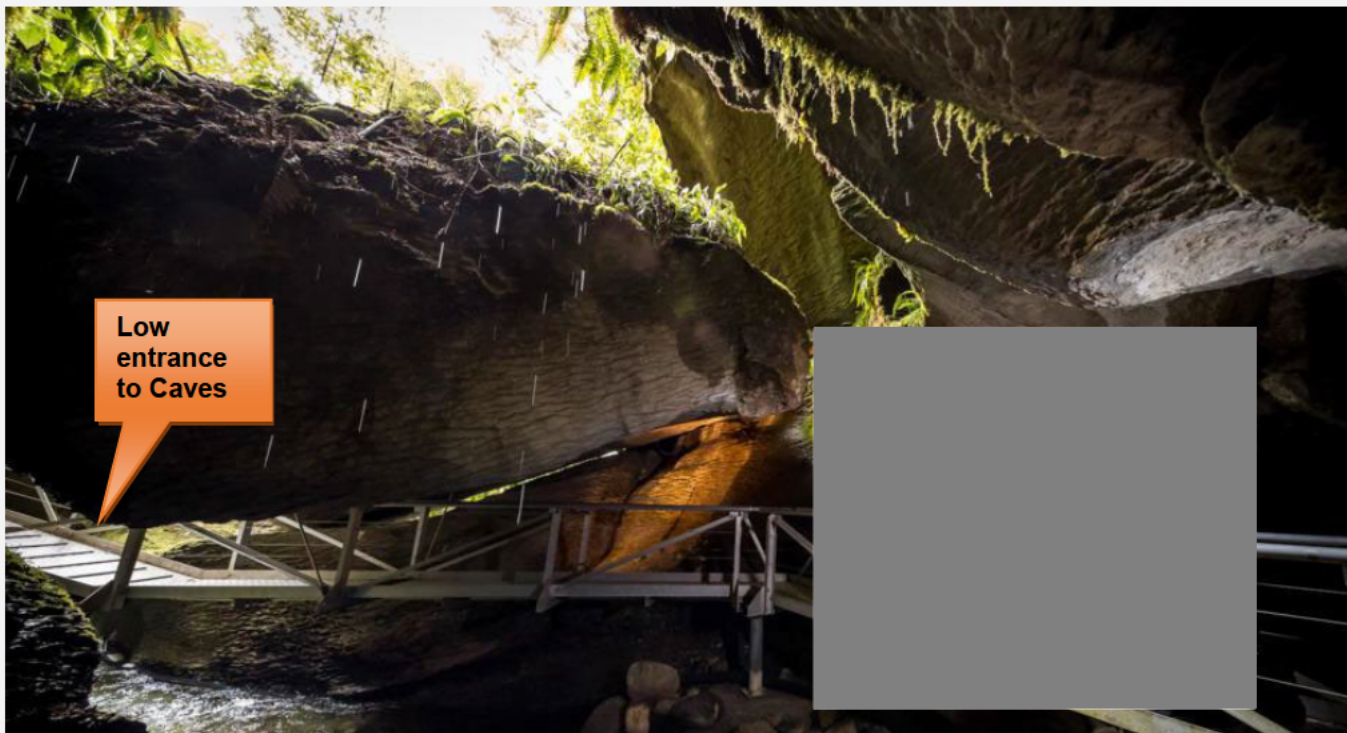


Figure 6 – Photo of Entrance to Te Ana-au Glowworm Caves

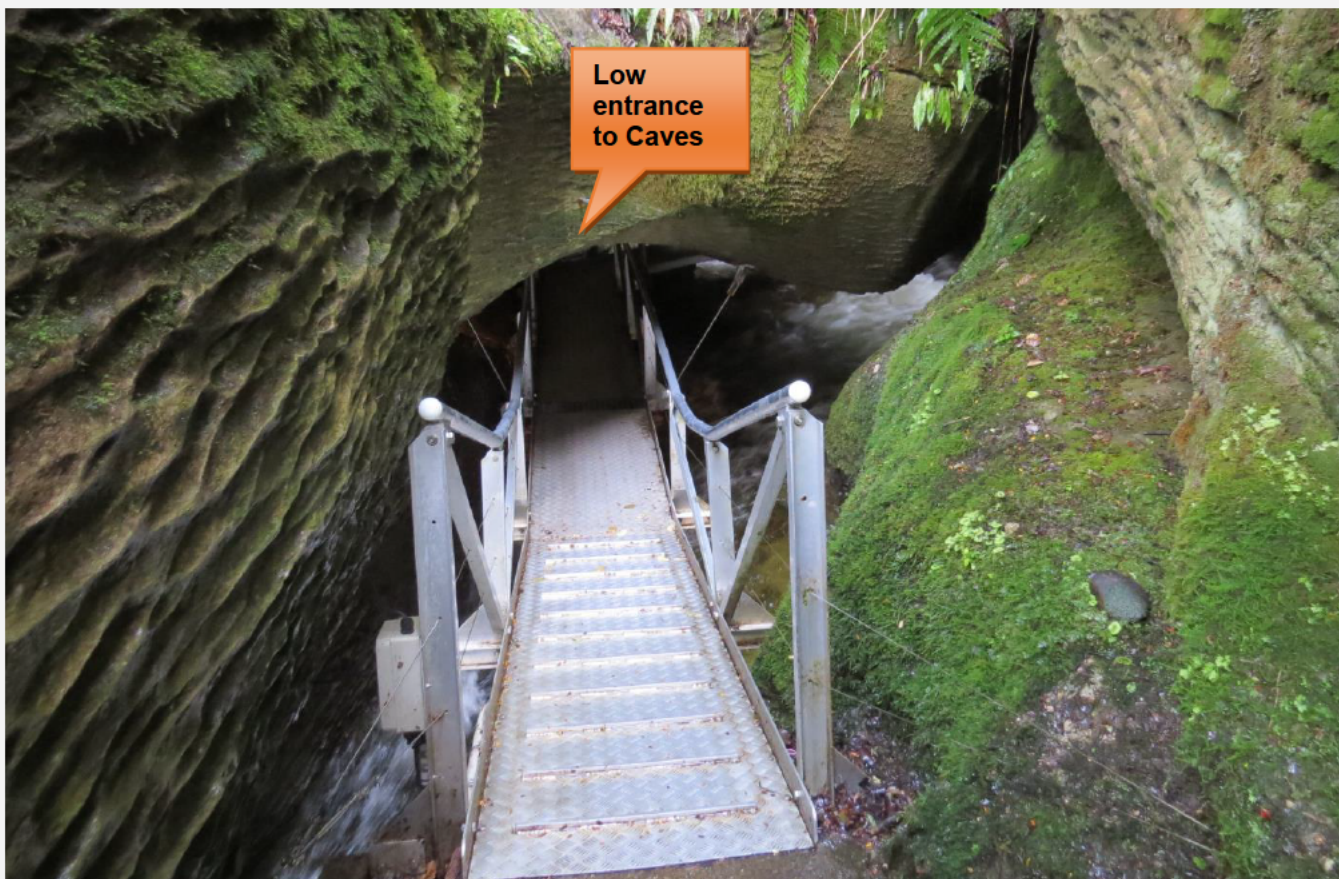


Figure 7 – Photo of the cave in flood



The following are identified hazards associated with the site:

On site land slips and tree avalanches;

Tree falls and falling branches;

A number trip, slip, and fall hazards (plus potential head injuries due to head height obstructions);

Entrapment of personnel (slip across cave entrance or high water level);

Fire at Cavern House, in the surrounding area, Hydro shed / generator, in the Caves;

Blackout in the Caves;

Capsize of punt;

Flooding;

Earthquake; and

Unmarked cave entrances, sink holes and Karst system natural hazards.

Refer attached Caves Intersafety Workplace Operational Surveillance Report

Physical security

Because of the location of the Te Ana-au Glowworm Caves on the western side of Lake Te Ana-au the site is only accessible by boat or helicopter. Consequently most of the infrastructure such as Cavern House, Wastewater Treatment Plant, Hydroelectric plant, the backup diesel generator, and the cave itself are not physically secure. That is specifically there is no 'secure' gate (the gate can be climbed around) on the cave entrance therefore

anyone can enter the cave when there are no Real Journeys staff on site. We could fit locks to the likes of the generator shed and Cavern House however it would be no issue for someone to break in.

Competent operation

The Te Ana-au Glowworm Caves tour is operated ex the Te Anau lakefront with visitors being transferred to and from the site by vessel, usually "Luminosa". The typical scheduled departure times (prior to COVID-19) are as follows: 0745, 0900, 1015, 1130, 1245, 1400, 1515, 1630, 1745, 1900, 2015, and 2130 hours with the highest frequency of trips being after Christmas and Chinese New Year and the lowest frequency in June. The Te Ana-au Glowworm Caves' trip total duration for passengers being 2¼ hours with 1½ hours on site at the caves. However, to accomplish these aforementioned scheduled departures, the "Luminosa" shuttles back and forth to the main lakefront wharf, on the Te Anau Lakefront, to pick up a second party while the first party is still at the Te Ana-au Glowworm Caves and so on throughout the day.

The maximum number of cave visitors transferred to the site by the "Luminosa" is 78 with the visitors being broken up into groups of 13 or 14 visitors (depending on the composition of family groups) with one guide. On arrival at the Te Ana-au Glowworm Caves wharf three groups of 13 or 14 visitors are taken into the cave with 5 minutes separation and the other three groups of 13 or 14 are taken into Cavern House for an interpretation briefing including an opportunity to have a cuppa and use the toilet facilities. Once the first of the three groups of 13/14 visitors have had their tour of the cave then they swap over with the visitors in Cavern House.

In the Te Ana-au Cave tour involves visitor being guided through the cave up to the entrance to the Glowworm Grotto where visitors embark into a 14 seater punt. Two punts can be used in the grotto at any one time when the Tunnel Burn is not high, at high stream levels only one punt is utilised. The cave guide manoeuvres the punt into and out of the grotto by hauling on overhead chains. To maintain the Glowworm bioluminescence this manoeuvring of the cave punts is done in the dark.

Because the cave is effectively a 'blind end' cave with only one way in and out the cave guides need to choreograph the movement of the three groups through the cave and to facilitate this there are a couple of larger platforms in the cave walkways to allow groups to pass each other. The choreograph these movements of people through the Te Ana-au is most effectively and safely undertaken by one operator. Moreover because of the inaccessibility of the site and the hazards at the site, all visitors need to be accounted for to ensure they are all safely returned to Te Anau itself.

Further Real Journeys needs exclusive possession to manage its Te Ana-au Glowworm Caves facilities as efficiently as possible and exclusive possession will allow Real Journeys to adequately maintain its facilities in the lease area and regulate the use of services such as electricity and water supplies. For instance in the summer months flow in the 'un-named stream' can become very low and water conservation measures need to be employed to enable the hydro to continue to work. Moreover because of the nature of this Te Ana-au Glowworm Caves site and the environment, exclusive possession is required to manage the public's health and safety including enabling activities such as closing the site in adverse weather conditions and after earthquakes. After earthquakes rock monitoring data needs to be checked to ensure there has been no movement of the rocks in the caves. Such management and maintenance requires specific skills, to ensure competent operation of the site including access to vessels to enable maintenance technicians to get to the Te Ana-au Glowworm Caves quickly to effect repairs. In particular Real Journeys has an engineering facility along with suitably qualified staff based in Te Anau. Also we have good relationships with the likes of Geotechnical Experts who undertake regular inspections and provide advice regarding managing the site safety.

Figure 8 – diagram of Te Ana-au Glowworm Caves



Moreover, the Manager of Te Ana-au Caves is the Vice-president of Australasian Cave and Karst Management Association Inc. (ACKMA) and has been a member since 1995. ACKMA is a professional association for all those responsible for, or interested in, planning and management of limestone landscapes and caves in the Australasian region¹. The knowledge the Manager of Te Ana-au Glowworm Caves manager has is invaluable in looking after the sites structure, micro-climate, lampenflora, cave biota and cave interpretation.

Protection of the Te Ana-au Glowworm Caves environment.

Visitors have the potential to negatively impact on a cave's structure, micro-climate, lampenflora, and cave biota. For instance, the CO₂ breathed out by visitors dissolves quickly in condensing solutions, and as the condensed solutions are undersaturated with respect to dolomite, calcite and aragonite; these solutions represent 'an aggressive solution' that can potentially cause carbonate dissolution in limestone caves. This dissolution process is known as condensation corrosion and is responsible for cave genesis in some cases but can cause damage to cave walls.²

Moreover it has been found that Glowworms are sensitive to torchlight and will switch off their bioluminescence if disturbed. Smoke from fires or cigarettes, and insect repellent, also affect Glowworms and their prey.³ Consequently the impact of visitors on Te Ana-au Glowworm Caves needs to be prudently managed to ensure the cave environment and its biota are not compromised. That is to ensure the cave 'health' is maintained it is important for one entity to be looking after the site and taking responsibility for managing the overall activity at the site to preserve this environment. Real Journeys have a vested interest in this as we wish to maintain Te Ana-au Glowworm Cave as a premier visitor attraction.

The Cave visitor infrastructure has been designed and built using best practice guidelines, and is mostly of modular construction to minimise engineering impacts in the Te Anau-au Glowworm Caves.

E. Technical Specifications (for telecommunications sites only)

Real Journeys also requires any concession to provide for the installation, use, maintenance and upgrading of the following types of 'IT' equipment:

1. The 4G aerial inside the Cavern House which provides internet connectivity to the eastern side of Lake Te Anau;
2. Weather stations where the data can be monitored remotely through web based applications;
3. Cave environment monitoring equipment where the data can be monitored remotely through web based applications;
4. Potentially the use of so called 'smart traps' where a cell phone signal or similar is sent out when the trap has been triggered;
5. Use of other smart technologies where a cell phone signal or similar is sent out when the likes of the hydro intake become blocked, which would also include the use of battery packs and solar panels on a tower to get above tree height.

That is the provision in a concession to allow for the adoption of technology (as it becomes more readily available) to in particular monitor, the overall safety of the site.

¹ <http://www.ackma.org/about.html>

² <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.832.1271&rep=rep1&type=pdf>

³ <https://www.abc.net.au/science/slab/glowworm/>

F. Term

Please detail the length of the term sought (i.e. number of years or months) and why.

Note: An application for a concession for a period over 10 years must be publicly notified, an application for a concession up to 10 years will not be publicly notified unless the adverse effects of the activity are such that it is required, or if an exclusive interest in the land is required.

27 years

We are seeking this renewed term in accordance with clause 17 of the Deed between Real Journeys Ltd (formerly Fiordland Travel Ltd) and the Minister of Conservation signed on 30 June 1989 as added by the Deed dated 10 December 1992 (PAC 14-06-02-01), and also under Part 3B of the Conservation Act 1987.

We require a significant concession term to reflect the value of investment we have made in connection with the operation of the Te Ana-au Glowworm Caves tours including wharves and vessels on Lake Te Ana-au. Surety of tenure in relation to our operation will enable us to invest in new innovations such as the introduction of either an electric or hydrogen powered vessel on Lake Te Anau to service the Lake Te Ana-au Glowworm Caves with such an investment being in the magnitude of one million plus dollars.

G. Bulk fuel storage

Under the Hazardous Substances and New Organisms Act 1996 (HSNO Act) 'Bulk fuel storage' is considered to be any single container, stationary or mobile, used or unused, that has a capacity in excess of 250 litres of Class 3 fuel types. This includes petrol, diesel, aviation gasoline, kerosene and Jet A1. For more information on Hazardous Substances, go to:

<http://www.business.govt.nz/worksafe/information-guidance/legal-framework/hsno-act-1996>

Do you intend to store fuel in bulk on the land as part of the activity?

~~YES~~ **NO**

Diesel is stored on site for the operation of the backup generator but the tank in the 'belly' of the generator is under 250 litres in volume. A smaller tank is also used to store diesel for the fireplace in Cavern House. This is double skinned so has built in containment.

If you have answered yes, then please provide full details of how and where you intend to store the fuel, and label any attachments including plans, maps and/or photographs as Attachment 3b:G. If your concession application is approved you will be required to provide a copy of your HSNO compliance certification to the Department before you begin the activity.

H. Environmental Impact Assessment

This section is one of the most important factors that will determine the Department's decision on the application. Please answer in detail.

Refer attached EIA

I. Attachments

Attachments should *only* be used if there is:

- A specific question requiring a map or further information
- Not enough space on the form to finish your answer

- You have additional information that supports your answer
- You wish to make an additional request of DOC regarding the application.

Label each document clearly and complete the table below.

Section of the application form the attachment relates to	Document title	Document format	Description of attachment
A	Real Journeys Concession Application Te Ana-au Glowworm Caves site and infrastructure plans and photos	PDF	Site photos, maps to provide an overview to the application
A	Lease plan 17.3.22	PDF	drawing
A	Hydro pipeline survey	PDF	drawing
A	Longitudinal section of hydro pipeline	PDF	drawing
A	Yanmar Generator Brochure	PDF	brochure
D	Caves Intersafety Workplace operational surveillance report	PDF	Site safety audit
H	Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application	PDF	EIA

J. Other

Is there any further information you wish to supply in support of your application? Please attach if necessary and label Attachment 3a:l.

Real Journeys contends that the best way (and proven way) to manage the operation of the Te Ana-au Glowworm Caves site is through an 'exclusive lease' of the site taking in to account all of the relevant assets and infrastructure (with the exception of the upper reaches of the hydroelectric plant pipeline and the dam and intake structures) as this will give the operator of the site the ability to close the site when required for Health and Safety. In addition section 5.6 Boating and Facilities (Table 12) of FNPMP acknowledges the site is 'subject to lease'.

The Te Ana-au Glowworm Caves are a culturally and ecologically important system of limestone caves on the western shore of Lake Te Anau, in the southwest of New Zealand. They were re-discovered in 1948 by Lawson Burrows, who found the caves system after years of searching, following clues in old Māori legends. Through their rediscovery, Lawson Burrows with his business partner Wilson Campbell set up Fiordland Travel as a tourism company highlighting Te Ana-au Glowworm Cave consequently the site has been a 'tourist attraction' for 73 years.

The hydro plant has been operation from the early 1960sand the hydro pipeline is mostly still a hand riveted steel pipe which was re-purposed from a goldmining operation in Naseby, Central Otago.

Over the last 10 to 15 years much of the physical infrastructure associated with the operation of the Te Ana-au Glowworm Caves has been upgraded such as the following:

- The 2016-17 Wastewater treatment plant upgrade with installation of advanced enviro-septic system (AES);
- The 2017 installation of a new backup Diesel Generator; and
- The 2018-19 replacement of sections of the in-cave walkways so that all the in-cave walkway sections can be unbolted to ensure that ongoing repairs and maintenance can be undertaken readily without impacting on the environment of the cave.

Real Journeys maintains stoat lines and rat traps in and around Te Ana-au Glowworm Caves.

Real Journeys has participated in a ACMKA lead initiative to record cave climate details. This particular project was instigated in May 2020 when cave visitation was halted due to COVID-19 restrictions. For some cave sites across Australasian this was the first time no visitor were present in a cave for more than 100 years which provided an opportunity to generate baseline data. Of the 27 Australian and NZ show caves participating in the project, Te Ana-au Glowworm Cave has provided the most continuous data set so far.

Real Journeys cave guides often assist / guide other interested parties including researchers to experience the Aurora Caves. That is Real Journeys staff have the 'caving' expertise to enable other less experienced people to access other karst systems on PCL and other land.

In particular, Real Journeys works cooperatively with the Department to facilitate access to the Aurora Caves; including providing access to and from the site via the "Luminosa" sailings; ensuring visitors find the track up to Lake Orbell (the route to Aurora Caves); providing advice to unguided parties regarding hazards; and with our Te Ana-au Cave Manager, for over a decade, guiding parties through Aurora Caves as part of the DOC Fiordland summer events nature program.



The Department recommends that you contact the Department of Conservation Office closest to where the activity is proposed to discuss the application prior to completing the application forms. Please provide all information requested in as much detail as possible. Applicants will be advised if further information is required before this application can be processed by the Department.

This form is to be used when the proposed activity involves using water craft on public conservation land. Examples may include kayaking, boat landings, or use of Department of Conservation wharves. This form is to be completed in conjunction with either Applicant Information Form 1a (longer term concession) or Applicant Information Form 1b (one-off concession) as appropriate.

- If your application involves guiding clients or aircraft transportation on public conservation land please also fill in Form 4a and/or Form 4c as appropriate.
- If your application includes building, extending or adding to any permanent or temporary structures or facilities on public conservation land, please also fill in Form 3b,
- If your application includes tenancy of any DOC managed buildings (other than overnight usage of huts) please also fill in Form 3a.

Please complete this application form, attach Form 1a or Form 1b, and any other applicable forms and information and send to permissions@doc.govt.nz. The Department will process the application and issue a concession if it is satisfied that the application meets all the requirements for granting a concession under the Conservation Act 1987.

If you require extra space for answering please attach and label according to the relevant section.

A. Location(s) and Activity(ies)

List the areas of your operation, please use NZTM GPS coordinates where possible, and attach a map and label Attachment 4a:C. If you are unable to identify the areas or you do not know them, please seek the assistance of Departmental staff.

Name of Conservation Area	Activity	Waterway being used, location and/or name of all landing sites	Size, type, colour and name of all water craft	Proposed months/ season	Max. Party Size (incl. guides)	Frequency of Use (trips/landings)
Fiordland National Park	Guided 'punt' tours in the Glowworm Grotto of the Te Ana-au Glowworm Caves.	An enclosed section of the Tunnel Burn in Te Ana-au Glowworm Cave.	2x purpose built under (non-power driven) 6 metre alloy pontoon style 14 person punts (excluding the guide)	Year round	For each Te Ana-au Caves tour ex the Te Anau Lake Front departure 78 visitors under take a Glowworm grotto tour over a period of 1¼ hours however 2x 14+1 are in the Glowworm Grotto at any one time.	12 trips per day (i.e. 12 x 78 visitors)
Fiordland National Park	Barge access to Te Ana-au Glowworm Caves 'lease area' to transfer heavy machinery and equipment to and from the Te Ana-au Glowworm Caves 'lease area' to undertake repairs and maintenance and the for the likes of flood or storm remediation work.	Lake Te Ana-au and lower reaches of Tunnel Burn	TBC – size of barge depends on the equipment that needs to be transferred	Year round	N/A	Undertaken on an as and when needed basis.
Fiordland National Park	Access to the Tunnel Burn by an excavator to carry out the 'permitted' activities provided for in Rules 75 and 77 of the Proposed Southland Water and Land Plan. That is, the removal of vegetation flood debris obstructing water flow, including	The edge Lake Te Ana-au and lower reaches of Tunnel Burn	TBC – the type of excavator will depend on the scope of the remediation work and the size of the obstruction.	Year round	N/A	Undertaken on an as and when needed basis.

plants dislodged and transplanted during flood flows, from the bed of a lake, river or modified watercourse, and any associated bed disturbance and discharge resulting from carrying out the activity. Plus The entry into or passage across the bed of a lake, river or modified watercourse by any wheeled or tracked vehicle or machine and any associated bed disturbance and discharge resulting from carrying out the activity.

B. Environmental Impact Assessment

This section is one of the most important factors that will determine the Department's decision on the application. Please answer in detail.

Refer [attached Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application](#)

C. Term

Please detail the length of the term sought (i.e. number of years or months) and why. If you are applying for a one-off permit please state the specific dates and/or times sought.

Note: An application for a concession for a period over 10 years must be publicly notified, an application for a concession up to 10 years will not be publicly notified unless the adverse effects of the activity are such that it is required, or if an exclusive interest in the land is required.

27 years

We are seeking this renewed term in accordance with clause 17 of the Deed between Real Journeys Ltd (formerly Fiordland Travel Ltd) and the Minister of Conservation signed on 30 June 1989 as added by the Deed dated 10 December 1992 (PAC 14-06-02-01), and also under Part 3B of the Conservation Act 1987.

We require a significant concession term to reflect the value of investment we have made in connection with the operation of the Te Ana-au Glowworm Caves tours including wharves and vessels on Lake Te Ana-au. Surety of tenure in relation to our operation will enable us to invest in new innovations such as the introduction of either an electric or hydrogen powered vessel on Lake Te Anau to service the Lake Te Ana-au Glowworm Caves with such an investment being in the magnitude of one million plus dollars.

D. Bulk fuel storage

Under the Hazardous Substances and New Organisms Act 1996 (HSNO Act) 'Bulk fuel storage' is considered to be any single container, stationary or mobile, used or unused, that has a capacity in excess of 250 litres of Class 3 fuel types. This includes petrol, diesel, aviation gasoline, kerosene and Jet A1. For more information on Hazardous Substances, go to:

<http://www.business.govt.nz/worksafe/information-guidance/legal-framework/hsno-act-1996>

Do you intend to store fuel in bulk on the land as part of the activity?

~~YES~~ / NO

If you have answered yes, then please provide full details of how and where you intend to store the fuel, and label any attachments including plans, maps and/or photographs as Attachment 4b:D. If your concession application is approved you will be required to provide a copy of your HSNO compliance certification to the Department before you begin the activity.

E. Safety Plan

The Department requires that all concessionaires holding concessions for recreation or tourism activities have a safety plan which has been audited by an external expert.

If your activity is covered by the Health and Safety in Employment (Adventure Activity) Regulations 2011 proof of that audit is sufficient. If your activity is **not** covered by the Adventure Activity Regulations,

please read the *Guidelines on the Requirements for Concessionaire Safety Plans* on the Department's website. If you are unsure, please go to the WorkSafe website and read their [guidance](#).

If your concession application is approved, you will be required to provide a copy of an independent auditor's approval of your safety plan to the Department before you begin the activity.

F. Other

Is there any further information you wish to supply in support of your application? Please attach if necessary and label Attachment 4b:F.

Guided 'punt' tours in the Glowworm Grotto part of this application is audited by Qualmark along with the overall Te Ana-au Glowworm Caves tour ex Te Anau.



The Department recommends that you contact the Department of Conservation Office closest to where the activity is proposed to discuss the application prior to completing the application forms. Please provide all information requested in as much detail as possible. Applicants will be advised if further information is required before this application can be processed by the Department.

This form is to be used when the proposed activity involves any filming on public conservation land, it is to be completed in conjunction with either Applicant Information Form 1a (longer term concession) or Applicant Information Form 1b (one-off concession) as appropriate.

Please complete this application form, attach Form 1a or Form 1b, and any other applicable forms and information and send to permissions@doc.govt.nz. The Department will process the application and issue a concession if it is satisfied that the application meets all the requirements for granting a concession under the Conservation Act 1987.

If you require extra space for answering, please attach and label according to the relevant section.

A. Description of Activity

Please note the purpose of the filming activity (advertisement, movie, documentary etc), and describe in detail the proposed filming activity. If you need further space, please attach and label Attachment Form 5a:A1. The locations for the filming are to be listed in section E.

Still photography; and filming including use of drones for still photography and videography in the Fiordland National Park; in particular in and around Te Ana-au Glowworm Caves including the Te Ana-au Glowworm Caves 'lease area' and Lake Te Anau. The output of the photography; and filming will be used for creation of point of sale material such as postcards; livery; interpretation content; advertising; marketing; and promotion purposes. The output will be circulated through traditional channels (such as videos in information centres, print and marketing collateral material distributed direct to customers, retail, inbound, and wholesale channels) and web based channels such as websites; social media (including by 'social influencers'); and YouTube clips.

The still photography and videography will be undertaken on an as and when required basis. For instance when the company's sales and marketing needs updating. Any still photography and videography undertaken inside Te Ana-au Glowworm Cave will be kept to a minimum and will be supervised by the Te Ana-au Glowworm Cave Manager. Also typically this filming or photography does not need updating as the cave environment including the Glowworms' remain unchanged and are basically 'timeless'.

Are there to be any fires/pyrotechnics involved with the filming? **YES / NO**

If so, please describe in detail how these will be used, including how they will be created and managed. If you need further space, please attach and label Attachment Form 5a:A2.

Are there any other special effects that may be used? **YES / NO**

If so, please describe in detail how these will be used, including how they will be created and managed. If you need further space, please attach and label Attachment Form 5a:A3.

Are animals involved with the filming?

YES / ~~NO~~

If so, please provide details. If you need further space, please attach and label Attachment Form 5a:A4.

Please note: animals are not permitted in many public conservation areas, please contact the Department of Conservation Office closest to where the activity is proposed to discuss

The Glowworms / titiwai; cave wetas and other incidental wildlife commonly found outside the Te Ana-au Glowworm Caves such as:

- South Island Robin / Kakaruwai;
- Fantail / Tiwaiwaka; and
- Bellbird / Korimako.

Are vehicles involved with the filming?

~~YES~~ / **NO**

If so, please provide details. If you need further space please attach and label Attachment Form 5a:A4.

B. Facilities/Structures

If you wish to build, extend or add to any **permanent or temporary structures** on public conservation land (e.g. toilets, sets, storage facilities). Please include any details of construction e.g. location, building dimensions, materials, purpose, number of people and vehicles involved etc. Please also provide the following details:

- Could this structure or facility be reasonably located outside public conservation land? Provide details of other sites/areas considered.
- Could any potential adverse effects be significantly less (and/or different) in another conservation area or another part of the conservation area to which the application relates? Give details/reasons

Please attach a site and construction plan showing location of proposed structures, please use NZTM GPS coordinates where possible, and label Attachment 5a:B.

C Aircraft/Boats

If aircraft/boats (including Remotely Piloted Aircraft Systems (drones)) are proposed to be used please provide details of the purpose and a description of size/type. If you need further space please attach and label Attachment Form 5a:C.

Refer aircraft activity concession application form which is part of our overall application.

1. Helicopter / drone based photography and / videography to collect information to assess how work needs to be carried out at Te Ana-au Cave site i.e. to plan a remedial or repairs and maintenance job and figure out how to address H&S issues;
2. Helicopter or Drone flights for photography / filming for promotional videos and still photography over Te Ana-au Glowworm Caves site and Lake Te Anau; and

- Drone flights for other activities associated with the operation of Te Ana-au Glowworm Cave such as inspecting site for hazards such as slips / tree falls, dead trees; weed and pest control, which will in effect involve 'filming' to allow the footage to be reviewed once the drone was returned.

Refer watercraft activity concession application form (7b) which is part of our overall application.

- Te Ana-au Glowworm Cave Tours involves use of punts within the Glowworm Grotto hence photography and / videography will be undertaken from the punts and 'showing' the punts;
- Given that the Te Ana-au Glowworm Cave site is accessed by vessel typically the "Luminosa". Therefore photography and / videography will be undertaken from "Luminosa" and other Real Journeys 'work boats' such as the "Teretere" to provide views / images of the Te Ana-au Glowworm Caves site from the Lake and to provide views / images of the "Luminosa" taken from the land.

Please provide the following information for each proposed landing sites for both aircraft and boats and attach maps of flight paths, courses, and/or landing areas. If you need further space please attach and label Attachment Form 5a:C.

Landing site/reason	Maximum number of landings at each site per day/per year	Maximum number of people landed at each site per day/per year
Aircraft		
Helicopter landing site at Te Ana-au Glowworm Cave is typically the Lake Foreshore; where there is a sufficiently large 'beach' depending on lake level. However given the close proximity of the township of Te Anau the helicopter does not land on site when undertaking photography and / videography	N/A	N/A
Drone landing and take-off sites are typically the viewing platform in front of Cavern House; the walkway from the cave wharf; the cave wharf itself; and the <i>Luminosa</i> (or replacement vessel) / Real Journeys work boat.	6 per day maximum duration of each use half day.	24 landings year round, maximum duration of each use half day. Typically only involves one drone operator with support crew (of up to 5) such as marketing staff to ensure the 'right' shots are taken; however the activity may include the use of 'models / actors' in lieu of Real Journeys customers.
Watercraft		
Glowworm Grotto in the Te Ana-au Glowworm Caves	6 per day maximum duration of each use half day.	24 times per year with a crew of up to 6 persons involved in the undertaking of the 'filming' however the activity may include the use of 'models / actors' in lieu of Real Journeys customers.
Te Ana-au Glowworm Cave wharf	6 per day maximum duration of each use half day.	24 times per year with a crew of up to 6 persons; however the activity may include the use of 'models / actors' in lieu of Real Journeys customers.
Lake Te Anau foreshore in front of Te Ana-au Glowworm Cave lease area	6 per day maximum duration of each use half day.	24 times per year with a crew of up to 6 persons however the activity may include the use of 'models / actors' in lieu of Real Journeys customers.

D. Term

Please detail the length of the term sought (i.e. specific dates or weeks or months) and why.

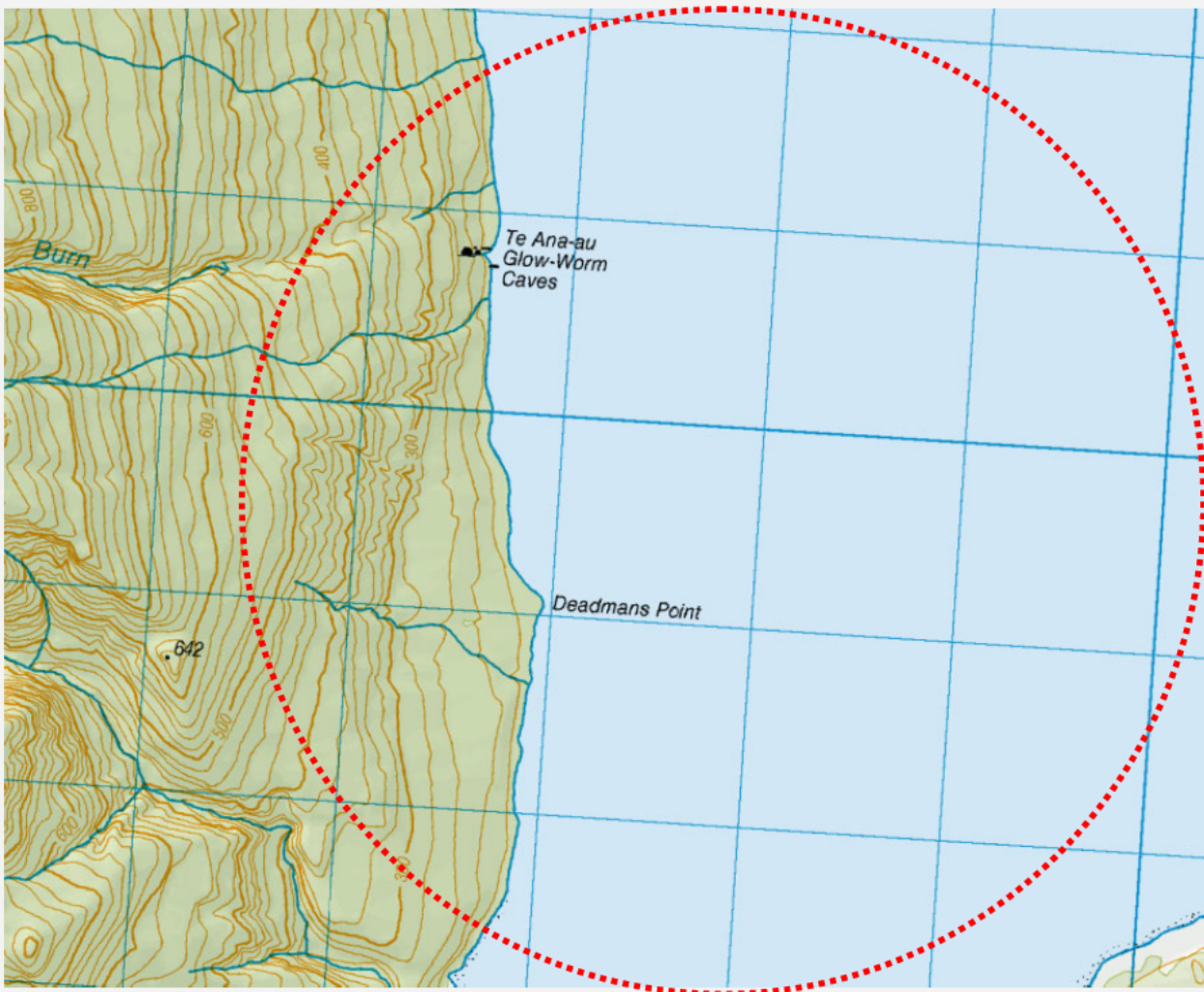
27 years

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We require a significant concession term to reflect the value of investment we have made in connection with the operation of the Te Ana-au Glowworm Caves tours including wharves and vessels on Lake Te Ana-au. Surety of tenure in relation to our operation will enable us to invest in new innovations such as the introduction of either an electric or hydrogen powered vessel on Lake Te Ana-au to service the Lake Te Ana-au Glowworm Caves with such an investment being in the magnitude of one million plus dollars.

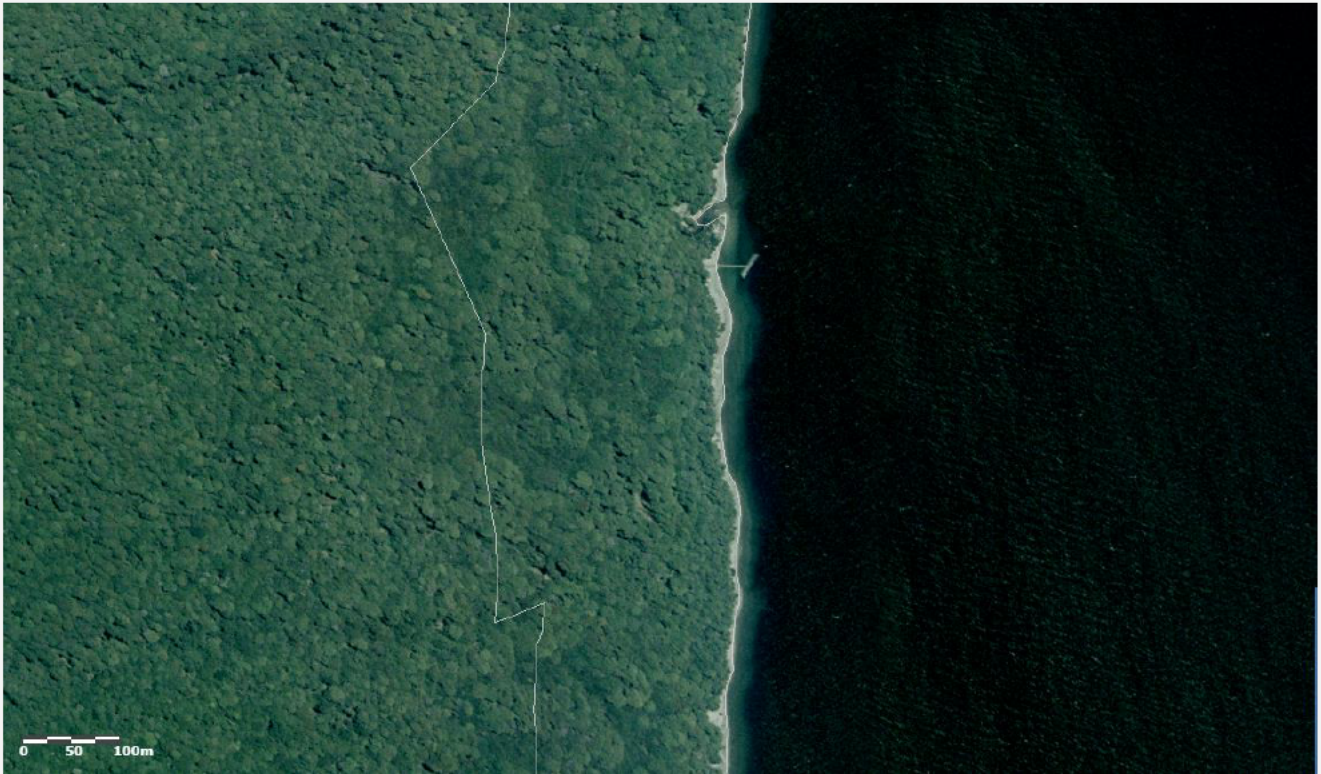
Name of Conservation Area	DOC Facilities to be used e.g. huts, lodges or camp sites	Max. Crew Size at Each Area	Duration of Operation (half or full days?)
Fiordland National Park	N/A	6	Half day

Figure 1. Proposed approximate area of operation – for photography and videography¹



¹ <https://www.topomap.co.nz/NZTopoMap?v=2&ll=-45.305591,167.729044&z=14>

Figure 2. Aerial view of the site²



Also refer [Te Ana-au Glowworm Caves site and infrastructure photos](#)

F. Environmental Impact Assessment

This section is one of the most important factors that will determine the Department's decision on the application. Please answer in detail.

Refer [Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application](#).

G. Other

Is there any further information you wish to supply in support of your application? Please attach if necessary and label Attachment 5a:G.

Because Real Journeys primary operation at this site is the operation of Te Ana-au Glowworm Caves Tours it is in our best interests to ensure our 'customers / visitors' are not adversely impacted by 'filming' activities.

² <https://maps.es.govt.nz/>

Is this the right application for me?

Use this application form if you want to undertake aircraft activities on public conservation land and waters for a term of three months or more for:

- Commercial operations
- Recreational users

“Aircraft” is defined in section 2 of the Civil Aviation Act 1990 as any machine that can derive support in the atmosphere from the reactions of the air otherwise than by the reactions of the air against the surface of the earth. “Aircraft” includes drones or other unmanned aircraft.

Aircraft activities (commercial operations and recreational users) include: taking off, landing and hovering. Examples of this include scenic landings, dropping off or picking up recreationalists (e.g. hunters etc.), and servicing other Concessionaires (e.g. guided walking groups, dropping/collecting beehives etc.). Aircraft activities do not include flying over public conservation land and waters.

Note: While you do not need a concession to fly an aircraft over public conservation land and waters, if your aircraft is a drone or other unmanned aircraft, you do need consent from the Department of Conservation (DOC) or any lessee occupying the public conservation land or waters (unless you are a certified drone operator under the Civil Aviation Authority Rules).

Use this form for new applications and variations to existing aircraft activity DOC concessions.

This application does not cover:

- [Recreational drone use](#)¹ – applications shorter than three months.
- [Wild animal recovery operations](#)² (WARO).
- [Aerially assisted trophy hunting](#)³ (AATH).

How do I complete this application form?

- Complete all sections of this form.
- DOC encourages electronic applications (e.g. typed Word document), rather than handwritten applications. Electronic applications are easier to read and less likely to be returned to you for clarification.
- If you need extra space, attach or include extra documents and label them according to the relevant section. Record any attachments in the table at the back of this application form (section L).

Personal information will be managed by DOC confidentially. For further information check DOC’s privacy and security statements⁴.

¹ <https://www.doc.govt.nz/get-involved/apply-for-permits/recreational-drone-use/>

² <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/national-wild-animal-recovery-operations/>

³ <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/aerially-assisted-trophy-hunting/>

⁴ <https://www.doc.govt.nz/footer-links/privacy-and-security/>

If I need some help, where do I get more information?

- Check DOC's [Aircraft Activities](#)⁵ webpage.
- Arrange a pre-application meeting (either face to face or over the phone) by contacting the local [DOC office](#)⁶ closest to where your activity is taking place. You can use [DOC maps](#)⁷ to identify which District Office you should contact. Or arrange a meeting with any of our [four offices that process concessions](#)⁸ – choose the one closest to where the activity is proposed.
- If your application covers multiple districts, contact the office nearest most of the locations you are applying undertake your activity, or nearest to locations you have a specific question about.

Have you considered DOC's statutory planning documents?

Your concession must not be inconsistent with relevant [DOC statutory planning documents](#)⁹ as they set out how DOC and our Treaty partners manage public conservation land. Statutory planning documents can have a direct impact on your application, for example they may set the specific locations or number of landings allowed.

Book a pre-application meeting with DOC staff if you require assistance with navigating DOC's statutory planning documents.

How do I submit my application?

Email your completed application and any other attachments to: permissions@doc.govt.nz

What happens next?

Once received, your application will be assessed by DOC. If your application is complete, DOC will begin processing.

If your application is incomplete it will be returned to you for more information.

Why does DOC ask for this information?

The questions in this application form are designed to cover the requirements set out in DOC's conservation legislation. Your answers allow us to assess:

- The effects of your activity and your proposed methods to avoid, remedy or mitigate any adverse effects of the activity.
- Your qualifications, resources, skills and experience to adequately conduct the activity on public conservation land.
- Your creditworthiness is a factor in determining whether DOC should extend credit to you and set up a DOC customer accounts receivable credit account for cost recovery. To make this assessment DOC will supply your information to a credit checking agency.

Note: Information collected by DOC will be supplied to a debt collection agency in the event of non-payment of payable fees.

Treaty Partner consultation

⁵ <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/aircraft-activities/>

⁶ <https://www.doc.govt.nz/footer-links/contact-us/office-by-name/>

⁷ <http://maps.doc.govt.nz/mapviewer/index.html?viewer=docmaps>

⁸ <https://www.doc.govt.nz/get-involved/apply-for-permits/contacts>

⁹ <https://www.doc.govt.nz/about-us/our-policies-and-plans/statutory-plans/>

DOC has a statutory responsibility to give effect to the principles of the Treaty of Waitangi. One component of this may be DOC consulting with Treaty Partners about your application. This consultation will feed into DOC's decision-making process. More information can be found on the DOC website on our [iwi/hapū/whānau consultation](#)¹⁰ page.

Contact your local [DOC office](#)¹¹ if you require further information about consultation.

What fees will I pay?

You may be required to pay a processing fee for this application regardless of whether your application is granted or not. You may request an estimate of the processing fees for your application. If you request an estimate, DOC may require you to pay the reasonable costs of the estimate prior to it being prepared. DOC will not process your application until the estimate has been provided to you. In addition if you are granted an aircraft activity concession on public conservation land and waters you may be required to pay annual activity and management fees. These fees are listed on the [Aircraft Activities page](#)¹² on the DOC website.

DOC will invoice your processing fees after your application has been considered. If your application is large or complex, DOC may undertake billing at intervals periodically during processing until a decision is made. If you withdraw your application DOC will invoice you for the costs incurred up to the point of your withdrawal.

Will my application be publicly notified?

Your application will be publicly notified if:

- It is a license with a term of more than 10 years
- If after having regard to the effects of the activity, DOC considers it appropriate due to do so.

Public notification will increase the time and cost of processing of your application. If you believe public notification is required for your application email: permissions@doc.govt.nz to arrange a pre-application meeting.

What does DOC require if my application is approved?

If your application is approved DOC requires:

- **Insurance** to indemnify the Minister of Conservation against any claims or liabilities arising from your actions. The level of insurance cover will depend on the activity.
- An **Air Operators Certificate** from the Civil Aviation Authority.
- Aircraft operators may require **noise abatement certification** (from the [Aviation Industry Association](#)¹³ and [Qualmark](#)¹⁴),

Note: DOC/Minister can vary the concession if the information on which the concession was granted contained material inaccuracies. DOC may also recover any costs incurred.

¹⁰ <https://www.doc.govt.nz/get-involved/apply-for-permits/iwi-consultation/>

¹¹ <https://www.doc.govt.nz/footer-links/contact-us/office-by-name/>

¹² <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/aircraft-activities/>

¹³ <https://www.aia.org.nz/AIRCARE/How+to+become+AIRCARE+Accredited.html>

¹⁴ <https://www.qualmark.co.nz/>

A. Applicant details

Legal status of applicant (tick)	<input type="checkbox"/> Individual (Go to ①)	
	<input checked="" type="checkbox"/> Registered company (Go to ②)	<input type="checkbox"/> Trust (Go to ②)
	<input type="checkbox"/> Incorporated society (Go to ②)	<input type="checkbox"/> Other e.g. Educational institutes (Go to ②)

①	Applicant name (individual)		
	Phone		Mobile phone
	Email		
	Physical address		Postcode
	Postal address (if different from above)		Postcode

②	Applicant name (full name of registered company, trust, incorporated society or other)		Real Journeys Limited	
	Trading name (if different from applicant name)		Realnz	
	NZBN if applicable (to apply go to: https://www.nzbn.govt.nz)	9429040267098	Company, trust or incorporated society registration number	154923
	Registered office of company or incorporated society (if applicable)		14 Captain Roberts Road, Te Anau 9600	
	Company phone	032497816	Company website	www.realnz.com
	Contact person and role		Fiona Black – Manager Concessions and Consents	
	Phone		Mobile phone	
	Email		Fiona.black@realnz.com	
	Postal address	P.O. Box 1, Te Anau	Postcode	9640
	Street address (if different from postal address)	14 Captain Roberts Road, Te Anau	Postcode	9600

B. Variation of an existing concession

Is this application *varying* an existing concession?

No	<input checked="" type="checkbox"/>
Yes	<input type="checkbox"/>

- Only complete the parts of the form that relate to the variation you are seeking.
- State the concession number of the concession you wish to vary and describe the variation.

Concession number you wish to vary	
------------------------------------	--

- Briefly describe the variation you are seeking to your existing concession:

--

C. Pre-application meeting

Have you had a pre-application meeting or spoken to someone in DOC?

No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>

- If yes, state when and who with:

Judi Brennan, Permissions Manager,
Vicki Crosbie, Permissions Team Leader, and
Lisa Wheeler, Senior Permissions Advisor

D. Description of activity

Select what applies to you:

Commercial aircraft (including commercial use of drones or other unmanned aircraft)	<input checked="" type="checkbox"/>
Private recreational aircraft (including recreational drone use over three months)	<input type="checkbox"/>

Select the type of aircraft you are going to be using:

Fixed wing	<input type="checkbox"/>
Helicopter	<input checked="" type="checkbox"/>
Drone (commercial and recreational over three months)	<input checked="" type="checkbox"/>

Explain what the landing / hovering is for, e.g. scenic landings, dropping off or picking up recreationalists (e.g. hunters.), servicing other Concessionaires (e.g. guided walking groups, dropping/collecting beehives.).

1. Utilising Helicopters to undertake Te Ana-au Glowworm Cave infrastructure servicing, repairs, maintenance, upgrade activities and potentially pest control activities to control both weed and mammalian pest threats. Including the most common activities of removing septic tank waste; and removal of tree fall hazards plus taking photographs / video of the likes of slips (tree avalanches) to assess how remedial work should be carried out which typically only involves aircraft hovering for the activities such as attaching slings and loads (NB on occasion it might require flying up as far as Lake Orbell if for some reason the Tunnel Burn and unnamed stream flow are drastically reduced);
2. Utilising Helicopters to access Te Ana-au Glowworm Cave site in the event of an emergencies including medical evacuations and for firefighting;
3. Helicopter and Drone flights for photography / filming for promotional videos and still photography over Te Ana-au Glowworm Caves site and Lake Te Anau; and
4. Drone flights for other activities associated with the operation of Te Ana-au Glowworm Cave such as inspecting site for hazards such as slips / tree falls, dead trees; weed and pest control.

All of the above proposed activities will be undertaken infrequently on an 'as an when required' basis mainly by 'contracted' aircraft operators such as Southern Lakes Helicopters. The only consistent activity is the removal of septic tank waste, nonetheless the frequency of this activity is determined by the number of people visiting the Te Ana-au Glowworm Caves. The proposed aircraft use detailed in point 1, and 4 above will be generally undertaken during the times when there are no visitors are on site at Te Ana-au Glowworm Caves to assist to manage health and safety and not adversely impact on the visitor experience.

When Helicopters are landed, they are most often landed on the lakeshore in front of Cavern House, but this depends on the lake level. In high lake levels there is virtually no beach and Helicopters can only land where they can find a clear area of lake shore.

Figure 1 – Photo of lake shore in front of Cavern House



E. Are you applying for anything else?

Are you applying for DOC concessions to undertake other activities while you are undertaking this activity?

No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>

- If yes, state the other concessions you are applying for.

ACTIVITY APPLICATION FORM*	FORM NO.	TICK
Land use: Use of public conservation land for private/commercial facility/structure	3b	<input checked="" type="checkbox"/>
Guiding/Tourism/Recreation: Watercraft activities	4b	<input checked="" type="checkbox"/>
Filming	5a	<input checked="" type="checkbox"/>
Other activities (not covered in the above forms or in the new activity application forms that combine applicant and activity information)	7a	<input checked="" type="checkbox"/>
Easement		<input checked="" type="checkbox"/>
Land Based Guiding Activities		<input checked="" type="checkbox"/>

F. Duration

State how long (months and years) you want your concession to last

27 years

- Explain why you are seeking this duration:

We are seeking this renewed term in accordance with clause 17 of the Deed between Real Journeys Ltd (formerly Fiordland Travel Ltd) and the Minister of Conservation signed on 30 June 1989 as added by the Deed dated 10 December 1992 (PAC 14-06-02-01), and also under Part 3B of the Conservation Act 1987.

We require a significant concession term to reflect the value of investment we have made in connection with the operation of the Te Ana-au Glowworm Caves tours including wharves and vessels on Lake Te Ana-au. Surety of tenure in relation to our operation will enable us to invest in new innovations such as the introduction of either an electric or hydrogen powered vessel on Lake Te Anau to service the Lake Te Ana-au Glowworm Caves with such an investment being in the magnitude of one million plus dollars.

G. Background experience of applicant

Provide relevant information relating to your ability to carry out the proposed activity (e.g. details of previous concessions, membership of professional organisations, and relevant qualifications).

In 1954 Les and Olive Hutchins began operating the Manapouri-Doubtful Sound Tourist Company, running four-day excursions to and from Doubtful Sound. In 1966 Les and Olive acquired Fiordland Travel Ltd with its Te Ana-au Glowworm Caves and Milford Track Lake Transport operation and began trading as Fiordland Travel Limited.

Continued expansion followed with the acquisition of the vintage steamship “TSS Earnslaw” in Queenstown in 1969 and with the establishment of cruises in Milford Sound in 1970.

Since 2002 Fiordland Travel Ltd has operated all its tourism excursions under the ‘Real Journeys’ brand; in 2004 Stewart Island Experiences was established and in 2006 changed its company name to Real Journeys Limited. In 2013 Real Journeys also purchased Cardrona Alpine Resort and the 155-hectare property at Walter Peak which Real Journeys previously leased. Then in 2015 Real Journeys purchased the International Antarctic Centre in Christchurch and in 2016 Real Journeys took over 100% ownership of Queenstown Rafting and purchased Kiwi Discovery which were also wrapped into the Go Orange brand. In 2018 Go Orange purchased Queenstown Water Taxis and Thunder Jet.

In October 2018 the Wayfare Group was established and each company created or acquired by Real Journeys Limited became wholly owned subsidiaries of the Wayfare Group. Due to the fallout from COVID-19 in early 2021 Go Orange was absorbed into Real Journeys and all Go Orange concessions have been assigned to Real Journeys.

Now late in 2021 Wayfare has become RealNZ and while Cardrona Alpine Resort, Treble Cone and the International Antarctic Centre maintain their individual brands as RealNZ experiences, all the tourism brands including all the Go Orange Products come under the umbrella of RealNZ. Accordingly the RealNZ remains the largest tourism operator in the region with approximate 37 Department of Conservation Concessions / Approvals; several management agreements and operational bases in Christchurch, Milford Sound, Te Anau, Manapouri, Queenstown, Wanaka and Stewart Island.

H. Consultation undertaken

DOC has a statutory obligation to give effect to the principles of the Treaty of Waitangi. This may require consultation with our Treaty Partner (iwi/hapū/whānau of local Maori) on your application. If you have already consulted with our Treaty Partner, or with other interested stakeholders, DOC would like to know about it.

We recommend you discuss consultation with a DOC staff member before starting your application.

Have you carried out any consultation?

No	<input checked="" type="checkbox"/>
Yes	<input type="checkbox"/>

As noted in our cover letter, this application has been prepared under time-pressure. There has not been sufficient opportunity for us to carry out proper consultation with mana whenua and iwi Māori. We intend to carry out appropriate consultation as soon as we are able.

- If yes, supply details for each group consulted with:

whānau/hapū/iwi or other interested party consulted with:	In the first instance we will be engaging with Ōraka Aparima Rūnaka
Name of individual you consulted with:	Most likely [REDACTED]
Date of consultation:	

How consultation was undertaken (e.g. email, meeting):	
Outcome of consultation*:	To be provided.
Other interested stakeholders consulted with e.g. Conservation Boards or community groups:	When appropriate we will present to the Southland Conservation Board
Name of individual you consulted with:	
Date of consultation:	
How consultation was undertaken (e.g. email, meeting):	
Outcome of consultation*:	

* If you received a written response to consultation attach a copy. Record the document details in the section [L] Attachments section of this form.

I. Consistency with DOC statutory plans

Note: Statutory planning documents can have a direct impact on your application, for example they may set the specific locations or number of landings allowed.

List the [DOC's statutory planning documents](#)¹⁵ relevant to your application:

Figure 2 - Location and extent of Takahē Specially Protected Area



Fiordland National Park Management Plan (FNPMP) is the relevant statutory document. The Te Ana-au Glowworm Caves was located within Takahē Specially Protected Area (Murchison Mountains) – refer figure 2 below. However

¹⁵ <https://www.doc.govt.nz/about-us/our-policies-and-plans/statutory-plans/>

in 2018 the lake boundary of the Takahē Specially Protected Area was lifted by approximately 200 metres through gazettal - refer figure 3 and 4 below. Consequently now most of the Te Ana-au Glowworm Caves site is outside the Takahē Specially Protected Area and it is unclear if the site is now in the East Fiordland Air Activity Zone.

Figure 3 – new Boundary of Takahe Specially Protected Area



Nonetheless the Section 5.3.4 Takahē Specially Protected Area (Murchison Mountains) of the FNMP provisions are as follows:

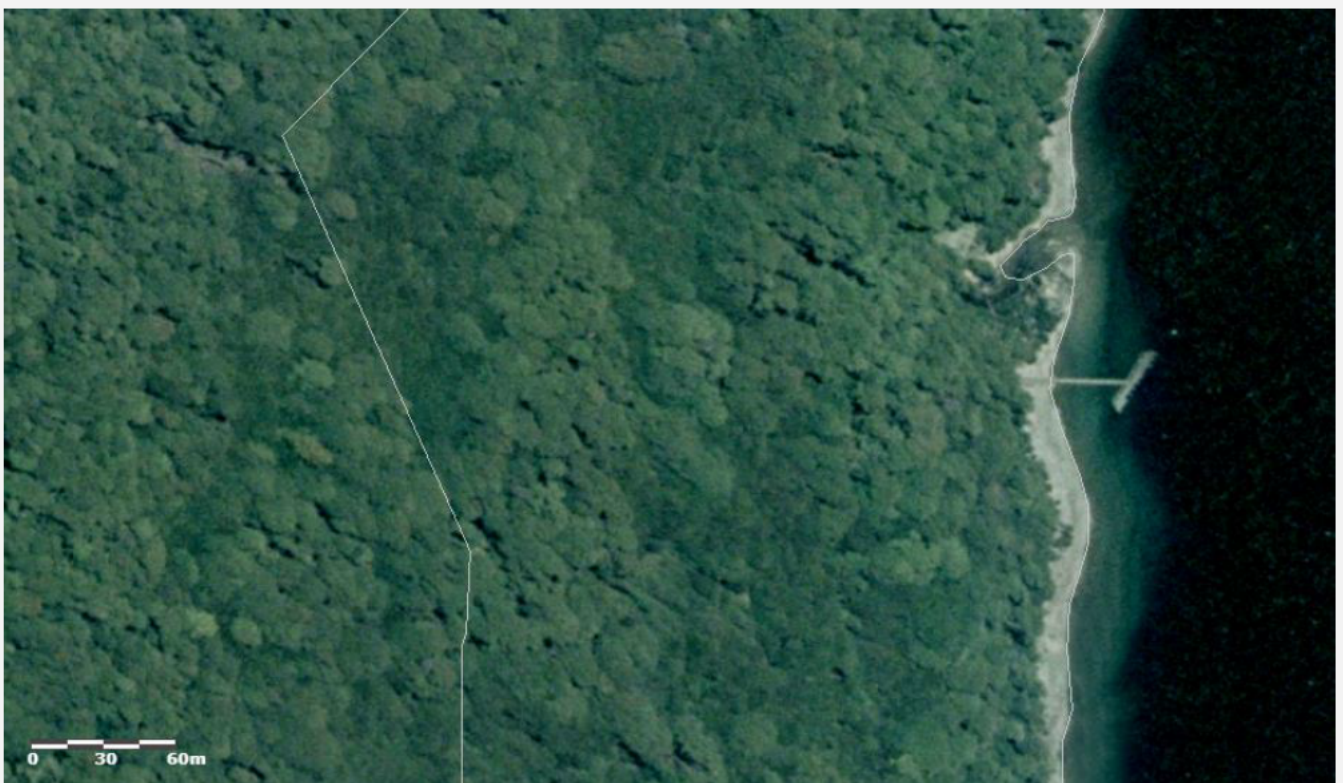
Objective

1. To manage the Takahē Specially Protected Area (Murchison Mountains) for the purpose of preserving takahē in their natural habitat. Any recreation and commercial access permitted to this area will be consistent with this purpose.

Implementation

3. The only permits that are likely to be granted are those which will not adversely affect the purpose of this Specially Protected Area. They will be limited to:
 - a) Access for non-guided recreational tramping groups to the tracks designated on Map 8. The following restrictions will apply:
 - i) Access will be restricted to December, January and February only;
 - ii) Only two tramping groups per week, with only one visitor group per day;
 - iii) Visitor group size will be restricted to no more than four members unless the Area Manager determines that camping is acceptable; then the visitor group size may be a maximum of six;
 - iv) Unless specially permitted, no camping will be allowed. Where camping is specifically permitted in accordance with point (iii) it may only occur within 100 metres of the huts listed in point (v); and
 - v) All groups will be required to use the following biodiversity huts only (unless specifically permitted to camp in accordance with point (iii)): Te Au, Robin Saddle, Wisely and Junction Burn.

Figure 4. Aerial view - including showing uplifted boundary of Takahe Specially Protected Area¹⁶



- b) *Access for trout fishing (both guided and non-guided) in the areas identified on Map 8. These areas will be identified by marker posts; and the Department of Conservation will advocate to Fish and Game New Zealand that the conditions of this access are listed on fishing licences. Access will be permitted for day trips only. Access may be reviewed at any time; and*
- c) *The following restrictions should apply regarding access for non-guided recreation visits to the Aurora Caves:*
- i) Only two visitor groups per month should be permitted;*
 - ii) In addition to (i) above, a further two extra visitor groups per annum may be permitted for public awareness and education purposes into the Caves;*
 - iii) Total visitor group size should not exceed twelve persons inclusive of group leaders (i.e. a maximum visitor group size of ten persons exclusive of group leaders);*
 - iv) All visitor groups should have a minimum of one member of the New Zealand Speleological Society included within the total visitor group size. This person will have to demonstrate knowledge of conservation ethics associated with caving and provide approved references;*
 - v) Access to the Aurora Caves should only be permitted for day visits (no overnight opportunities); and*
 - vi) Access to these caves may be declined should monitoring determine an unacceptable level of impact on the natural values of the caves (refer also Implementation 4 of this section). (refer also to section 5.14 Cave and Karst Systems)*
- d) *Concession access to the Aurora Caves should be subject to following conditions:*
- i) Due to sensitive cave environments only one concession should be granted for access to the Aurora Caves;*
 - ii) No facilities should be permitted to be developed in the caves;*
 - iii) Total visitor group size should not exceed twelve persons inclusive of guides (i.e. a maximum concession visitor group size of ten persons exclusive of guides);*
 - iv) All groups should have a minimum of one member of the New Zealand Speleological Society included within the total visitor group size. This person will have to demonstrate knowledge of conservation ethics associated with caving and provide approved references;*
 - v) Concession access to the Aurora Caves should be limited to one visit per month;*
 - vi) Concession access should only be permitted for day visits (no overnight opportunities); and*
 - vii) Access to these caves may be declined should monitoring determine an unacceptable level of impact on the natural values of the caves (refer also Implementation 4 of this section). (refer also to section 5.14 Cave and Karst Systems)*
- e) *The existing Te Ana-au Cave operation; and*
- f) *No aircraft landings/take-offs should be permitted in the Specially Protected Area for the purpose of enabling the access outlined in points a) - e).*

Section 5.5 AIRCRAFT ACCESS

5.5.1 Aircraft Access to Fiordland (general)

Objectives

- 1. To manage aircraft access in a way that facilitates public use and enjoyment of Fiordland National Park but does not have unacceptable adverse effects on natural values or visitors to Fiordland National Park.*
- 2. To allow aircraft access for concessionaire infrastructure, event servicing or other authorised activity where the effects of that access have been considered as part of the overall activity and are acceptable.*
- 3. To allow aircraft access for Fiordland National Park management, emergency and search and rescue purposes.*
- 4. To monitor both the level of aircraft access in Fiordland National Park and its effects on other Fiordland National Park visitors.*

Implementation

- 1. All aircraft operators landing in Fiordland National Park require a concession, except landings for emergency or search and rescue purposes or landings undertaken by the Department of Conservation or its contractors for management purposes. Although landings for search and rescue, emergencies and park management purposes will be unrestricted, the number of landings will still be monitored and landings for park management purposes should, where practical, occur at locations, times and frequencies that minimise the impact on natural values or visitors to Fiordland National Park. The Department of Conservation should use aircraft concessionaires for management operations within Fiordland National Park where possible.*
- 2. Where relevant, matters including, but not limited to, the following should be included on concessions for aircraft landings/take-offs:*
 - a) Provisions relating to frequency and timing of activity and the number of landings;*
 - b) Provisions relating to restrictions on purpose of landing;*
 - c) Provisions relating to noise mitigation measures;*
 - d) Details of all aircraft that the concessionaire is entitled to possess and operate within Fiordland National Park (including the type, registration and number of aircraft);*
 - e) Provisions specifying specific access points;*
 - f) Maps detailing the catchments and/or sites at which landings are permitted;*
 - g) A special condition allowing the review, suspension and/or termination of the concession should unauthorised landings be undertaken;*
 - h) The requirement to provide activity return forms that should include information on the timing, number, location of landings, number of passengers in the aircraft and purpose of all aircraft landings. This information should be required on a monthly basis in an agreed format;*
 - i) The requirement for all operators to record the location of landings using an approved Global Positioning Systems recorder, or a similar device. This information may be required by the Department of Conservation at agreed intervals;*
 - j) Provisions relating to managing any adverse effects on visitor experience values and natural values;*
 - k) The requirement that a minimum of 50% of all allocated landings in the concessions may be charged for at the start of the concession year regardless of whether they are used. The number of landings that are used above the first 50% may be charged for at a set time that should be detailed in the concession; and*
 - l) The requirement that concessionaires should be required to contribute to the cost of monitoring and research to determine the effects of aircraft access in Fiordland National Park.*
- 5. Endeavour to ensure that users of Fiordland National Park have realistic expectations of aircraft use. This message will be promoted in publications, at visitor centres and through the Department of Conservation's website.*

Concessionaire infrastructure servicing, scientific activity and the management of State Highway 94

16. Aircraft landings/takeoffs required for the essential servicing of concessionaire infrastructure events or scientific activity authorised by way of the concession process that are justified will be considered separately to the limits identified in Tables 7, 8, 9 and 10. The effects of landings/takeoffs will be considered as part of that concession application that authorises the infrastructure. Landings/ takeoffs will need to be consistent with the recreation opportunities identified in section 5.3 Visitor Settings of this plan. In addition to this, where relevant, landings/takeoffs associated with the servicing of concessionaire infrastructure or events will be subject to the requirements of Implementation 2.

Are you aware of any potential inconsistency of your activity with DOC's statutory planning documents?

No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>

- If yes, explain why it is inconsistent with the statutory planning documents.

Potentially there is an inconsistency with the FNPMP as Te Ana-au Glowworm Caves was located within Takahē Specially Protected Area (Murchison Mountains) (refer figure 2), however in 2018 the lake boundary of the Takahē Specially Protected Area was lifted by approximately 200 metres through gazettal - refer figures 3 and 4.

Consequently now most of the Te Ana-au Glowworm Caves site is now outside the Takahē Specially Protected Area and it is unclear if the site is now in the East Fiordland Air Activity Zone. That is because of the uplift of the boundary of the Takahē Specially Protected Area it is uncertain what management Plan 'visitor management setting' / zoning applies to the site and therefore which FNPMP implementations now pertain to the site. Despite implementation 7 of section 5.3.4 Takahē Specially Protected Area (Murchison Mountains). That is:

The Department of Conservation may also consider the appropriateness of the boundary of the specially protected area, with particular respect to a limited buffer zone for boat access to recognise the use of Lake Te Anau, by commencing a consultation process within the life span of this plan.

J. Location of the activity

List all the areas of your proposed operation. All columns must be completed. If the column is not applicable you must state so. If you require more space attach a separate document.

Need help? If you are unable to identify a location contact the local District Office or use DOC's online mapping system - maps.doc.govt.nz¹⁷.

- ① **Public Conservation Land:** Include the official name and type of the Public Conservation Land that the location is within (e.g. Fiordland National Park) use maps.doc.govt.nz¹⁸ to help you.
- ② **Landing / Hovering Location:** If you are applying for specific sites you must include NZTM GPS coordinates. If you are applying for landing zones, as identified in the relevant Statutory Document, state the zones you are requesting. If you are applying for drone use, state the start point in NZTM GPS coordinates and attach a map highlighting the area you wish to operate. Record any attachments in Section L of this application form.
- ③ **Reason for Landing / Hovering:** State the reason for each landing / hovering e.g. to drop off or pick up heli-hikers; to shuttle heli-bikers; to drop equipment; to survey an area etc.
- ④ **Aircraft Model:** List the model of each aircraft you intend to use.
- ⑤ **Aircraft Registration:** List the registration of each aircraft you intend to use. If your drone does not have a registration state N/A.
- ⑥ **Aircraft Weight:** List the weight of the empty aircraft.
- ⑦ **Max. No. of Passengers Aircraft Can Hold:** Excluding the pilot.
- ⑧ **Max. No. of Landings / Max. Duration Per Day:** Maximum number of landings at each site per day. If using a drone, state the maximum duration the drone will be in the air per day.
- ⑨ **Max. No. Landings / Max. Duration Per Year:** Maximum number of landings at each site per year. If using a drone, state the maximum duration the drone will be in the air per year.

¹⁷ maps.doc.govt.nz

¹⁸ maps.doc.govt.nz

	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Activity	Public Conservation Land	Landing / Hovering Location	Reason for Landing / Hovering	Aircraft Model Aircraft Registration Aircraft Weight			Max. No. of Passengers Aircraft Can Hold	Max. No. of Landings / Max. Duration Per Day	Max. No. Landings / Max. Duration Per Year
1.	Fiordland National Park	Mainly Te Ana-au Glowworm Caves Lease Area – but potentially a wider area (up to Lake Orbell) for site inspections and pest control activities to ensure pests do not re-invade the area around the caves.	Utilising Helicopters to undertake Te Ana-au Glowworm Cave infrastructure servicing, repairs, maintenance, upgrade activities and potentially pest control activities to control both weed and mammalian pest threats (these activities can involve photography and / videography to collect information to assess how work needs to be carried out [i.e. to plan the job and address H&S issues]) (NB on occasion it might require flying up as far as Lake Orbell if for some reason the Tunnel Burn and unnamed stream flow are drastically reduced). Including the most common activities of removing septic tank waste; and removal of tree fall hazards which typically only involves aircraft hovering while slings and loads are attached.	This Helicopter activity will be undertaken mainly by Te Anau based helicopter companies (not by Real Journeys) using aircraft such as Squirrel BA, B2, B3 and AS350; or Kawasaki BK-117. However, we do not believe the specifics of the helicopters being used should be included in any Real Journeys concession as Aircraft Companies frequently replace their aircraft.			N/A	6 per day maximum duration of each use half day.	24 landings year round, maximum duration of each use half day.
2.		Te Ana-au Glowworm Caves Lease Area	Utilising Helicopters to access Te Ana-au Glowworm Cave site in the event of an emergencies including medical evacuations and for firefighting.	Depending on the event, as the Helicopter could be deployed from Otago, so it is impossible to detail the aircraft details			Based on most common helicopter size (6 pax)	As and when required	As and when required

	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Activity	Public Conservation Land	Landing / Hovering Location	Reason for Landing / Hovering	Aircraft Model Aircraft Registration Aircraft Weight			Max. No. of Passengers Aircraft Can Hold	Max. No. of Landings / Max. Duration Per Day	Max. No. Landings / Max. Duration Per Year
3.		Te Ana-au Glowworm Caves site and over Lake Te Anau	Helicopter or Drone flights for photography / filming for promotional videos and still photography over Te Ana-au Glowworm Caves site and Lake Te Anau. Noting that due to the proximity of Te Anau township helicopters mainly fly to the site ex Te Anau and do not land at the Te An-au Glowworm Caves site when being utilised for filming or photography.	We do not believe the specifics of the Drones being used should be included in any Real Journeys concession as drone technology is evolving quickly accordingly drones are often being replaced with newer models with improved features. Refer above with respect to helicopter models.			N/A	6 per day maximum duration of each use half day.	24 landings year round, maximum duration of each use half day
4.		Mainly Te Ana-au Glowworm Caves Lease Area – but potentially a wider area to address / inspect site hazards (such as slips and tree falls) plus for pest control activities to ensure pests do not re-invade the area around the caves.	Drone flights for other activities associated with the operation of Te Ana-au Glowworm Cave such as inspecting site for hazards such as slips / tree falls, dead trees; weed and pest control. For instance, it would be advantageous to undertake a drone site inspection after major storm events to ensure the site is safe.	We do not believe the specifics of the Drones being used should be included in any Real Journeys concession as drone technology is evolving quickly accordingly drones are often being replaced with newer models with improved features.			N/A	12 per day maximum duration of each use half day.	52 landings year round, maximum duration of each use half day

K. Effects assessment

The table below suggests some common environmental effects and ways to remedy, mitigate or avoid them. Tick the boxes that are relevant to your application.

Refer attached, [Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application](#)

Feature	Potential effects	Proposed methods to avoid, remedy or mitigate the effect	Tick which apply
Flora and fauna	Disturbance of vegetation or natural area	- Educate staff, and clients on the sensitivities of the area and advise them of low impact techniques	<input checked="" type="checkbox"/>
		- Do not cut down or damage any vegetation or natural feature	<input type="checkbox"/>
		- Do not feed any species	<input checked="" type="checkbox"/>
		- Do not harass any species	<input checked="" type="checkbox"/>
	Damage to wildlife or habitat	- Do not take animals, including domestic pets, onto the land	<input checked="" type="checkbox"/>
		- Do not play recordings of bird song	<input checked="" type="checkbox"/>
Biosecurity	Introduction of new or increase in existing threats to indigenous ecosystems e.g. pests, weeds and pathogens	- Follow Biosecurity New Zealand's Check Clean Dry procedure when in and around waterways	<input checked="" type="checkbox"/>
		- Ensure footwear is cleaned at designated cleaning stations (e.g. Kauri die back areas) or with appropriate cleaning methods when cleaning stations are not available	<input type="checkbox"/>
		- Take all precautions to ensure weeds are not introduced to the land	<input checked="" type="checkbox"/>
Other users of the land	Too many landings in relation to the visitor setting.	- Ensure number of landings are kept to the limits set out in the statutory planning documents	<input checked="" type="checkbox"/>
		- Obtain a noise abatement certificate if required	<input checked="" type="checkbox"/>
	Cumulative impacts of additional landings / drones at already busy sites	- Ensure idle time on the ground is kept to a minimum	<input checked="" type="checkbox"/>
		- Consider timing of visits to off peak periods of the day, week, season or year where possible	<input checked="" type="checkbox"/>
	Increased noise	- Co-ordinate visits with other concessionaires (where possible)	<input checked="" type="checkbox"/>

Feature	Potential effects	Proposed methods to avoid, remedy or mitigate the effect	Tick which apply
	Conflict between different activities and visitors	- Select landing sites that avoid huts, tracks and car parks.	<input checked="" type="checkbox"/>
		- Select flight paths that avoid huts, tracks and car parks.	<input checked="" type="checkbox"/>
		- Complete accurate annual activity returns and maintain GPS records to allow DOC to monitor usage	<input checked="" type="checkbox"/>
		- Educate staff and clients on the need for respect for other visitors and their right to quiet enjoyment of the area	<input checked="" type="checkbox"/>
Cultural values	Offensive to Tangata Whenua or members of the public generally. Incorrect stories/history about the site	- Consult with Iwi over any proposal for cultural interpretation	<input checked="" type="checkbox"/>
		- Ensure any cultural interpretation is consistent with Iwi values	<input checked="" type="checkbox"/>
		- Educate clients to respect cultural values or traditions	<input checked="" type="checkbox"/>
Historic values	Damage to historic sites or objects, including Wahi Tapu	- Land away from historic sites and objects, including Wahi Tapu sites	<input checked="" type="checkbox"/>
Rubbish and waste	Rubbish, toilet waste or debris left on public conservation land	- Follow the ' Leave no Trace ' and ' Visit the Kiwi way ' principles	<input checked="" type="checkbox"/>
		- Do not refuel, leave any fuel drums or construct fuel dumps, unless in an emergency	<input checked="" type="checkbox"/>
		- Do not bury any toilet waste within 50 metres of a water source	<input checked="" type="checkbox"/>
		- Provide rubbish bags, proper waste containers and removal procedures and ensure these are not accessible to wildlife or able to be blown away	<input checked="" type="checkbox"/>
Fires	Wildfires	- Ensure no open fires	<input checked="" type="checkbox"/>
Positive effects	Allow members of the public to experience public conservation land in a safe manner and in areas they may not be capable of experiencing on their own	- N/A - Via guided tours, access to a unique and otherwise inaccessible cave system,	<input checked="" type="checkbox"/>

L. Attachments

Attachments should *only* be used if there is:

- Not enough space on the form to finish your answer.
- You have additional information that supports your answer.
- You wish to make an additional request of DOC regarding the application.

Label each document clearly and complete the table below.

Section of the application form the attachment relates to	Document title	Document format	Description of attachment
L & D	Real Journeys Concession Application Te Ana-au Glowworm Caves site and infrastructure plans and photos	PDF	Site photos, maps to provide an overview to the application
L	Lease plan 17.3.22	PDF	drawing
L	Hydro pipeline survey	PDF	drawing
L	Longitudinal section of hydro pipeline	PDF	drawing
K	Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application	PDF	EIA

M. Checklists

Application checklist	Tick
I have completed all sections of this form relevant to my application and understand that the form will be returned to me if it is incomplete.	<input checked="" type="checkbox"/>
I certify that the information provided in this application form and any attached additional forms is, to the best of my knowledge true and correct.	<input checked="" type="checkbox"/>
I have supplied the correct location and activity information in section J	<input checked="" type="checkbox"/>
I have completed the effects assessment in section K	<input checked="" type="checkbox"/>
I have appropriately labelled all attachments and completed section 'L. Attachments' to match.	<input checked="" type="checkbox"/>


N. Terms and conditions for a credit account with the Department of Conservation

Have you held an account with the Department of Conservation before?	Tick
No	<input type="checkbox"/>

Yes	<input checked="" type="checkbox"/>
If "yes", under what name:	Real Journeys Limited

In ticking this checklist and placing your name below you are acknowledging that you have read and agreed to these terms and conditions for an account with the Department of Conservation

Terms and Conditions	Tick
I/We agree that the Department of Conservation can provide my/our details to the Department's Credit Checking Agency to enable it to conduct a full credit check.	<input checked="" type="checkbox"/>
I/We agree that any change which affects the trading address, legal entity, structure of management or control of the applicant's company (as detailed in this application) will be notified in writing to the Department of Conservation within 7 days of that change becoming effective.	<input checked="" type="checkbox"/>
I/We agree to notify the Department of Conservation of any disputed charges within 14 days of the date of the invoice.	<input checked="" type="checkbox"/>
I/We agree to fully pay the Department of Conservation for any invoice received on or before the due date.	<input checked="" type="checkbox"/>
I/We agree to pay all costs incurred (including interest, legal costs and debt recovery fees) to recover any money owing on this account.	<input checked="" type="checkbox"/>
I/We agree that the credit account provided by the Department of Conservation may be withdrawn by the Department of Conservation, if any terms and conditions (as above) of the credit account are not met.	<input checked="" type="checkbox"/>
I/We agree that the Department of Conservation can provide my details to the Department's Debt Collection Agency in the event of non-payment of payable fees.	<input checked="" type="checkbox"/>

Applicant Name/s (of authorised person/s)		Date	25 March 2021
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For Departmental use

Credit check completed	
Comments:	
Signed	Name
Approved (Tier 4 manager or above)	Name



The Department recommends that you contact the Department of Conservation Office closest to where the activity is proposed to discuss the application prior to completing the application forms. Please provide all information requested in as much detail as possible. Applicants will be advised if further information is required before this application can be processed by the Department.

This form is to be used when your activity does not fall into any of the other categories. It is to be completed in conjunction with either Applicant Information Form 1a (longer term concession) or Applicant Information Form 1b (one-off concession) as appropriate.

- If your application involves guiding clients on public conservation land eg walking, kayaking, 4WD, hunting, aircraft landings, please fill in Forms 4a, 4b and/or Form 4c as applicable.
- If your application includes building, extending or adding to any permanent or temporary structures or facilities on public conservation land, please also fill in Form 3b,
- If your application includes tenancy of any DOC managed buildings (other than overnight usage of huts) please also fill in Form 3a.
- If your application is for access across public conservation land please fill in Form 3c.

Please complete this application form, attach Form 1a or Form 1b, and any other applicable forms and information and send to permissions@doc.govt.nz. The Department will process the application and issue a concession if it is satisfied that the application meets all the requirements for granting a concession under the Conservation Act 1987.

If you require extra space for answering please attach and label according to the relevant section.

A. Description of Activity

Please describe the proposed activity(s) in detail.

Please include the name and status of the public conservation land, the size of the area you are applying for and why this area has been chosen.

Please attach maps of the location and any detailed site plan, any drawings of proposal and label Attachment 7a:A.

Any activities undertaken at Te Ana-au Glowworm Caves which are not addressed in the following application forms:

ACTIVITY APPLICATION FORM*	FORM NO.	TICK
Land use: Use of public conservation land for private/commercial facility/structure	3b	<input checked="" type="checkbox"/>
Guiding/Tourism/Recreation: Watercraft activities	4b	<input checked="" type="checkbox"/>
Filming	5a	<input checked="" type="checkbox"/>
Aircraft Activities		<input checked="" type="checkbox"/>
Easement		<input checked="" type="checkbox"/>
Land Based Guiding Activities		<input checked="" type="checkbox"/>

Such as:

1. Retail – sale and purchase of souvenirs such as postcards and Glowworm novelty items;
2. Provision of Food and Beverage services – tea and coffee; sale (or supply) of softdrinks, snacks; other light refreshments and on occasion the service of more substantial food and beverage offerings (including alcohol) for special interest, conference and ‘famil’ / media groups (for MICE groups – i.e. meetings, incentives, conferences and exhibitions);
3. Trapping to reduce the population of mammalian pests including the establishment and maintenance of ‘trap lines’;
4. Weed pest control activities;
5. Site monitoring and inspections by the likes of Geotech experts, scientists and engineers mainly to continually assess the safety of the site and provide advice regarding site management;
6. Provision of services for instance the actual activity of generating of electricity, treating wastewater, taking of freshwater for use the domestic supply in Cavern House (including sampling for resource consent compliance monitoring);
7. The actual ‘damming’ of the Tunnel Burn to create the Glowworm Grotto;
8. The installation, use, maintenance and upgrading of the following types of ‘IT’ equipment; that is the provision in a concession to allow for the adoption of technology (as it becomes more readily available) to in particular monitor the overall safety of the site;
 - i. The 4G aerial inside the Cavern House which provides internet connectivity to the eastern side of Lake Te Anau;
 - ii. Weather station monitoring where the data can be monitored remotely through web based

applications;

- iii. Cave environment (including Geotech) monitoring (including scientific research) where the data can be monitored remotely through web based applications;
- iv. Potentially the use of so called 'smart traps' where a cell phone signal or similar is sent out when the trap has been triggered; and
- v. Use of other smart technologies where a cell phone signal or similar is sent out when the likes of the hydro intake become blocked, which would also include the use of battery packs and solar panels on a tower to get above tree height.

B. Term

Please detail the length of the term sought (i.e. number of years or months) and why. If you are applying for a one-off permit please state the specific dates and/or times sought.

Note: An application for a concession for a period over 10 years must be publicly notified, an application for a concession up to 10 years will not be publicly notified unless the adverse effects of the activity are such that it is required, or if an exclusive interest in the land is required.

27 years

We are seeking this renewed term in accordance with clause 17 of the Deed between Real Journeys Ltd (formerly Fiordland Travel Ltd) and the Minister of Conservation signed on 30 June 1989 as added by the Deed dated 10 December 1992(PAC 14-06-02-01), and also under Part 3B of the Conservation Act 1987.

We require a significant concession term to reflect the value of investment we have made in connection with the operation of the Te Ana-au Glowworm Caves tours including wharves and vessels on Lake Te Ana-au. Surety of tenure in relation to our operation will enable us to invest in new innovations such as the introduction of either an electric or hydrogen powered vessel on Lake Te Anau to service the Lake Te Ana-au Glowworm Caves with such an investment being in the magnitude of one million plus dollars.

C. Bulk fuel storage

Under the Hazardous Substances and New Organisms Act 1996 (HSNO Act) 'Bulk fuel storage' is considered to be any single container, stationary or mobile, used or unused, that has a capacity in excess of 250 litres of Class 3 fuel types. This includes petrol, diesel, aviation gasoline, kerosene and Jet A1. For more information on Hazardous Substances, go to:

<http://www.business.govt.nz/worksafe/information-guidance/legal-framework/hsno-act-1996>

Do you intend to store fuel in bulk on the land as part of the activity?

YES / NO

D. Environmental Impact Assessment

This section is one of the most important factors that will determine the Department's decision on the application. Please answer in detail.

Refer attached Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application

E. Other

Is there any further information you wish to supply in support of your application? Please attach if necessary and label Attachment 7a:E.

Application for an Easement on Public Conservation Land



Department of
Conservation
Te Papa Atawhai
New Zealand Government

Is this the right application for me?

Use this application form if you seek an easement concession across public conservation land, either to benefit other land or in gross (e.g. right of way), for the following purpose:

- a right to convey water.
- a right to drain water.
- a right to drain sewage.
- a right of way.
- a right to convey electricity.
- a right to convey telecommunications.
- a right to convey gas.

Use this form for new applications and variations to an existing easement concession across land administered by the Department of Conservation (DOC).

How do I complete this application form?

- Complete all sections of this form.
- DOC encourages electronic applications (e.g. a typed Word document), rather than handwritten applications. Electronic applications are easier to read and less likely to be returned to you for clarification.
- If you need extra space, attach or include extra documents and label them according to the relevant section. Record the document details in section **L Attachments**.
- It is recommended that you read the standard and optional terms and conditions in the [concession \(easement\) template](#)¹ to inform your application.

Personal information will be managed by DOC confidentially. For further information check [DOC's privacy and security statements](#).

If I need some help, where do I get more information?

- Check DOC's [Access/Easement](#)² webpage.
- Arrange a pre-application meeting (either face to face or over the phone) by contacting the local [DOC office](#)³ closest to where your activity is taking place. You can use [DOC maps](#)⁴ to identify which District Office you should contact. Or arrange a meeting with any of our [offices that process concessions](#)⁵ – choose the one closest to where the activity is proposed.
- It is recommended that you seek legal advice for guidance when completing this form.

¹ <https://www.doc.govt.nz/globalassets/documents/about-doc/concessions-and-permits/concessions/concession-contract-easement.pdf>

² <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/access-easements/>

³ <https://www.doc.govt.nz/footer-links/contact-us/office-by-name/>

⁴ <http://maps.doc.govt.nz/mapviewer/index.html?viewer=docmaps>

⁵ <https://www.doc.govt.nz/get-involved/apply-for-permits/contacts>

Have you considered DOC's statutory planning documents?

Your easement concession must not be inconsistent with [DOC's relevant statutory planning documents](#)⁶ as they set out how DOC and our Treaty partners manage public conservation land. Statutory planning documents can have a direct impact on your application.

Book a pre-application meeting with DOC staff if you require assistance navigating DOC's statutory planning documents.

Have you considered the environmental effects of your easement concession?

It is your responsibility, as the applicant for the concession (easement), to **provide a detailed description** of the:

- Activity.
- The potential effects.
- Ways that you can remedy, mitigate or avoid any potential adverse effects.

A list of potential effects is supplied in this application form, under section **K Effects Assessment** for you to consider and attach to this application. The size and scale of your environmental effects assessment should be in proportion with the size and scale of the activity and its potential effects. You will need to describe the existing environment, the potential effects and describe your methods to avoid, remedy or mitigate these effects. For further information check [DOC's Environmental Impact Assessment](#)⁷ and [DOC's guide to preparing your environmental impact assessment](#)⁸. We also recommend that you read the standard conditions in the [concession \(easement\) template](#)⁹ about protecting the environment to inform your application. In many cases an Assessment of Environmental Effect (AEE) prepared for a resource consent under the Resource Management Act 1991 may be sufficient.

Book a pre-application meeting with DOC staff if you require assistance in scoping the environmental effects you will need to consider in your application.

How do I submit my application?

Email your completed application, recommended location forms, and any other attachments to:

permissions@doc.govt.nz

What happens next?

Once received, your application will be assessed by DOC. If your application is complete, DOC will begin processing.

If your application is incomplete it will be returned to you for more information.

Why does DOC ask for this information?

The questions in this application form are designed to cover the requirements set out in conservation legislation. Your answers allow us to assess:

- The effects of your activity and your proposed methods to avoid, remedy or mitigate any adverse effects of the activity.
- Your qualifications, resources, skills and experience to adequately conduct the activity on public conservation land.

⁶ <https://www.doc.govt.nz/about-us/our-policies-and-plans/statutory-plans/>

⁷ <https://www.doc.govt.nz/get-involved/apply-for-permits/managing-your-concession/environmental-impact-assessment/>

⁸ <https://www.doc.govt.nz/globalassets/documents/about-doc/concessions-and-permits/concessions/guide-to-environmental-impact-assessments.pdf>

⁹ <https://www.doc.govt.nz/globalassets/documents/about-doc/concessions-and-permits/concessions/concession-contract-easement.pdf>

- Your creditworthiness is a factor in determining whether DOC should extend credit to you and set up a DOC customer accounts receivable credit account for cost recovery. To make this assessment DOC will supply your information to a credit checking agency.

Note: Information collected by DOC will be supplied to a debt collection agency in the event of non-payment of payable fees.

Treaty Partner consultation

DOC has a statutory responsibility to give effect to the principles of the Treaty of Waitangi. One component of this may be DOC consulting with Treaty Partners about your application. This consultation will feed into DOC's decision-making process. More information can be found on the DOC website on our [iwi/hapū/whānau consultation](#)¹⁰ page.

Contact your local [DOC office](#)¹¹ if you require further information about consultation.

What fees will I pay?

You may be required to pay a **processing fee** for this application regardless of whether your application is granted or not. You may request an estimate of the processing fees for your application. If you request an estimate, DOC may require you to pay the reasonable costs of the estimate prior to it being prepared. DOC will not process your application until the estimate has been provided to you. In addition, if you are granted an easement concession over public conservation land you may also be required to pay a **bond, insurance, monitoring fees and ongoing concession easement activity**¹² and **management fees**. Minor easement concession fees are listed on the [Access/Easement](#)¹³ page on the DOC website.

DOC will invoice your processing fees after your application has been considered. If your application is large or complex, DOC may undertake billing at intervals periodically during processing until a decision is made. If you withdraw your application DOC will invoice you for the costs incurred up to the point of your withdrawal.

Your application will set up a credit account with DOC. See the checklist at the end of the form for the terms and conditions you need to accept for a DOC credit account.

Will my application be publicly notified?

- Your application for an easement concession may be publicly notified if having regard to the effects of the activity it is considered appropriate to do so.¹⁴

What does DOC require if my application is approved?

If your application is approved DOC may require:

- **Insurance** to indemnify the Minister of Conservation against any claims or liabilities arising from your actions. The level of insurance cover will depend on the activity.
- A **bond** may be required to be in place before undertaking your activity.¹⁵

Note: The Minister can vary the easement concession if the information on which the easement concession was granted contained material inaccuracies. DOC may also recover any costs incurred.

¹⁰ <https://www.doc.govt.nz/get-involved/apply-for-permits/iwi-consultation/>

¹¹ <https://www.doc.govt.nz/footer-links/contact-us/office-by-name/>

¹² <https://www.doc.govt.nz/get-involved/apply-for-permits/managing-your-concession/ongoing-concession-fees/>

¹³ <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/access-easements/>

¹⁴ <http://www.legislation.govt.nz/act/public/1987/0065/latest/DLM7475509.html>

¹⁵ <http://www.legislation.govt.nz/act/public/1987/0065/latest/DLM104654.html>

Registration

If you wish to register the easement concession on the Record of Title (formerly known as a Certificate of Title) you need to:

- Discuss with DOC your intention to register your application.
- Record your intent to register in section **M Registration on a Record of Title**.
- Gain DOC's permission to register your application.
- Engage your own legal advice to complete your registration.
- Check the conditions in the [concession \(easement\) template](#).
- Provide detailed plans to DOC (GIS shapefiles (.shp) are recommended).

Note: The applicant will be responsible for registering the easement concession and all the costs of registration.

A. Applicant details

Legal status of applicant (tick)	<input type="checkbox"/> Individual (Go to ①)	
	<input checked="" type="checkbox"/> Registered company (Go to ②)	<input type="checkbox"/> Trust (Go to ②)
	<input type="checkbox"/> Incorporated society (Go to ②)	<input type="checkbox"/> Other e.g. Educational institutes (Go to ②)

①	Applicant name (individual)		
	Phone		Mobile phone
	Email		
	Physical address		Postcode
	Postal address (if different from above)		Postcode

②	Applicant name (full name of registered company, trust, incorporated society or other)		Real Journeys Limited	
	Trading name (if different from applicant name)		Realnz	
	NZBN if applicable (to apply go to: https://www.nzbn.govt.nz)	9429040267098	Company, trust or incorporated society registration number	154923
	Registered office of company or incorporated society (if applicable)		14 Captain Roberts Road, Te Anau 9600	
	Company phone	032497816	Company website	www.realnz.com
	Contact person and role		Fiona Black – Manager Concessions and Consents	
	Phone		Mobile phone	
	Email		Fiona.black@realnz.com	
	Postal address	P.O. Box 1, Te Anau	Postcode	9640
	Street address (if different from postal address)	14 Captain Roberts Road, Te Anau	Postcode	9600

B. Variation of an existing easement concession.

Is this application *varying* an existing easement concession?

No	<input checked="" type="checkbox"/>
Yes	<input type="checkbox"/>
Easement concession number you wish to vary	

C. Pre-application meeting

Have you had a pre-application meeting or spoken to someone in DOC?

No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>

- If yes record the:

Date of DOC pre-application meeting	14 October 2021
Name of DOC staff member	Judi Brennan, Permissions Manager, Vicki Crosbie, Permissions Team Leader, and Lisa Wheeler, Senior Permissions Advisor
Name of person who had the pre-application meeting with DOC	Mathew Day, General Manager Corporate Affairs, Realnz; Paul Norris, Chief Conservation Officer, Realnz; and Fiona Black, Concessions & Consents Manager, Realnz.

D. Location and nature of the proposed easement concession

Name (physical description/common name) and land status of public conservation land on which the concession (easement) will cover.

The location of this site of application is the Fiordland National Park. The Te Ana-au Glowworm Caves was located within Takahē Specially Protected Area (Murchison Mountains) – refer figure 1 below. Yet in 2018 the lake boundary of the Takahē Specially Protected Area was lifted by approximately 200 metres through gazettal - refer figure 2 and 3 below. Consequently most of the Te Ana-au Glowworm Caves site is now outside the Takahē Specially Protected Area.

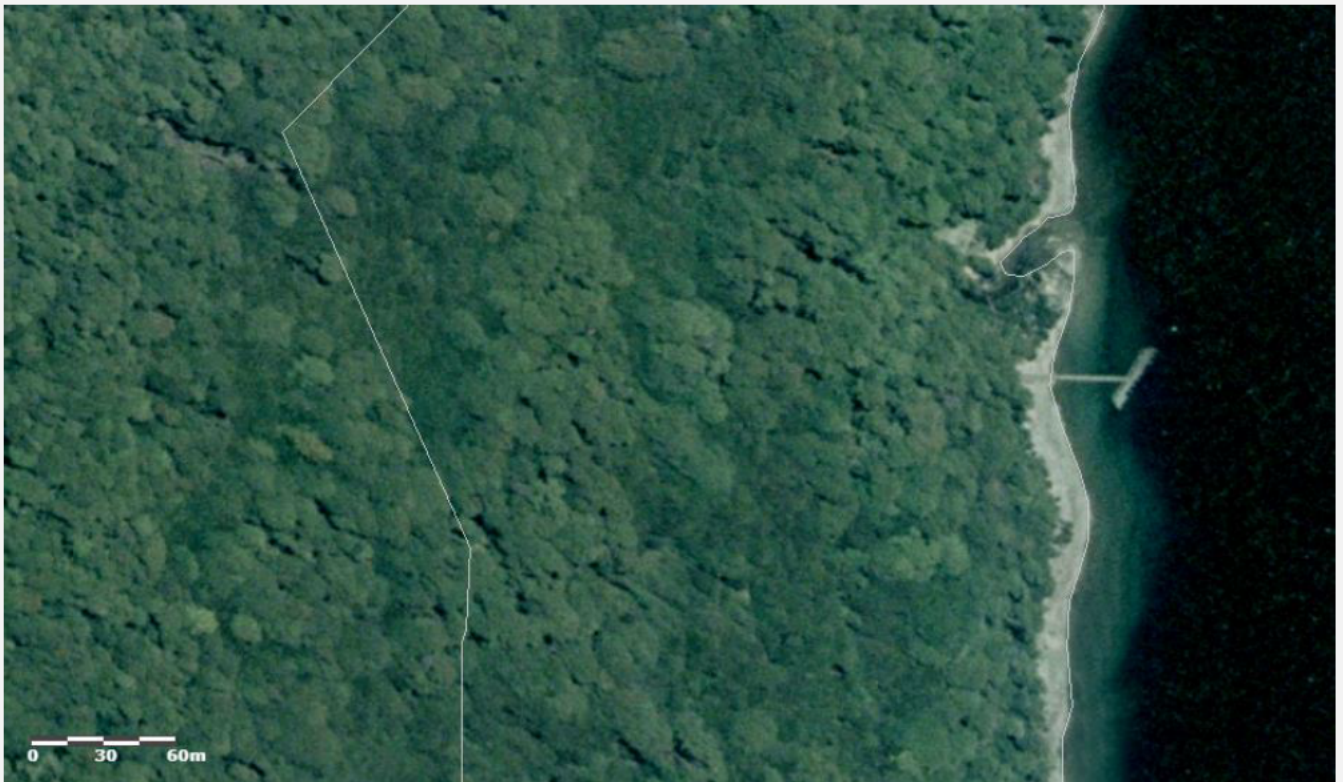
Figure 1 - Location and extent of Takahe Specially Protected Area



Figure 2 – new Boundary of Takahe Specially Protected Area



Figure 3. Aerial view - including showing uplifted boundary of Takahe Specially Protected Area¹⁶



Will your easement concession benefit other land?

No	<input checked="" type="checkbox"/>
Yes	<input type="checkbox"/>

If yes, provide the Lot, Deposited Plan (DP) and record of title of the other land that the easement concession will benefit.

Provide the following documents (as attachments) and record the document details in the section L Attachments of this form:

- **Detailed site plan** - with proposed easement, for example:
 - For a road: the length, width, area and position where the easement will be situated.
 - For a pipe: length, width, diameter of the pipe, area and position where the easement will be situated.
 - For telecommunications: mast dimensions and type, including height, site footprint (m²) and position where the easement facility will be situated.
- **Map of the site**
- **Aerial photo** of the site
- **Drawings of the proposal** (DOC's recommendation is for a GIS shapefiles (.shp) especially if you are going to register the easement on the title of the land)
- **GPS coordinates** (if available) and **provisional survey plan** (if available).

¹⁶ <https://maps.es.govt.nz/index.aspx?app=basic>

Record the document details in the section L Attachments of this form.

Refer attached Te Ana-au Glowworm Cave site and infrastructure photos.

E. Description of activity

Select (by ticking the box) all the easement concession types you are applying for:

A right to convey water:	<input checked="" type="checkbox"/>
A right to drain water:	<input checked="" type="checkbox"/>
A right to drain sewage:	<input checked="" type="checkbox"/>
A right of way:	<input checked="" type="checkbox"/>
A right to convey electricity:	<input checked="" type="checkbox"/>
A right to convey telecommunications:	<input checked="" type="checkbox"/>
A right to convey gas:	<input type="checkbox"/>

Describe in detail the reasons for your proposed easement concession, including why an easement is required (as opposed to a lease, license or permit). Location details can be completed in section D.

Refer attached Real Journeys Concession Application Te Ana-au Glowworm Caves site infrastructure plans and photos

We are applying for renewal of existing easement rights ancillary to and in support of the main Te Ana-au Glowworm Caves operation, services, and facilities to enable the continued operation of services and utilities for the Te Ana-au Glowworm Caves and associated activities (including under clauses 16 and 17 (as added) of the Deed signed on 30 June 1989). This includes ownership, control, operation, maintenance and management of services and facilities for year round use of the site (as applied for under various concession application forms as part of this overall application).

In particular we require:

- a) a right to take water (from the unnamed stream and Lake Te Anau), drain water; store, convey and use water for hydroelectric generator; 'domestic purposes' (drinking water, to supply bars, kitchen / canteen, and bathrooms etc.) and cleaning both interior and exterior areas at the site;
- b) a right to drain sewage, process and store (septic tanks) wastewater; and discharge waste via a disposal field.
- c) a right to convey electricity (from hydro, backup generator and batteries, to the various buildings; infrastructure and into the cave for lighting);
- d) a right of way (the right to access the site to conduct tours and undertake other operational functions including pest control, repairs, maintenance and remediation): and
- e) a right to convey telecommunications and computer media.

The easements pertain to the following services;

- Utilities and services (above and under the ground infrastructure) for storage, reticulation, and use of the following services; freshwater, wastewater, electricity, telecommunication, data, and computer media.
- Ancillary equipment such as monitoring, filtering, metering equipment and weather stations.

The Hydro plant consists of the following:

- Dam and intake structures (including surge tank and screens);
- Pipeline; PVC and steel hand riveted pipes;
- Pelton Wheel;
- Generator and valves; and
- Discharge race.

Water is diverted from the un-named stream via the hydro-pipeline through the Te Ana-au Glowworm Caves hydroelectric generation plant. As “the crow flies” the dam and water diversion structures cover 397.32 metres from the start of the flume to the valve before the hydro plant - refer attached drawing of longitudinal section of pipeline.

- i. The plant has a dam and intake structures upstream where the excess water flowing down the un-named stream bed to Lake Te Anau is diverted down the hydro pipe. The water then passes through a Pelton wheel with a static head of approximately 81 metres to generate power then the water passes out the discharge race into Lake Te Anau.
- ii. The speed of the hydro generating plant has been reduced from 1200 RPM to 1000 RPM to reduce the frequency of the AC current to 50 cycles per second in line with NZ standards. The voltage generated is 240v for Cavern House and is reduced to 24v for mainly lighting within the cave for safety reasons.

NB: When operating the hydroelectric power plant operates 24 hours per day, that is the hydro is not taken off line when the Te Ana-au Glowworm Caves tours are not operating (after hours) as the power generated overnight is used to recharge batteries.

Real Journeys contends that the best way (and proven way) to manage the operation of the Te Ana-au Glowworm Caves is through an ‘exclusive lease’ of the site, taking in all of the relevant assets and infrastructure. Therefore we assert that it is really only the water take from Lake Te Anau; the upper reaches of the hydroelectric plant pipeline the dam and intake structures that are relevant to this easement application. That is this easement application should address the ownership, control, operation, repair, maintenance and management of the Te Ana-au Glowworm Cave Hydroelectric plant and freshwater take infrastructure outside the ‘exclusive lease’ area including for providing ‘right of way’ access to upper reaches of the hydroelectric plant pipeline and the dam and intake structures and other areas above the Te Ana-au Cave system mainly for operational, repair, and maintenance activities.

Further ‘right of way’ access will be required outside the ‘exclusive lease’ area to access the Deadmans Point navigation aid (for repairs and maintenance); for pest control activities to address mammalian and weed pest threats in the adjacent land. Access to the Deadmans Point navigation aid will either be by walking along the shore from the Te Ana-au Glowworm Cave wharf or via small work boat from the lake shore.

The Te Ana-au Glowworm Caves tours infrastructure has been and will be continually tweaked and upgraded over the years as some of the groundworks reach their end of life and further health and safety measures are required to ensure the safety of persons on site. Also all of the aforementioned ‘above ground’ infrastructure is located in native bush and on occasion trees need to be trimmed or removed to ensure the safety of the infrastructure and people at the site. In addition, the Tunnel Burn which runs through the Te Ana-au Glowworm Caves (and created the caves) is subject to flood and in extreme floods the infrastructure in the caves can be damaged along with the external walkways over the Tunnel Burn and Caves entrance protection structures as

happened in September 2021. Accordingly any concession needs to provide for the remediation of Te Ana-au Glowworm Caves infrastructure as a result of natural hazards.

F. Permanent or temporary structures or facilities

As part of your easement, do you wish to build, extend or add to any permanent or temporary structures or facilities on public conservation land (e.g. pipes, pumps, pump sheds, storage tanks, towers, poles, fences, storage facilities)?

No	<input checked="" type="checkbox"/>
Yes	<input type="checkbox"/>

The overall application includes existing structures and facilities and at present we are not applying to build, extend or add to any permanent structures or facilities on public conservation land nonetheless we want the overall document to provide for alterations to our existing infrastructure in the future.

If yes, answer the following five questions.

- 1 Provide full details about the structure or facility (e.g. dimensions, materials, location, purpose) and methods of construction (e.g. number of people and vehicles involved).

- 2 Will you or do you own the structure?
 - If yes, will you have co-sitees located on the structure?
 - If yes, provide details of any co-sitees.
 - If no, provide details of who owns the structure.

- 3 Could your structure or facility, or addition/extension to an existing structure or facility, be reasonably located outside public conservation land?
 - If yes, provide details of other sites/areas that have been considered.
 - If no, provide reasons why existing structures or facilities outside of public conservation land are not suitable.

- 4 Could any potential adverse effects of your structure or facility (or addition/extension to an existing structure or facility) be significantly less (and/or different) in another conservation area or another part of the conservation area you are applying for? Give details/reasons.

- 5** Could you use an existing structure or facility? Could you use the existing structure or facility without any additions?
- If yes, provide details of any existing structures or facilities that you have considered using, or how your activity might be undertaken without making an addition to the existing structure or facility.
 - If no, provide reasons why any existing structure or facility could not be used without any additions.

G. Technical Specifications (for telecommunications easements only)

If you are applying for telecommunications sites, you must provide full details about the following information:

Radio frequencies	
Transmitter power output	
Polarisation of the signal	
Type of antennae	
Likely portion of a 24-hour period that transmission will occur	
Likely heaviest period of use during a 24-hour period	
Describe how the site(s) will be accessed (e.g. by foot along x track, by x road, or by a helicopter landing at x)	

H. Are you applying for any other DOC permissions?

Are you applying for other DOC permissions in addition to this easement?

No	<input type="checkbox"/>
Yes e.g. Permanent and temporary structures (that are not part of your easement)	<input checked="" type="checkbox"/>

If yes, state the other permits you are applying for?

ACTIVITY APPLICATION FORM*	FORM NO.	TICK
Land use: Use of public conservation land for private/commercial facility/structure	3b	<input checked="" type="checkbox"/>
Guiding/Tourism/Recreation: Watercraft activities	4b	<input checked="" type="checkbox"/>
Filming	5a	<input checked="" type="checkbox"/>
Other activities (not covered in the above forms or in the new activity application forms that combine applicant and activity information)	7a	<input checked="" type="checkbox"/>
Aircraft Activities		<input checked="" type="checkbox"/>
Land Based Guiding Activities		<input checked="" type="checkbox"/>

I. Duration (term of easement)

In accordance with section 17Z(3)(a)(c) of the Conservation Act 1987, an easement may be granted for a term not exceeding 30 years, except:

- (a) In exceptional circumstances, the Minister may grant a term not exceeding 60 years
- (b) Where the easement provides a right of way access to a property to which there is no other practical access, the term may be for such longer period as the Minister considers appropriate
- (c) Where the easement is for a public work (as defined in the Public Works Act 1981), the term may be for the reasonably foreseeable duration of that public work.

Detail the length of the term sought (i.e. **must be** number of years or months) and why (*Note: in perpetuity/forever or similar meaning is not a term under the Act and not able to be granted*):

27 Years

If you are seeking over 30 years, explain why:

We are seeking this renewed term in accordance with clauses 17 of the Deed between Real Journeys Ltd (formerly Fiordland Travel Ltd) and the Minister of Conservation signed on 30 June 1989 as added by the Deed dated 10 December 1992 (PAC 14-06-02-01), and also under Part 3B of the Conservation Act 1987.

We require a significant concession term to reflect the value of investment we have made in connection with the operation of the Te Ana-au Glowworm Caves tours including wharves and vessels on Lake Te Ana-au. Surety of tenure in relation to our operation will enable us to invest in new innovations such as the introduction of either an electric or hydrogen powered vessel on Lake Te Anau to service the Lake Te Ana-au Glowworm Caves with such an investment being in the magnitude of one million plus dollars.

J. Consultation undertaken

DOC has a statutory obligation to give effect to the principles of the Treaty of Waitangi. This often requires consultation with our Treaty Partner (iwi/hapū/whānau of local Maori) on your application. If you have already consulted with our Treaty Partner, or with other interested stakeholders (including other parties already located at your proposed location), DOC would like to know about it.

We recommend you discuss consultation with a DOC staff member before starting your application.

Have you carried out any consultation?

No



Yes



As noted in our cover letter, this application has been prepared under time-pressure. There has not been sufficient opportunity for us to carry out proper consultation with mana whenua and iwi Māori. We intend to carry out appropriate consultation as soon as we are able.

If yes, supply details of each Treaty Partner or interested stakeholders consulted with.

Copy and paste the table below and complete for each Treaty Partner or other interested stakeholders. If you received a written response to consultation attach a copy and record all attachments in section 'L Attachments', including:

- Additional pages with the required information
- Written responses to your consultation with Treaty Partners or other interested stakeholders.

Whānau/hapū/iwi or other interested party consulted with:	In the first instance we will be engaging with Ōraka Aparima Rūnaka
Name of individual you consulted with:	Most likely [REDACTED]
Date of consultation:	
Form of consultation (e.g. email, meeting):	
Outcome of consultation:	To be provided.

Other interested stakeholders consulted with e.g. Conservation Boards or community groups:	When appropriate we will present to the Southland Conservation Board
Name of individual you consulted with:	
Date of consultation:	
Form of consultation (e.g. email, meeting):	
Outcome of consultation:	

K. Consistency with DOC statutory plans

List the [DOC's statutory planning documents](#)¹⁷ relevant to your application.

Appendix 2 Ecosystem and habitat types within Southland Murihiku of Southland Murihiku Conservation Management Strategy 2016 recognises Cave Ecosystem / habitats plus likely threats and pressures including Te Ana-au Glowworm Caves and notes that the site is managed under a concession.

Fiordland National Park Management Plan (FNPMP) is the relevant statutory document. However the Te Ana-au Glowworm Caves was located within Takahē Specially Protected Area (Murchison Mountains) – refer figure 1 above. However in 2018 the lake boundary of the Takahē Specially Protected Area was lifted by approximately 200 metres through gazettal - refer figure 2 and 3 above. Consequently now most of the Te Ana-au Glowworm

¹⁷ <https://www.doc.govt.nz/about-us/our-policies-and-plans/statutory-plans/>

Caves site is outside the Takahē Specially Protected Area and it is now unclear what FNPMP 'management planning zoning' now applies to most of the Te Ana-au Glowworm Caves site. Nonetheless the following provisions of the FNPMP are applicable from Section 5.3.4 Takahē Specially Protected Area (Murchison Mountains):

Objective

1. To manage the Takahē Specially Protected Area (Murchison Mountains) for the purpose of preserving Takahē in their natural habitat. Any recreation and commercial access permitted to this area will be consistent with this purpose.

Implementation

1. No recreation facilities will be provided in the Takahē Specially Protected Area (Murchison Mountains).
2. All access to this area requires permission from the Minister (note: this does not include access required to meet the purpose of this Specially Protected Area as outlined in Objective 1).
3. The only permits that are likely to be granted are those which will not adversely affect the purpose of this Specially Protected Area. They will be limited to:
 - e) The existing Te Ana-au Cave operation; and
7. The Department of Conservation may also consider the appropriateness of the boundary of the specially protected area, with particular respect to a limited buffer zone for boat access to recognise the use of Lake Te Anau, by commencing a consultation process within the life span of this plan.

That is implementation 7 provided for the boundary of the specially protected area, to be lifted.

In addition section 5.6 Boating and Facilities of FNPMP acknowledges that the Te Ana-au Glowworm Caves site is "subject to lease".

Are you aware of any potential inconsistency of your easement concession with DOC's statutory planning documents? As outlined above, due to the lifting of boundary of the Takahē Specially Protected Area it is unclear what planning provisions now apply to the Te Ana-au Glowworm Caves site activities and infrastructure.

No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>

If you have answered yes, explain why it is inconsistent with the statutory planning documents

[Refer above](#)

L. Effects assessment

Identify actual or possible effects of the easement concession applied for. Describe the actions you propose to take to avoid, remedy or mitigate any adverse effects. For further information check [DOC's](#)

[Environmental Impact Assessment](#)¹⁸ and [DOC's guide to preparing your environmental impact assessment](#)¹⁹.

If you have identified effects or mitigation measures for adverse effects not included in the table below or you have a full Environmental Impact Assessment attach this information to your application. Record this additional information in the table below and in section K as an attachment.

Have you attached a full Environmental Impact Assessment?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>

Refer attached Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application.

If you have answered **no** provide a **description of environmental effects** of your easement concession in the table below including details of the:

- Existing environment
- Potential effects
- Proposed methods to avoid, remedy or mitigate the adverse effect/s.

Description of environmental effects	
No effects as the easement uses an existing structure or facility (including a road or track) and there will be no modification or disturbance due to increased use.	<input type="checkbox"/>
Effects	Description
Effects on the landscape e.g. ability of landscape to accommodate changes.	
Effects on the visual composition of the landscape	
Effects on cultural values of Tangata Whenua or members of the public	
Effects on historic sites or objects including Wahi Tapu e.g, disturbance of the ground.	
Effects on existing infrastructure such as roads, tracks, huts, carparks, huts etc.	
Effects on existing vegetation e.g. disturbance or removal of vegetation.	

¹⁸ <https://www.doc.govt.nz/get-involved/apply-for-permits/managing-your-concession/environmental-impact-assessment/>

¹⁹ <https://www.doc.govt.nz/globalassets/documents/about-doc/concessions-and-permits/concessions/guide-to-environmental-impact-assessments.pdf>

Effects of earthworks e.g. removal of topsoil and where removed earthworks will be stored. Note: All earthworks storage on public conservation land needs to be authorised.	
Effects on wildlife or wildlife habitat	
Effects on aquatic habitat (waterways, swamps, freshwater animals and vegetation).	
Effects on other users (tangata whenua, recreational users and concessionaires) of the Land.	
Effects of the easement increase threats (pests, weeds, pathogens and fire) to public conservation land.	
Effects of increased rubbish, toilet waste or debris left on public conservation land during construction and regular use of the easement.	
Cumulative effects that could be caused by the easement.	
Positive effects of the easement.	

M. Attachments

Attachments should *only* be used if there is:

- A specific question requiring a map or further information
- Not enough space on the form to finish your answer
- You have additional information that supports your answer
- You wish to make an additional request of DOC regarding the application.

Label each document clearly and complete the table below.

Section of the application form the attachment relates to	Document title	Document format	Description of attachment
E	Real Journeys Concession Application Te Ana-au Glowworm Caves site infrastructure plans and photos	PDF	Site photos, maps to provide an overview to the application
E	Lease plan 17.3.22	PDF	drawing
E	Hydro pipeline survey	PDF	drawing

Section of the application form the attachment relates to	Document title	Document format	Description of attachment
E	Longitudinal section of hydro pipeline		drawing
L	Real Journeys Environmental Impact Assessment Te Ana-au Glowworm Caves Concession Application	PDF	EIA

N. Registration on a Record of Title

Are you going to register your easement concession (if granted) on the Record of Title (formerly known as the Certificate of Title)?

No	<input checked="" type="checkbox"/>
Yes	<input type="checkbox"/>

If yes, you will be responsible for registering the easement concession, including all costs.

O. Checklist

Application checklist	Tick
I have completed all sections of this form relevant to my application and understand that the form will be returned to me if it is incomplete.	<input checked="" type="checkbox"/>
I certify that the information provided in this application form and any attached additional forms is, to the best of my knowledge, true and correct.	<input checked="" type="checkbox"/>
I have supplied maps to accompany my shapefiles (.shp) and/or NZTM GPS locations listed in section E Locations.	<input checked="" type="checkbox"/>
I have detailed, in Section 'K Effects assessment', the easements environmental effects or I have supplied a full Environmental Impact Assessment and attached to section 'L Attachments'.	<input checked="" type="checkbox"/>
I have indicated in section 'M Do you intend to register the easement concession' that I do or do not want the easement registered.	<input checked="" type="checkbox"/>
I understand if I want the easement registered on the Record of Title I will be paying all the costs of the registration including surveying and independent legal advice.	<input checked="" type="checkbox"/>
I have appropriately labelled all attachments and completed section 'L. Attachments' to match.	<input checked="" type="checkbox"/>

P. Terms and conditions for a credit account with the Department of Conservation

Have you held an account with the Department of Conservation before?	Tick
No	<input type="checkbox"/>
Yes	<input checked="" type="checkbox"/>
If "yes", under what name:	Real Journeys Limited

In ticking this checklist and placing your name below you are acknowledging that you have read and agreed to these terms and conditions for an account with the Department of Conservation

Terms and conditions	Tick
I/We agree that the Department of Conservation can provide my/our details to the Department's Credit Checking Agency to enable it to conduct a full credit check.	<input checked="" type="checkbox"/>
I/We agree that any change which affects the trading address, legal entity, structure of management or control of the applicant's company (as detailed in this application) will be notified in writing to the Department of Conservation within 7 days of that change becoming effective.	<input checked="" type="checkbox"/>
I/We agree to notify the Department of Conservation of any disputed charges within 14 days of the date of the invoice.	<input checked="" type="checkbox"/>
I/We agree to fully pay the Department of Conservation for any invoice received on or before the due date.	<input checked="" type="checkbox"/>
I/We agree to pay all costs incurred (including interest, legal costs and debt recovery fees) to recover any money owing on this account.	<input checked="" type="checkbox"/>
I/We agree that the credit account provided by the Department of Conservation may be withdrawn by the Department of Conservation, if any terms and conditions (as above) of the credit account are not met.	<input checked="" type="checkbox"/>
I/We agree that the Department of Conservation can provide my details to the Department's Debt Collection Agency in the event of non-payment of payable fees.	<input checked="" type="checkbox"/>

Applicant Name/s (of authorised person/s)		Date	25 March 2022
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For Departmental use			
Credit check completed			
Comments:			
Signed		Name	
Approved (Tier 4 manager or above)		Name	

Environmental Impact Assessment – Concession Application for Te Ana-au Glowworm Caves

Description of the Environment

The whole south-west Fiordland area has been subject to many geological forces: tectonic plate movements, glaciation and erosion. The landform has been created by the uplift of hard plutonic rocks such as granite and diorite and in the south-west of Fiordland; the uplifted marine terraces are unique in New Zealand. Some of these marine terraces such as those found in the Murchison Mountains and Mount Luxmore, are presently at an altitude of over 1,000 metres above sea level, with the benches spanning 50 kilometres. The oldest of these terraces are approximately 1 million years old. These uplifted rocks have been subsequently carved into their present shape by successive periods of heavy glaciation. Specifically the Fiordland terrain was scoured by glaciations during the last ice age, between 75,000 and 15,000 years ago. The larger lakes in Fiordland such as Lake Te Ana-au are situated in these old glacial valleys or troughs; their shorelines have evolved similarly to those of the fiords. Most erosion since the last glaciation period has been by way of rockfalls and slips. Effects are local and minor so that the glacial landforms are usually well preserved, other than where rivers have cut deep narrow gorges into the valley floors. Nevertheless, the distinctive geological feature of the Murchison Mountains is the karst system.

Karst is a distinctive terrain shaped by the action of water on soluble rock – usually marble or limestone. Features of karst landscapes include sinkholes, caves, blind valleys, bluffs, gorges, arches, and fluted rock outcrops. Caves are vital features and provide the underground drainage characteristic of karst terrain. Fiordland National Park contains only relatively small areas of karst. Notable, are those on the Hunter Mountains, Murchison Mountains and on Mount Luxmore. A prominent line of bluffs lies on the eastern flank of the Murchison Mountains above Lake Te Anau. On the lower slopes, the Aurora/Te Ana-au Glowworm Cave system consists of eight kilometres of passages. This system extends over 270 metres vertically from its uppermost entrance to its resurgence near the lakeshore. Aurora cave is significant for its size, geomorphology, diversity of form, and subterranean ecosystem. The lowest portion (Te Ana-au Glowworm Caves) has been developed for tourist visits with minimal impact on the overall cave system.

The Lake moderates the climate at the Te Ana-au Glowworm Caves by acting as a heat sink, cooling the summers and warming the winters, which in turn has modified the vegetation around the margins of the lake. Silver Beech and Mountain Beech are the most widespread species in Fiordland Forest, however near Lake Te Anau, Rimu, Miro, and Totara are often prominent. Southern Rātā, Kāmahi and Broadleaf are also significant in Fiordland forests because of their adaptability to extreme climate and soil conditions. A rich variety of ferns including blechnum ferns, shield ferns, spleenworts and filmy-ferns, along with the larger tree-ferns are all found. Nevertheless, around the Te Ana-au Glowworm Caves pole beach forest predominates with some Kamahi, Lancewoods and Broad Leafs.

This forest provides habitat for a number of bird and invertebrate species such as: Toutouwai (South Island Robin), Pīwakawaka (Fantail), Miromiro (South Island Tomtit), Korimako (Bellbird), Kiwi and Kererū (New Zealand Wood Pigeon). Rare species such as Whio (Blue Duck) are sometimes seen in the Tunnel Burn and Takahē occasionally come down to the lower reaches of the Murchison Mountains. The Te Ana-au Glowworm Cave provides habitat for *Arachnocampa luminosa* (Skuse, 1891), commonly known as New Zealand Glowworm or simply Glowworm / Titiwai, is a species of fungus gnat endemic to New Zealand. The larval stage and the imago produce a blue-green bioluminescence. The species is known to dwell in caves and on sheltered banks in native bush where humidity is high.

Arachnocampa luminosa (for which Real Journeys vessel the “Luminosa” is named) is widespread in both the North and the South Island. The spherical eggs (0.75mm in diameter) are usually deposited directly onto the cave wall. Upon hatching, the cylindrical larva immediately begins to glow. When they first emerge they are usually between 3-5 millimetres

long, and will grow to between 30-40mm across in several months. The larva may move around on the surface of the cave or bank before selecting a site to begin producing its silk nest. Most larvae emerge during the spring. The larva spins a nest out of silk on the ceiling of the cave and then hangs down up to 30 silk threads along which it places regular small sticky droplets. Their prey largely include other small Diptera (especially midges) although Glowworms living on banks may also trap spiders and other non-flying invertebrates. When prey is entangled in a snare, the larva pulls it up by ingesting the snare and starts feeding on the live prey. The larva will suspend itself on a long thread and pupates over up to 24 hours. The pupal phase lasts about two weeks. During this time, the pupa continue to glow although males eventually lose their glow. The adults which eventually emerge are poor fliers. Adults usually emerge during the winter and tend to live for up to 76 hours in the case of females and up to 96 hours in the case of males. Females usually lay over 100 eggs and eggs usually hatch after about 20 days.

The larvae of this species glow to attract prey into their threads. The glow has a maximum wavelength of 487 nm and, like other species exhibiting bioluminescence, this glow is produced as a result a luciferase enzyme acting upon a small molecule of luciferin. It occurs in modified excretory organs known as Malpighian tubules in the abdomen. The luciferase enzyme in this species shares similarities with the protein that occurs in fireflies. However, the luciferin that the enzyme acts upon is entirely different to that of fireflies and, indeed, from all other currently known bioluminescent systems.

Sources of mortality for Glowworms include predation by cave harvestmen (including the short-legged harvestmen, *Hendea myersi cavernicola*, and the long-legged harvestmen, *Megalopsalis tumida*), parasitic fungi (*Tolypocladium sp.*), and possibly cannibalism when adults become entangled in other larvae's silk threads although evidence is mixed.¹

In our lease area at the Te Ana-au Glowworm Caves, there are several structures to enable our Glowworm Caves tours to operate, such as Cavern House (visitor centre); steel and concrete walkways and viewing platforms; fences; the effluent treatment plant; hydro system including dam, intake, pipeline; Pelton wheel; diesel generator and discharge race. Thus the environment at the Te Ana-au Glowworm Caves is modified to a degree, especially compared to the surrounding Murchison Mountains. However the site has been operating as a visitor attraction since 1948, with many of the original structures such as dams, walkways, punt operations, hydroelectric power generation, all with a long history of minimal environmental impact. There is also a growing element of 'heritage tourism' to consider, as the site nears 75 years of visitor activity. Indeed natural forces, such as the recent tree fall and slip event, have had a far greater modifying effect on the 'local' environment, compared to the presence of visitors to the site.

¹ https://en.wikipedia.org/wiki/Arachnocampa_luminosa

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
Lower reaches of Murchison Mountains; Fiordland National Park	Landscape values	<p>Te Ana-au Glowworm Cave existing lease area contains a few buildings, and other infrastructure to facilitate the operation of Te Ana-au Glowworm Cave tours. This infrastructure has the potential to adversely affect the landscape values of the bottom reaches of the Murchison Mountains.</p> <p>The potential of a landscape to absorb change mainly depends on two key factors:</p> <ul style="list-style-type: none"> a) Its landscape character sensitivity; and b) Its visibility. <p>It is also acknowledged that landscape is only one component when considering the potential for change and that other considerations relating to heritage, cultural values, servicing, access, geology, hydrology also play a role in an assessment.</p> <p>Being Outstanding Natural Landscape (ONL) the Te Ana-au Glowworm Cave existing lease area generally has high landscape character sensitivity. However, much of the site provides a higher capacity to absorb development as it is already developed and is not readily visible from Lake Te Anau or the eastern side of the lake due to the bush cover; the topography of the site and the recessive colours of the infrastructure; compared to the remainder of the landform with its generally highly visible slopes. That is, at the distance the existing infrastructure can be viewed from, it is barely legible to the untrained eye.</p> <p>The Te Ana-au Glowworm Cave existing viewing platform (in front of Cavern House; the Caves walkway shelter; and the Caves Wharf all provide views of the surrounding landscape. This proposal will have the positive effect of continuing to</p>	<p>The main structures located in the Te Ana-au Glowworm Cave existing lease area are not readily visible from Lake Te Anau or the eastern side of the lake due to the bush cover; the topography of the site and the recessive colours of the infrastructure. It is only really the Te Ana-au Glowworm Caves wharf which is readily visible, and this structure does not form part of this application. Refer attached Te Ana-au Glowworm Caves site infrastructure plans and photo.</p> <p>Current structures and utilities are well maintained to ensure any potential impacts on the environment are avoided, remedied, or mitigated.</p> <p>Building and infrastructure colour schemes are chosen in collaboration with the Department of Conservation. Accordingly, the infrastructure is mostly in neutral colours and low light reflectivity to enable it to be visually recessive.</p> <p>Visitors to Te Ana-au Glowworm Cave expect a certain amount of facilities on the site (especially given the typical rainfall at this site so it is necessary to provide visitors with cover out of the weather) to cater for visitors accordingly visitors are generally accepting of the built infrastructure present at Te Ana-au Glowworm Caves.</p> <p>Real Journeys 'watercraft' activities mainly the use of punts will not have any physical effects on the Tunnel Burn.</p>

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
		enable use of the Te Ana-au Glowworm Cave site with the contingent benefits of being able to appreciate the surrounding landscape from the aforementioned vantage points.	Revegetation of the 2021 slip area will be managed by a combination of local plant transfer and natural regeneration.
	Existing DOC infrastructure such as roads, tracks, carparks, huts etc.	All the infrastructure that is the subject of these Te Ana-au Glowworm Cave applications is Real Journeys owned infrastructure consequently this proposal will not result in any effects on Department of Conservation infrastructure.	N/A
	Cultural values of Tangata Whenua	<p>Lake Te Anau was important for the Ngai Tahu in pre-European times as the area was a traditional stopping point on their trails between the east and west coasts of the South Island of New Zealand, where they obtained food and resources. Consequently, under Ngai Tahu Claims Settlement Act 1998 Lake Te Ana-au is a statutory acknowledgement area.</p> <p>Ngāi Tahu Association with Te Ana-au (Lake Te Anau)</p> <p>Te Ana-au is one of the lakes referred to in the tradition of 'Ngā Puna Wai Karikari o Rakaihautu', which tells how the principal lakes of Te Wai Pounamu were dug by the rangatira (chief) Rakaihautu. Rakaihautu was the captain of the waka, Uruao, which brought the tribe, Waitaha, to New Zealand. Rakaihautu beached his canoe at Whakatū (Nelson). From Whakatū, Rakaihautu divided the new arrivals in two, with his son taking one party to explore the coastline southwards and Rakaihautu taking another southward inland route. On his inland journey southward, Rakaihautu used his famous kō to</p>	<p>Interpretation regarding the areas cultural associations is provided by our guides and included in the interpretation panels on site. Real Journeys has consulted with Ngā Rūnanga o Murihiku on this interpretation material to ensure the accuracy of the information imparted to visitors (refer Insiders Guide to Te Ana-au Glowworm Cave).</p> <p>Monitor cave health to ensure:</p> <ul style="list-style-type: none"> ➤ cave's limestone structures are not degraded (this is mostly achieved through the provision of cave walkways, so visitors are not walking on the limestone of the cave), ➤ micro-climate is maintained, ➤ lampenflora, and cave biota is maintained <p>Maintain wastewater treatment plant (including pipes that feed into the plant) in optimum condition including regular maintenance and monitoring.</p>

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
		<p>dig the principal lakes of Te Wai Pounamu, including Te Ana-au.</p> <p>For Ngāi Tahu, traditions such as this represent the links between the cosmological world of the gods and present generations, these histories reinforce tribal identity and solidarity and continuity between generations and document the events which shaped the environment of Te Wai Pounamu and Ngāi Tahu as an iwi.²</p> <p>The tūpuna had considerable knowledge of whakapapa, traditional trails and tauranga waka, places for gathering kai and other taonga, ways in which to use the resources of Te Ana-au, the relationship of people with the lake and their dependence on it and tikanga for the proper and sustainable utilisation of resources. All of these values remain important to Ngāi Tahu today. The mauri of Te Ana-au including the wider catchment represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life. All elements of the natural environment possess a life force and all forms of life are related. Mauri is a critical element of the spiritual relationship of Ngāi Tahu Whānui with the lake including the wider catchment and more particularly the Tunnel Burn.</p> <p>According to Māori legend there was a cave filled with glowing light somewhere on the shores of the lake. In 1948</p>	<p>Our diesel generator is bunded and appropriate spill kits are maintained on site (sullage and petrochemical). Mop up any spills which do occur by using best practice spill retrieval techniques and prevent any spillage into waterways.</p>

² <https://southlanddc.govt.nz/assets/District-Plan-Variations/Proposed-District-Plan-Appeal-Version-Schedules-March-2016.pdf>

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		<p>this supposedly mythical cave was rediscovered, complete with the lights of countless puratoke (Glowworms). Early explanations of the meaning of the name then gave way to the obvious interpretation of the full name Te Ana-au, te: the; ana: cave; au: swirling, in reference to an underground torrent that ran through the cave.³ That is the Māori name Te Ana-au can be translated as "The Swirling Cave" (te: the; ana: cave; au: swirling) in reference to the water running through it.⁴</p> <p>Of particular concern, with respect to Tangata Whenua cultural associations with Te Ana-au Glowworm Cave is providing appropriate interpretation with respect to Ngai Tahu associations with the area; the management of the 'cave health' (cave's structure, micro-climate, lampenflora, and cave biota); wastewater management; diesel spills; and damage to vegetation which causes topsoil and sediment to flow into the catchment.</p>	
Lower reaches of Murchison Mountains; Fiordland National Park	Cultural values / recreational values of other members of the public	<p>The value of the Te Ana-au Glowworm as a tourism / recreational asset is generally recognised by the wider community.</p> <p>Activities such as Helicopter use potentially has positive and negative effects on recreational values. On the positive side it makes more areas of the Fiordland National Park accessible</p>	Real Journeys operations have a positive social and economic effect on the wider community. Real Journeys is a tourism operator that facilitates access to view and experience public spaces including public conservation land (PCL) that many people cannot otherwise access. A Department of Conservation study ⁵ found that many New Zealanders' have a strong connection to their lands and waters, and this fosters pro-environmental behaviours. However, future support for

³ <https://nzhistory.govt.nz/keyword/te-anau>

⁴ <https://www.milfordopportunities.nz/assets/Projects/210331-Te-Anau-Basin-Study.pdf>

⁵ Visitors as Advocates, A review of the relationship between participation in outdoor recreation and support for conservation and the environment, Michael Harbrow, 2019.

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		<p>potentially to more people. On the negative side the helicopter noise can impact on the recreational user experience of Fiordland National Park by diminishing the 'natural quiet' experienced by users.</p>	<p>conservation cannot be taken for granted, given the increasing ethnic diversity; the aging population in New Zealand; and the concentration of the country's population in urban areas, distant from much of our public conservation land (PCL). Therefore, the opportunities Real Journeys creates, to enable people to connect with, and experience the natural environment, has the benefit of developing stronger connections with the natural environment and promoting a greater conservation awareness of those visiting Te Ana-au Glowworm Caves.</p> <p>Prior to COVID-19 Real Journeys Te Ana-au Glowworm Caves tour, carried the third largest volume of passengers of all Real Journeys products. This was significant economically and socially for Te Anau as the visitors who undertake a Te Ana-au Glowworm Caves tour usually overnight in Te Anau and contribute to the wider economy by also spending on other services such as accommodation; transport; food and beverages. In particular Te Ana-au Glowworm Caves tour is one of the few Te Anau based attractions which 'holds' visitors in Te Anau and is especially important when the likes of the Milford Road is closed, as visitors have something to do while they wait for the road to re-open and remain in Te Anau spending on services.</p> <p>It is in Real Journeys best interests to maintain helicopter use at Te Ana-au Glowworm Caves at low levels, so this aircraft activity does not impact on the experience of recreational users and the wider Te Anau community. That is, if recreational users and the wider Te Anau community become</p>

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			<p>annoyed with the level of aircraft activity or other noise generating activities at Te Ana-au Glowworm Caves we will lose community support for our operation. Consequently it is in our best interests to keep the likes of helicopter use to a minimum and we do this any way to contain operational costs.</p>
	<p>Other users (tangata whenua, recreational users, and concessionaires) of the Land.</p>	<p>The main ‘other users’ of the Te Ana-au Glowworm Caves site are Department of Conservation staff and their contractors traversing through the area en route to and from to Lake Orbell to undertake work related to Takahē Specially Protected Area; such as stoat trapping and monitoring of Takahē population.</p> <p>The other users to the area are visitors to the Aurora Cave (which is by permit only).</p>	<p>Most other users access the site via “Luminosa” Real Journeys vessel that conducts visitors to and from the Te Ana-au Glowworm Caves. Accordingly Real Journeys is able to work collaboratively with these other users and can ensure they are aware of any hazards on site and up the hydro pipeline.</p>
	<p>Amenity Values (Are those natural or physical qualities and characteristics of an area that contribute to people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes)⁶</p>	<p>Because the site of the Te Ana-au Glowworm Caves is located on the western side of Lake Te Anau well away from the developed areas on the eastern shore; consequently it has high ‘amenity values’. As discussed above in landscape value and cultural value sections because the main structures located in the Te Ana-au Glowworm Cave existing lease area are not readily visible from Lake Te Anau (or the eastern side of Lake Te Anau) therefore the existing infrastructure and use of the site do not compromise ‘people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes’. Nonetheless some activities</p>	<p>Aircraft activity which is associated with this aspect of our application is temporary in nature and does not result in any lasting effects on the areas landscapes and amenity values.</p> <p>AS350, AS350B2, AS350B3 (Squirrel) Airbus Helicopters are commonly used in Te Anau; European Aviation Safety Agency TYPE-CERTIFICATE DATA SHEET FOR NOISE for Model AS350 to EC130 Helicopters⁸ indicating compliance with International Civil Aviation Organization Annex 16 Chapter 8 [Helicopter] noise limits of 90dB (take off/ departure), 91 dB</p>

⁶ <https://www.mfe.govt.nz/publications/rma/urban-amenity-and-rma>

⁸ https://www.easa.europa.eu/sites/default/files/dfu/EASA-TCDS-R.008_Airbus_Helicopters_AS350-EC130-08-07012014_0.pdf

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		<p>associated with the use of the site can affect amenity values such as aircraft use.</p> <p>Because aircraft activity is temporary in nature, the main impact aircraft activity has on amenity values is related to noise, and in this instance helicopter noise. That is visual effects of helicopter use are temporary nature and are not significant in impacting on 'pleasantness' in comparison to noise.</p> <p>Researchers have studied the effects of aircraft noise on visitor recreational experiences at a variety of DOC managed locations. One of most comprehensive and longer-term studies is MONITORING THE EFFECTS OF AIRCRAFT OVER-FLIGHTS ON VISITORS TO THE FOX AND FRANZ JOSEF GLACIER VALLEYS, WESTLAND TAI POUTINI NATIONAL PARK, NEW ZEALAND⁷ which found that there is a wide variation in visitors expectations and tolerance of aircraft noise.</p> <p>However, we do not believe this study is directly applicable to the Te Anau basin given the level of helicopter use associated with servicing the 'great walks'; wild deer recovery and cull; and other management activities in the FNP. That is for a Te Anau residents helicopter activity is a normative part of the</p>	<p>overflight and 93 dB (landing / approach) measured at ~152 metres from aircraft.⁹</p> <p>Many of the helicopter operators that fly to and from Te Anau Glow Worm Caves participate in an international programme known as 'Fly Neighbour Friendly' which aims to minimise helicopter noise and the effects of helicopter noise. This programme advocates for use of flight paths away from residential areas and areas where people are congregating for recreation such as the Great Walks in the Fiordland National Park.</p> <p>The main method for avoiding noise impacts is to fly at minimum safe heights at all times, en route to and from the landing site as per Legal information bulletin number 1, interpretation of CAR 91.311¹⁰. Noise effects can be further controlled by using prescribed rates of ascent and decent when operating to and from a landing / hovering area. Steep turns and sharp manoeuvres should be avoided in the vicinity of the landing area also approaching the landing / hovering site with a long glide slope should be avoided as it results in unnecessary noise on the ground near the landing / hovering area.</p>

⁷ <https://www.doc.govt.nz/globalassets/documents/about-doc/role/visitor-research/glaciers-aircraft-monitoring-report.pdf>

⁹ <https://www.icao.int/environmental-protection/pages/reduction-of-noise-at-source.aspx>

¹⁰ <https://www.aviation.govt.nz/assets/about-us/legal-information-bulletin-001.pdf>

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		environment with a high number of these flights flying over Lake Te Anau and near the Te Ana-au Glowworm Caves.	It is in Real Journeys best interests to maintain helicopter use at Te Ana-au Glowworm Caves at low levels, so this aircraft activity does not impact on the experience of recreational users and the wider Te Anau community. That is, if recreational users and the wider Te Anau community become annoyed with the level of aircraft activity at Te Ana-au Glowworm Caves we will lose community support for our operation. Consequently it is in our best interests to keep the likes of helicopter use to a minimum and we do this any way to contain operational costs.
	Historic sites or objects including Wāhi Tapu	Southland District Council, DOC and Heritage New Zealand do not identify any historic sites in the vicinity of Te Ana-au Glowworm Caves. However, with more than 60,000 recorded archaeological sites in New Zealand there is a chance of finding additional sites or material during earthworks. That is, earthworks carry the potential for accidental discovery which may include koiwi, artefacts, middens, hangi/umu, storage pits, early building foundations which maybe Māori or early European origin.	Real Journeys implements accidental discovery protocols with respect to any earthworks. Specifically following the discovery of material that could be an archaeological site, koiwi and/or taonga, the machine operator will cease all work in the discovery area, with a 20m exclusion zone established around the find to minimise damage; and immediately advise the Te Ana-au Glowworm Caves Manager.
Lower reaches of Murchison Mountains; Fiordland National Park	Flora habitat / vegetation	Habitat modification and damage	<p>This proposal relates to the use of existing infrastructure not the installation or construction of new infrastructure. Accordingly the activities that impact on flora habitat / vegetation outside the cave are as follows:</p> <ul style="list-style-type: none"> ➤ Trimming back vegetation from tracks and pathways to maintain access to the site; ➤ Removal of dead or windblown trees that pose a threat to the health and safety of people on site or could potentially fall on structures causing damage. ➤ Slips / tree avalanches that require clean up as they pose a threat to the health and safety of people on

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			<p>site or could potentially fall on / smoother structures causing damage and causing sediment to flow / tumble into the Tunnel Burn.</p> <p>Real Journeys works collaboratively with the Department and seeks approval prior to removing vegetation / slips including undertaking bat assessments on trees that are likely to be bat roost trees before their removal. Also when major projects are being undertaken such as clearing up slips or installing new infrastructure (such as the Beech House and AES system); any vegetation that can be 'replanted' is 'harvested' and set aside to restore the site after the work has been completed.</p> <p>Monitor cave health to ensure micro-climate is preserved, to maintain lampenflora, and cave biota. We monitor this by keeping 'tabs' on the number of Glowworms bioluminescing. With the caves catchment being within the specially protected area, it is unmodified and as such the Tunnel Burn represents a pristine natural stream environment. Unlike many caves' where catchment management issues arise, our location and the protection afforded to the catchment above the caves significantly reduces management input.</p>
Lower reaches of Murchison Mountains;	Fauna / wildlife habitat	<p>The potential adverse effects are as follows:</p> <ul style="list-style-type: none"> ➤ Erosion and sedimentation which can in turn adversely affect downstream waterways; 	Clean up any slips into the Tunnel Burn to ensure sedimentation does not adversely affect environment of the caves itself or the downstream waterway.

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Fiordland National Park		<ul style="list-style-type: none"> ➤ Establishment of invasive weed species which displace endemic species which provide habitat for indigenous invertebrate; ➤ Predation by introduced mammals; and ➤ Potential disturbance of terrestrial birds in and around the cave site. 	<p>Equipment used for any development or remedial works within the Te Ana-au Glowworm Caves site must be checked, cleaned, and dried to ensure no introduction of exotic materials before being brought on site.</p> <p>Continue weed control to remove the likes of thistles and dandelions from the lake edge and remove any exotic weeds around the site.</p> <p>Continue with predator trapping – rat trapping and maintenance of stoat lines.</p> <p>There is the potential for terrestrial birds in and around the cave site to be disturbed by visitors. However for most of the time visitors are guided and the guides ensure visitors do not undertake activities that have the potential to disturb wildlife. Also for the vast majority of the time visitors are on site at the Te Ana-au Glowworm Caves, they are either in the cave or in Cavern house hence there is little time for visitors to engage in activities which would disturb any birds.</p> <p>Moreover when visitors are on site on the western side of Lake Te Anau they remain on formed tracks, therefore the area where visitors can interact with wildlife is very small relative to the vastness's of the adjacent PCL.</p>
	Compaction of soil	Compaction of soil can adversely impact on vegetation and therefore the wider ecosystem	All visitors are confined to formed tracks; walkways and viewing platforms while on site to ensure the wider site is not

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			<p>adversely impacted by visitors. That is effectively the site has been 'hardened' to address the level of visitation at the site. When the staff are undertaking checks such as of the hydro intake they keep to the 'formed' and marked track to prevent damage to a wider area.</p> <p>As discussed above when major projects are being undertaken such as clearing up slips or installing new infrastructure (such as the Beech House and AES system) where soils could be compacted; any vegetation that can be 'replanted' is 'harvested' and set aside to restore the site after the work has been completed. In addition the job is planned out so the movement of heavy machinery or other activity that could compact soil is confined to the minimum area so that the impacts of the work are minimal and do not create a 'blot' on the landscape.</p>
Lower reaches of Murchison Mountains; Fiordland National Park	Trampling of vegetation.		<p>All visitors are confined to formed tracks; walkways and viewing platforms while on site to ensure the wider site is not adversely impacted by visitors. When the staff are undertaking checks such as of the hydro intake they keep to the 'formed' and marked track to prevent damage to a wider area. However staff will occasionally divert from the main track to investigate tree fall, slips or undertake survey work, these diversions are infrequent and as such do not present a major impact.</p> <p>As discussed above when major projects are being undertaken such as clearing up slips or installing new infrastructure (such as the Beech House and AES system)</p>

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			<p>where vegetation could be trampled; any vegetation that can be 'replanted' is 'harvested' and set aside to restore the site after the work has been completed.</p>
<p>Lower reaches of Murchison Mountains; Fiordland National Park</p>	<p>Increase threats (pests, weeds, pathogens, and fire) to public conservation land).</p>	<p>Introduction and establishment of invasive weeds species and mammalian pests resulting in loss of biodiversity.</p>	<p>The Te Ana-au Glowworm Cave punts are mostly permanently located on site in the cave hence they are not exposed to any outside pest threats. The punts are occasionally removed from site and taken to Real Journeys workshop facility where repairs and maintenance activities are undertaken. These maintenance activities include 'cleaning' the punts before they are returned to the cave.</p> <p>Equipment used for any development or remedial works within the Te Ana-au Glowworm Caves site must be checked, cleaned, and dried to ensure no introduction of exotic materials before being brought on site.</p> <p>As discussed above when major projects are being undertaken such as clearing up slips or installing new infrastructure (such as the Beech House and AES system) where vegetation could be trampled; any vegetation that can be 'replanted' is 'harvested' and set aside to restore the site after the work has been completed. To minimise the areas of exposed soil where weeds could establish.</p> <p>Continue weed control to remove the likes of thistles and dandelions from the lake edge and remove any exotic weeds around the site.</p>

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			<p>Continue with predator trapping – rat trapping and maintenance of stoat lines.</p> <p>There will be no outdoor fires lit as part of this proposal in addition visitors are advised not to smoke on site. Cavern House has an enclosed diesel fireplace installed for heat and aesthetics. The ‘fire’ being diesel, also enables a quick ‘turn on’ and ‘turn off’ protocol, in line with staff arriving and departing the site with visitors. This means fire is extinguished before staff depart the site and reduces overall risk of embers or ashes causing a fire when staff have departed the site. The Beech House has an enclosed gas fireplace, which is installed and mainly operated for aesthetics as this ‘fire’ is in a semi outdoor setting.</p>
Lower reaches of Murchison Mountains; Fiordland National Park	<i>Didymosphenia germinata</i>	Spreading <i>Didymosphenia germinate</i> adversely impacting on quality of waterways.	<i>Didymosphenia germinata</i> (Didymo) is well established in the Lake Te Anau catchment including around both the eastern and western shorelines of Lake Te Anau. However Didymo is suppressed by low sunlight levels / darkness ¹¹ consequently Didymo is not ‘evident’ and does not ‘bloom’ in the Tunnel Burn in the Te Ana-au Glowworm Caves. Also the forest cover over the Tunnel Burn ex Lake Orbell and the streams passage through the Aurora Caves means that for most of the Tunnel Burn’s length, the stream is not exposed to the higher sunlight levels that promote the growth of Didymo. Which again means that Didymo is not ‘seen’ in the caves and the large Didymo mats do not form in the stream.

¹¹ <https://www.tongariroriver.org.nz/wp-content/uploads/documents/Didymo/jan-06-survival-study.pdf>

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			<p>Moreover most of the visitors to Te Ana-au Glowworm Caves remain on hardened tracks and walkways therefore their footwear does not come into contact with any waterways at the site. Accordingly, because of the widespread establishment of Didymo around Lake Te Anau; the suppression of its blooms at the site; and the minimal visitor contact with any water at the Te Ana-au Glowworm Caves it is not necessary to implement Didymo spread prevention measures for visitors to the Te Ana-au Glowworm Caves.</p>
<p>Lower reaches of Murchison Mountains; Fiordland National Park</p>	<p>Rubbish, toilet waste or debris left on public conservation land</p>	<p>Littering and pollution of the Te Ana-au Glowworm Cave site effectively degrading the quality of the environment.</p>	<p>Keep the wastewater treatment plant well maintained.</p> <p>Any waste generated during the operation, maintenance and ongoing use of the Te Ana-au Glowworm Caves will be dealt with using existing channels. That is; where possible waste is diverted into recycling channels or taken to landfill or disposed of through the on-site wastewater treatment plant. That is the rubbish and recycling generated at the caves is transferred back to Te Anau by the <i>Luminosa</i> and disposed of either to landfill or local recycling channels, for instance Fonterra is collecting empty milk bottles and taking responsibility for their disposal.</p>
	<p>Threats to the site / PCL from pollutants</p>	<p>The management of the 'cave health' (cave's structure, micro-climate, lampenflora, and cave biota); wastewater management; diesel spills; light effects in the caves; and light spill when Te Ana-au Glowworm Cave tours are operated after dark.</p>	<p>The CO₂ level in caves, can vary from 0.03% to more than 6% over a range of spatial and temporal scales (Batiot-Guilhe et al., 2007). Numerous sources have been identified for cave CO₂ and this diversity in CO₂ sources along with the complexity of karst systems results in a considerable variation in cave CO₂ levels in different caves systems worldwide.</p>

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		<p>CO₂ concentrations in karst environments (epikarst and soil) largely affect karst landscapes that cover 7–12% of the Earth’s continental area (Ford and Williams, 2007). The instantaneous CO₂ concentration in the cave atmosphere is the balance of the input and output fluxes. The input CO₂ flux may generally include the direct natural fluxes associated with:</p> <ul style="list-style-type: none"> i. the diffusion from soils/epikarst; ii. dripwater degassing (Bourges et al., 2001); iii. microbial decay of organic matter in cave sediments; iv. the transport of endogenous CO₂ in geologically active regions (Batiot Guilhe et al., 2007). <p>The indirect CO₂ fluxes can be derived from air advection from:</p> <ul style="list-style-type: none"> v. adjacent cave passages/epikarst; and vi. a cave river and conduit flow. <p>The anthropogenic flux is connected with:</p> <ul style="list-style-type: none"> vii. the exhaling of cave visitors (Faimon et al., 2006; Milanolo & Gabrovšek, 2009). <p>The output flux is linked with cave airflow and controlled by cave ventilation (Spötl et al., 2005; Banner et al., 2007; Baldini et al., 2008; Fernández-Cortés et al., 2009).</p>	<p>Nonetheless cave systems can be classified, into three groups based on the concept of energy levels which in turn relates directly to the level of ventilation: (i) low energy (static or poorly ventilated caves); (ii) moderate energy; and (ii) high energy (dynamic or well ventilated caves) (Bögli, 1978).</p> <p>The high-energy caves are those that experience important inputs of energy on a regular basis, such as periodic flooding or seasonal climatic events. Speleothem formation is rare in high energy caves, because any that may form are quickly scoured away or broken off. The impacts of visitors on high energy caves will generally be minimal.¹⁴</p> <p>Moderate-energy caves would normally undergo regular changes about one order of magnitude lower than the high-energy caves (e.g., caves with permanent streams or air current). Low-energy caves are those where the microclimate is extremely stable and often the highest energy event may be related to something as trivial as the falling of a single water drop [12]. CO₂ is more an issue in low energy caves with less natural ventilation, is often not discovered by monitoring but physical reaction of visitors to poor air quality, specifically with laboured breathing. When show / tourist caves fit into the moderate and low-energy categories, the energetic equilibrium can be very easily unbalanced especially in the</p>

¹⁴ <https://www.doc.govt.nz/Documents/conservation/land-and-freshwater/land/karst-management-guidelines.pdf>

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		<p>The cave airflow depends on (1) the cave geometry and (2) the pressure difference resulting from contrasting air densities (de Freitas et al., 1982). Since density is particularly a function of temperature, cave airflows are mostly related to the temperature difference between the interior of the cave and the exterior atmosphere (de Freitas et al., 1982; Baker & Genty, 1998; Pflitsch & Piasecki, 2003; Russell & MacLean, 2008; Kowalczk & Froelich, 2010; Faimon et al., 2012b). When the temperature gradient is greatest, airflow through the cave is enhanced, however when the temperature gradient is small, there is restricted airflow, and flushing of the cave air is limited. For temperature gradient to facilitate air circulation it is necessary that the cave entrances to remain clear so when the Tunnel Burn is high air circulation is restricted.</p> <p>In particular, the CO₂ exhaled by visitors while in the cave dissolves quickly in condensing solutions, and as the condensed solutions are undersaturated with respect to dolomite, calcite and aragonite; these solutions represent 'an aggressive solution' that can potentially cause carbonate dissolution in limestone caves. This dissolution process is known as condensation corrosion; the rates are dependent on cave atmosphere P_{CO₂} (partial pressure of carbon dioxide); and is responsible for cave genesis in some cases but can cause damage to cave walls.¹²</p>	<p>deep areas of the caves, where the stable climate can be easily disturbed.¹⁵</p> <p>The Te Ana-au Glowworm Cave is a high energy or dynamic well ventilated cave consequently the anthropomorphic CO₂ sources do not adversely affect the cave or the cave biota. This high energy or dynamic well ventilated cave also ensures that the Glowworms and other cave biota are not adversely affected by tourist activity.</p> <p>The dynamic nature of the Te Ana-au Glowworm Cave protects visitors and staff from the potential ill effects of Radon. Radon is a naturally occurring radionuclide. The highest concentrations of radon worldwide are found in underground spaces such as mines and caves and in some karst systems prolonged exposure to radon can compromise human health.</p> <p>Moreover due to the age of the Te Ana-au Glowworm caves, speleothems (cave decorations) have not yet formed, which further lessens the possible environmental impacts at the site. However to ensure the 'health' of the Te Ana-au Glowworm Cave is not compromised by tourist visitation Real Journeys is monitoring the cave.</p>

¹² <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.832.1271&rep=rep1&type=pdf>

¹⁵ <https://www.mdpi.com/2071-1050/13/4/1619>

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		<p>Moreover it has been found that Glowworms are sensitive to torchlight and will switch off their bioluminescence if disturbed. Smoke from fires or cigarettes, and insect repellent, also affect glow-worms and their prey.¹³</p>	<p>In particular, Real Journeys has participated in a ACMKA lead initiative to record cave climate details. The project was instigated in May 2020 when cave visitation was halted due to COVID-19 restrictions. For some cave sites across Australasia this was the first time no visitors were present in a cave for more than 100 years which provided an opportunity to generate baseline data. Of the 27 Australian and NZ show caves participating in the project, Te Ana-au Glowworm Cave has provided the most continuous data set so far. While the focus is on temperature and humidity, the commentary from the scientists leading the project confirms that the Te Ana-au Glowworm cave is extremely well ventilated.</p> <p>The data shows daily variations, depending on the time of year and time of day, with Te Ana-au Glowworm Cave showing some unique attributes, which are interpreted as effects caused by the unique cave morphology and streamway. The cave is a high energy cave, with regular natural flooding events and a dynamic environment. This is possibly caused by an altitude effect (cooler air ventilating through the cave from higher elevation) and/or cooling from the stream in winter, and perhaps also a little evaporative cooling (even though it is quite cool, there is some evaporation from the Tunnel Burn which would cool the air temperature). Seasonal changes see a switch between air and water temperatures being cooler or warmer, and with these variations in temperature gradients within the cave - a stratification (cooler near the water, warmer higher up in the</p>

¹³ <https://www.abc.net.au/science/slab/glowworm/>

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
			<p>cave). In contrast in summer the water temperature is warmer, and this should lead to a well-mixed cave air.</p> <p>Real Journeys will continue to feed data sets into this project and if the group decides to extend monitoring, we will participate. In time other parameters can be added to monitoring.</p> <p>The other advantage the Te Ana-au Glowworm Caves has with respect to maintaining the cave health, is the cave system is located in the undeveloped and protected environment of the Fiordland National Park as karst systems are vulnerable to activities in other (non-karst) parts of surface catchments. For example, logging, mining and road construction can greatly accelerate the natural level of erosion of karst soils and can dump large quantities of silt into cave streams. This could destroy the habitats of cave fauna and raise streambed levels. Therefore a karst area is, best protected by maintaining the intact surface vegetation, soils and hydrological systems over the whole catchment affecting the area; which is the case with the Te Ana-au Glowworm Caves.</p> <p>With respect to other threats to the Te Ana-au Glowworm cave environment, the light levels in the cave are kept to a minimum to prevent the growth of algae and other organisms. Specifically the cave is only lit when visitors are present; the light levels in the cave are as low as possible and we only illuminate areas to show off some of the caves attractive karst features, and areas required for visitors to</p>

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
			<p>navigate through the cave such as the walkways; flash photography in the cave is not permitted; and the Glowworm Grotto is unlit to preserve the Glowworm bioluminescence.</p> <p>For evening cave tours the cave exterior walkways, wharf and Cavern House are lit while visitors are on site. However the outside lights are kept to a low level to ensure visitors and our guides night vision is not compromised. That is because there are low light levels in the cave, it is important that visitors and staff are not dazzled by exterior lights before entering the cave. Also for safe vessel operation, it is important that the “Luminosa’s skipper night vision is not compromised by lighting on the shore when going alongside or leaving the Te Ana-au Glowworm Caves wharf.</p> <p>Regarding the potential for diesel spills, the Yanmar generator is installed in a bunded shed and the diesel generator and the diesel fire tank are refuelled using an enclosed refuelling system to ensure fuel cannot be spilt while the tanks are being topped up.</p> <p>Real Journeys maintain wastewater treatment plant (including pipes that feed into the plant) in optimum condition including regular maintenance and monitoring to ensure no environmental spills occur. Also all the wastewater treatment plant and the disposal system (AES) are sited well away from any waterways.</p>

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
Lower reaches of Murchison Mountains; Fiordland National Park	Noise	Degradation of natural values such as tranquillity values.	<p>Because the Te Ana-au Glowworm Cave wharf where the “Luminosa” berths is some distance (at least 100 metres) from Cavern House, Beech House and the cave entrance the vessel noise is not noticeable in these locations. Accordingly the <i>Luminosa</i> or replacement vessel can come and go from the wharf without impacting on the natural quiet.</p> <p>In addition the backup generator is likewise located some distance (at least 100 metres) from Cavern House, Beech House and the cave entrance and the generator is enclosed in a soundproof casing and a shed, consequently the generator cannot be heard at Cavern House, Beech House and the cave entrance. That is there are no significant impacts on the ‘natural quiet’ of the site due to the operation of the backup generator. NB the generator is only operated when the hydro is offline for any reason and is not in use when there are no people on site.</p> <p>There will be a minimal amount of noise created by the proposed visitation to FNP as the result of guides and clients conversations, nonetheless the noise created will not be significant and is temporary in nature. Within the cave itself guides and clients conversations are kept to a minimum due to the ‘noise’ created by the Tunnel Burn effectively flowing through an enclosed space. That is for the majority of the time the noise level of the stream is such that it makes conversations difficult; and when away from the flowing stream in the Glowworm Grotto ‘talking’ is discouraged to ensure Glowworms maintain their bioluminescence.</p>

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
			<p>There will also be noise created by the proposed maintenance or remediation activities and the extent of this will depend on the amount of work that has to be done and if any ‘power tools’ are used. Any significant work (including the use of Helicopters, barges and heavy machinery) will be undertaken when there are no visitors on site to minimise disruption and manage site health and safety.</p> <p>There will be some noise from the proposed use of the drone, but this will be minor and will only impact on ‘our’ visitors at the site. Any operational drone use will be predominately undertaken when no visitors are on site.</p>
	Alternative sites / methods	All the infrastructure that is the subject of these Te Ana-au Glowworm Cave applications is already in place and is at this site because of the presence of the karst system; that is the Te Ana-au Glowworm Cave, accordingly it is not appropriate to consider alternative sites / methods.	N/A
Lower reaches of Murchison Mountains; Fiordland National Park	Cumulative effects	This proposal is effectively for the operation of status-quo; hence the effects are generally well understood. In particular, the Te Ana-au Glowworm Cave infrastructure and is not readily visible from the Lake Te Anau or the eastern side of the lake; compared to the rest of the Murchison Mountains with its generally highly visible slopes. In addition the area of the Takahē Specially Protected Area, (Murchison Mountains) occupied by Real Journeys Te Ana-au Glowworm Caves infrastructure is very small compared to the overall size of	It is not considered that the proposal will result in any effects which will breach any threshold relating to the site’s ability to absorb development. Refer attached Te Ana-au Glowworm Cave site infrastructure plans and photos. Furthermore, it is not considered that the proposal will result in degradation of natural values or inappropriate domestication of the landscape because of the discrete nature of the site and no significant further works are required to maintain the existing levels of visitor activity (pre-COVID-19). Indeed natural forces, such as the recent tree fall and slip event, have had a far

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
		<p>Takahē Specially Protected Area which in excess of 50,000 hectares in area.</p> <p>That is, at the distance the existing infrastructure associated with this application can be viewed from, it is barely legible to the untrained eye reducing the cumulative effects.</p>	<p>greater modifying effect on the 'local' environment, compared to the presence of visitors to the site.</p>

Rushing water, fishing lines and high lights.

Insider's Guide to the Te Anau Glowworm Caves.

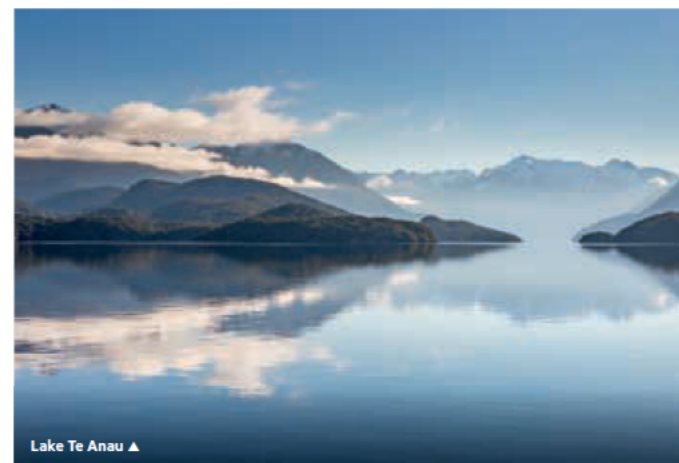
Above ground

World heritage

As part of the 12,500 km² Fiordland National Park, the caves and surrounding landscape is one of only three designated UNESCO World Heritage Areas in New Zealand.

Named Te Wāhipounamu, the southwest 2.6 million hectares of the South Island covers every piece of strict criteria the United Nations agency uses to judge places in need of special recognition and protection.

Ensuring the ongoing protection (and recognition) of this unique environment involves a number of carefully focused measures, including the safeguarding of native birdlife from predators.



Lake Te Anau ▲

Below ground

Cave formation

At approximately 12,000 years old, the Glowworm caves are part of the 'youngest' section of the greater Aurora system. Due to youth, the glowworm caves are considered 'high energy', the risk of flooding and low stalactite and stalagmite growth are a sign of this.

The Tunnel Burn stream that flows through the system would have originally run across the surface from Lake Orbell to Lake Te Anau. However, gradually this water cut through the mountain and down into the soft limestone within the cave system. The caves are still growing due to the flow of this water – the coursing power and mildly acidic nature of the stream dissolve rock and can turn small cracks into large voids.

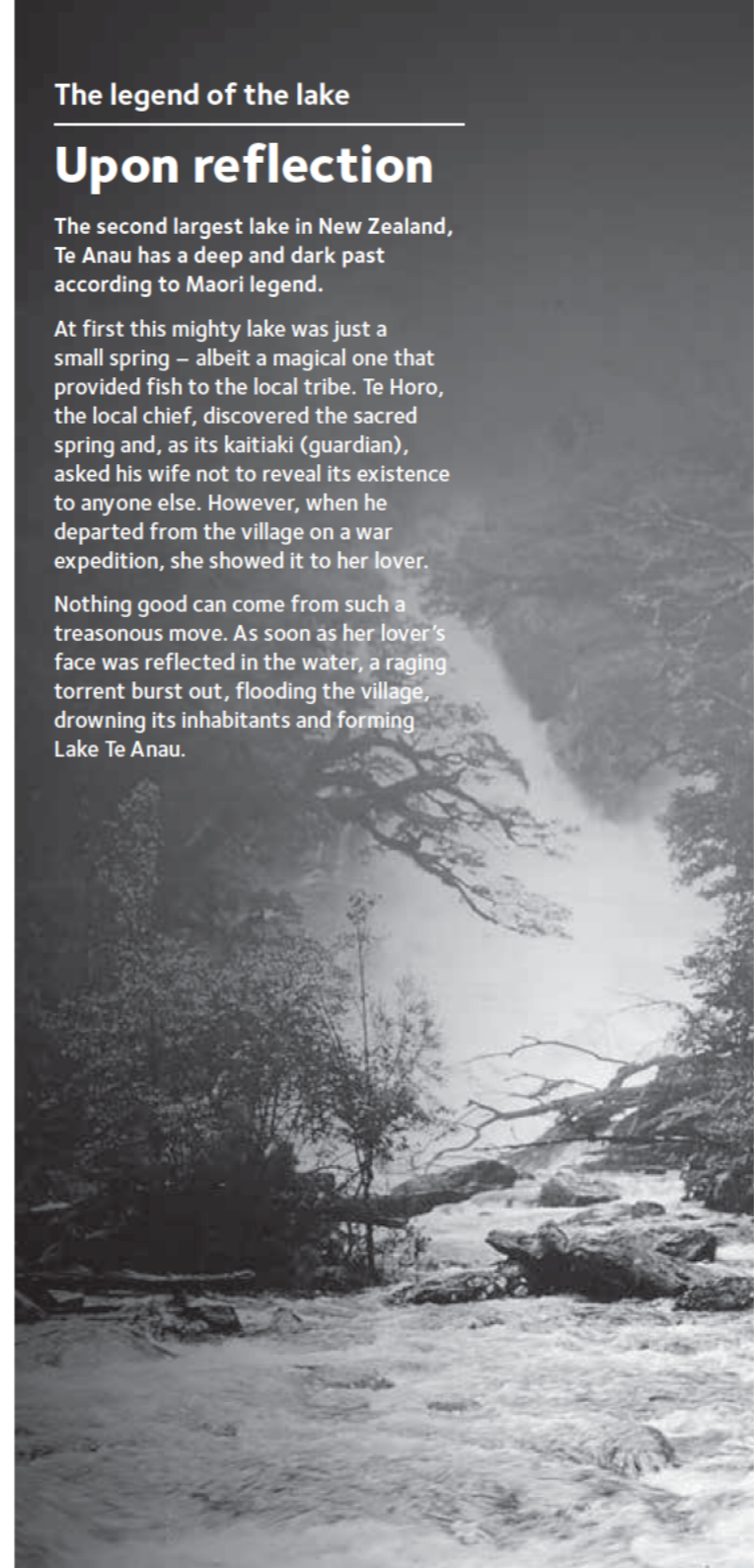
The legend of the lake

Upon reflection

The second largest lake in New Zealand, Te Anau has a deep and dark past according to Maori legend.

At first this mighty lake was just a small spring – albeit a magical one that provided fish to the local tribe. Te Horo, the local chief, discovered the sacred spring and, as its kaitiaki (guardian), asked his wife not to reveal its existence to anyone else. However, when he departed from the village on a war expedition, she showed it to her lover.

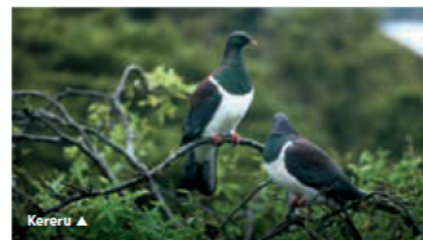
Nothing good can come from such a treasonous move. As soon as her lover's face was reflected in the water, a raging torrent burst out, flooding the village, drowning its inhabitants and forming Lake Te Anau.



Feathered friends

Bird life

The surrounding hills of Te Anau are home to a number of different bird species. Here, the native tui, takahe, kereru (native pigeon), piwakawaka (fantail), makomako (bellbird), ruru (morepork), riroriro (grey warbler) and ngrirungiru (tomtit) make the rainforest their home.



Kereru ▲

The Takahe

A survivor

Size: About 50 cms high (like a large hen)

Flight capacity: None

Status then: Thought long-extinct until rediscovery in 1948 by Invercargill doctor, Geoffrey Orbell

Status now: Critically endangered

Looks like: A large pukeko (which is a distant relative)

Diet: Tussock & ferns

Lifespan: Up to 20 yrs

Predators: The dastardly stoat



Takahe ▲



Cave Weta ▲



Long-finned Eel ▲



Harvestman ▲

Wildlife

Meet the locals

Cave Weta

One of five distinct groups of over 70 New Zealand species (some of which are the largest and heaviest insects in the world), the cave weta dines on plants and small insects and loves damp environments. The weta has remained unchanged, with little evolution since the 190 million year-old fossils. It can also have a short and dangerous life – after moulting its skin, the defenceless weta runs the risk of death by cannibalism.

Cave Weta

Maori name: Tokoriro

Found in: Limestone regions, rotten logs, under bark

Eating habits: Primarily a scavenger

Hearing: What? Cave Weta have no ears

Awareness: Very sensitive to vibration through padded feet

Long-finned Eel

There's more to New Zealand's only endemic freshwater eel than meets the eye (and, growing up to 1.7 metres and 25 kilograms, there's a lot to see). They can live over 100 years and make an incredible journey from deep sea spawning grounds in Tonga, along ocean currents and up New Zealand rivers. Here, their climbing expertise is renowned – juvenile eels can scale near-vertical heights of 40+ metres. While known to attack livestock and humans, this generally only happens if the target's incapacitated first.

Long-finned Eel

Maori name: Tuna Kuwharuwharu

Breeding: Just once – between 1 to 20 million eggs

Migration: Up to 130 kms inland

Endurance: Up to 48 hrs out of water

Protection: Classified as a threatened species by Dept of Conservation

Harvestman

There are approximately 160 different species of harvestmen in New Zealand. While these have a variety of colours, the type found in the caves often has a distinctive lack of pigmentation, a trait common for many species that have lived in the dark for so long. These harvestmen aren't too friendly to the local glowworms either – the slow-moving arachnid often seeks out the bright lights for a convenient meal.

Harvestman

Variety: 3,500+ species worldwide

Danger: None

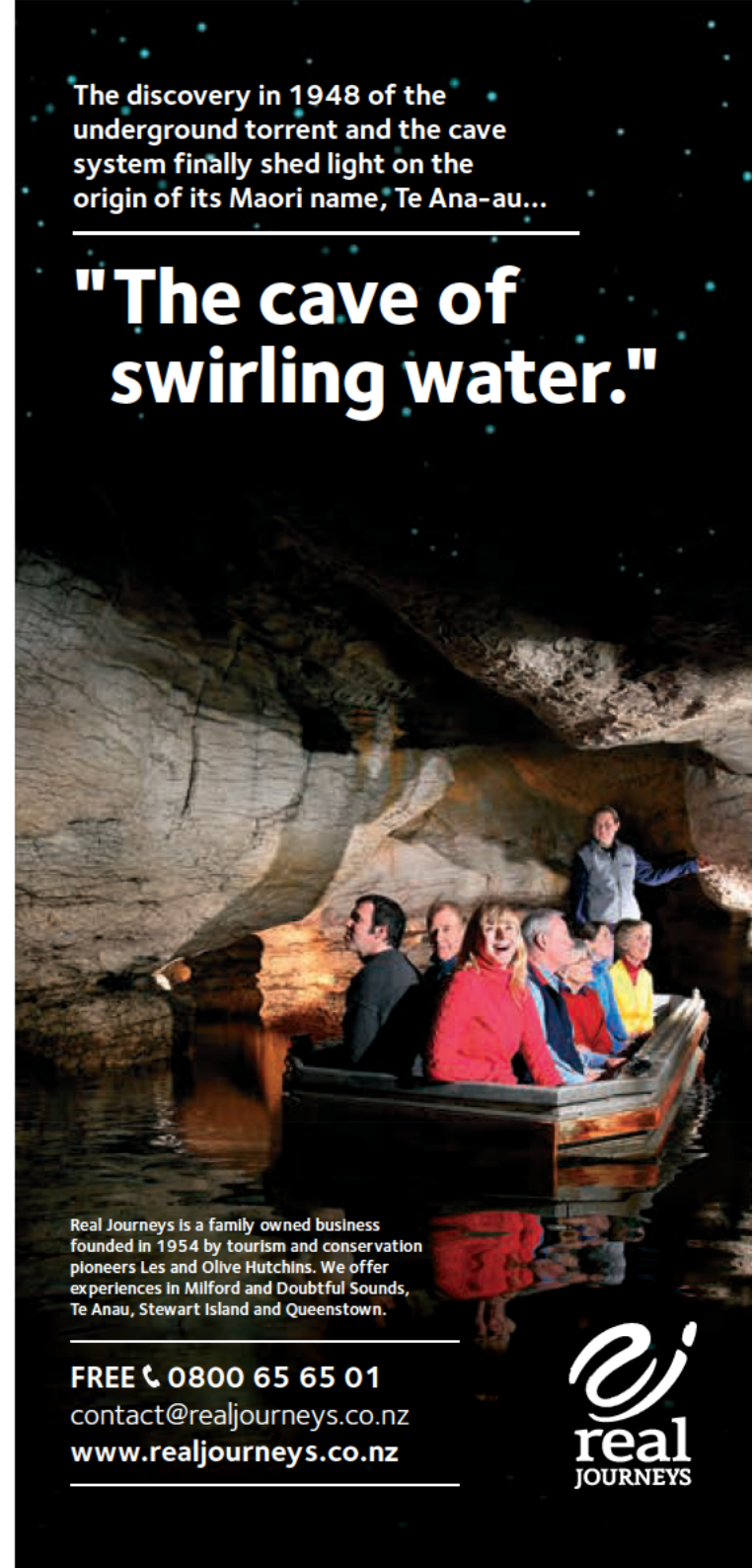
Defence: Omit a powerful stench

Mistaken for: The 'daddy long legs' spider

Size: 5 – 10 mm in body length

The discovery in 1948 of the underground torrent and the cave system finally shed light on the origin of its Maori name, Te Ana-au...

"The cave of swirling water."



Real Journeys is a family owned business founded in 1954 by tourism and conservation pioneers Les and Olive Hutchins. We offer experiences in Milford and Doubtful Sounds, Te Anau, Stewart Island and Queenstown.

FREE ☎ 0800 65 65 01
contact@realjourneys.co.nz
www.realjourneys.co.nz



Titiwai, the Maori translation for glowworm, describes 'lights reflected in water'.

Key facts

Restricted diet: The only time a glowworm eats is during the larva stage. There's a good reason why an adult fly doesn't eat – it has no mouth.

Hunger hints: Your belly will rumble when hungry. The hungrier a glowworm gets, the brighter it glows.

Life in a cave: There's another good reason why glowworms live in caves. Outside is simply too windy – their lines would get tangled.

Turf wars: Cave real estate is valuable and when one glowworm encroaches on another, it can result in heated battles and occasional cannibalism.

Larvae nest ▲

Chemical reactions

The science behind the sparkle



The glow is a result of an interesting chemical reaction involving the luciferase enzyme acting on the luciferin substrate. This then combines with adenosine triphosphate (the energy molecule) and good old oxygen.

The Luciferase enzyme's name is derived from Lucifer, the root (lusem ferre) meaning 'light bearer'.

Luciferase can be developed artificially too, with mice, silkworms and potatoes all engineered to produce the protein. There are plans underway to develop street lighting via 'bioluminescent' trees using this same chemical reaction.

Dining in the dark

Eating habits

While thoroughly enchanting to look at, the glowworm is more interested in function than fashion – their glow is prepared solely to ensure an adequate meal.

1. The table is prepared

Glowworms fish for food by dangling as many as 70 'fishing lines' from the roof. Each line is between 20 – 150mm long and covered with thick drops of sticky mucus.

2. The candles are lit

The insects, attracted to the light, circle closer until they become trapped and paralysed by chemicals in the lines.

3. Dinner is served

When the line vibrates, it is quickly hauled in. The trapped prey is killed and the insect's body converted into what is essentially a tasty milkshake for the glowworm.

A time to shine

The golden years of the glowworm

Egg: (20 – 24 days)

The female fly will lay approximately 130 tiny eggs throughout the year, but with hatching most common in December.

Larva: (9 months)

After hatching, the larva builds a nest, begins to glow and starts to feed. Once it has grown to around 30-40 millimetres, it covers itself in a protective skin and suspends itself on a long thread to become a pupa.

Pupa: (12 – 13 days)

It takes nearly two weeks for the pupa to become a fly. During this time the female glows brighter than the male to ensure that she has mates when it's time to hatch.

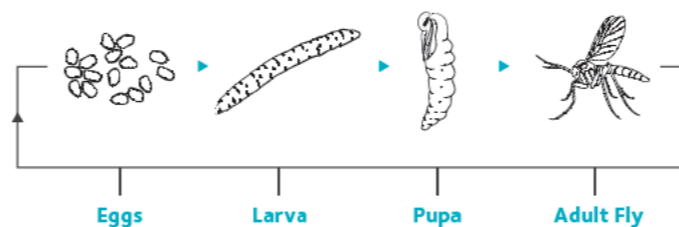
Fly: (1 – 5 days)

While the female dies quickly after laying eggs, the male can live on for up to another 5 days.



Glowworm nests

Glowworms base themselves in individual nests, which can be reconstructed and repaired and are not unlike a hammock, made of silk, attached to the roof of the cave. From the hammock they hang their silk fishing lines.



The Aurora Cave System

As far as the eye can't see

The twists and turns of the Aurora cave system are legendary. While the tour reaches some interesting places, it certainly does not cover the distance of the underground system.

6.7 kilometres long, and with four sprawling levels, the cave system is equal parts dark and treacherous, magical and enthralling.

Diving in: While the name Te Ana-au is translated as 'cave with a current of swirling water', for years the cave existed merely as part of Maori legend. However, in 1948, after three years' searching, one determined explorer finally found the hidden entrance. After uncovering evidence of water disappearing in the hills and reappearing at the lake, Lawson Burrows took the plunge – diving in and under the lake's edge before resurfacing inside the cave. Recognising the incredible potential of the site, Mr Burrows began the first tourism operation soon after this initial discovery.

Exploring further: There are many distinct areas within the Aurora system, the colourful names of which leave visitors with no doubt as to the features. The Cathedral is the highest point inside, rising up 20 metres from the cave floor. It may get larger too. The caves will continue to grow and evolve.

Protecting and preserving: Access is restricted to the fragile cave's ecosystem, and a set number of visitors is allowed each year. It's not just because of what's in the cave either. As the major wild habitat of the endangered takahe, an iconic flightless native bird, the surrounding Murchison Mountains are also highly important as a conservation area.