RAASAY
COMMUNITY RENEWABLES

RAASAY COMMUNITY HYDRO

Business Plan

V2 - Amended 20/01/21

Community Shares STANDARD

Supported by Community Shares Scotland

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Contents

Revision Log

Date	Sections revised and notes	Revised by
20/01/2021	New financial model received and embedded. Amendment to tables in financial sections and to wording to align with new financial model. The changes do not impact on the projected interest payment or returning investments, but it does include a small change to community benefit payments	EM

1. Introduction

1.1. The history of community development on Raasay and the incorporation of Raasay Community Renewables

In 2011 Raasay Community Council (RCC), Raasay Community Association (RCA), Raasay School Board, Raasay heritage Trust, Raasay House Community Company (RHCC) formed the Raasay Development Partnership with the intention to create an overall development plan for Raasay. The development plan once produced included a commitment to explore renewable energy developments. In 2018 RDT updated its 5-year development plan and a copy can be accessed here.

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In 2012 the Raasay community took over the local shop which was threatened with closure. Raasay Development Partnership created a new group, Community of Raasay Retail Association (CORRA), and secured the funding to acquire the shop. Raasay Community Stores has received the Scotland Award as part of the Rural Community Ownership Awards 2016.

In 2014 Raasay Development Partnership became a constituted body and changed its name to Raasay Development Trust (RDT). RDT are registered with companies house as a company limited by guarantee (SC483429). RDT are registered as a charity with OSCR (SCO45185).

In 2017 the community purchased the 'Pit' an old quarry site situated on the outskirts of the village for the development of a local wood fuel supply enterprise run by RDT. The land purchase was funded from the Scottish Land Fund and supported through a grant from the Climate Challenge Fund. The wood fuel project has provided income for RDT to employ part time administrative support and provides volunteering opportunities and training to residents.

The Boathouse located down by the ferry pier is also now under community ownership with RDT holding the title deeds. Proposals for bringing the boathouse back into community use are being considered.

Between 2015-2018, RDT secured £246,790.98 in funding to pursue its aims. So far, in 2019-2020, c£995,000 in funding has been secured towards progressing the projects detailed within the 5-year development plan. The recent funding success includes a successful application to the Scottish Land Fund to purchase 2.4 acres of land for affordable housing, an application to Rural Housing Fund to build properties for affordable rent, and an application to LEADER and HIE for development phase work for our proposed Community Pontoon. £307,700 has been secured towards the hydro project.

With the recent funding success and the support of a development officer and development funding from Community and Renewable Energy Scotland (CARES) RDT has been able to make significant progress towards providing renewable energy through our hydro project. The project had been put on hold, but it was agreed to look at it again while the Feed in Tarif (FIT) scheme was still available to us. The Raasay Community Hydro has gained planning permission, SEPA CAR licence, Scheduled Monument Consent and OFGEN pre-accreditation.

In 2020 Raasay Community Renewables (RCR) was incorporated to take forward a community shares offer and to oversee the construction, operation, and management of the Hydro project. RCR was registered with the FCA as a Community Benefit Society on 1st September. The societies registration number is 8459.

RCR's first task will be to undertake a share offer to raise funds to complete the construction of the Hydro and this business plan details our proposal.

1.2. RCR – our members, directors, and staff

RCR is a new entity and will generate an investor membership through an upcoming share offer. RCR is currently operated by an inaugural board comprised of 3 members of our community and 1 member from the RDT board. The RDT Local Development Officer (LDO) will continue to work on the project and assist the RCR board until the Hydro reaches commissioning stage.

1.2.1. Directors and staff – Details of skills and experience

Our directors, staff and volunteers bring a wide array of knowledge, skills and experience to the project. The maximum number of directors shall be 12; out of that number:

- no more than 8 shall be Contributor Directors;
- no more than 2 shall be Development Trust Directors;
- no more than 2 shall be Co-opted Directors.

Directors will be democratically elected to the board at an AGM. Directors can also be co-opted where a specific skill is required.

The inaugural Raasay Community Renewables board is detailed below

Table 1. Directors and staff information

Ross Gillies	RCR Director/ Co-Chair	Ross has experience of building hydro schemes and working on their implementation, gaining valuable experience in the field. Ross also has a MEng in Civil Engineering. Ross believes this is an exciting opportunity for Raasay and its future. Ross previously worked for Manitoba Energy, who were instrumental in the inception of the project, so it is a project that he cares about and would like to see become a reality.
Rosie Macleod	RCR Director/ Co-Chair	Rosie has a first-class honours degree in Mechanical Engineering and is currently undertaking a Masters in Marine Renewable Energy and working at the BUTEC base as a Range Support Technician for QinetiQ. Rosie joined RCR as she has a huge interest in the marine environment and renewable energy and believes this project utilises our islands natural resources in a sustainable way while providing a great opportunity for the community.
Ross Camilli	RCR Director/ Treasurer	Ross is a mechanical engineering student, with additional experience working on smaller scale hydro, wind and solar renewable projects. Ross is a keen supporter of renewable energy, and especially local community owned schemes.
Artemis Pana	RCR Director/ Secretary and RDT Director/ Treasurer	Artemis has a background in third sector management and funding, mainly in the fields of Homelessness, Equalities and Substance Misuse. Artemis has worked for the Scottish Government as Programme Manager for a £10million initiative to improve the lives of children affected by domestic abuse and has designed and delivered consultation and participation/co-production projects involving different stakeholders. After successfully obtaining an MSC in Sustainable Rural Development through the University of the Highlands & Islands, she is now working as the National Coordinator for Scottish Rural Action.
Elizabeth Macleod	Employee - RDT Local Development Officer	Elizabeth has a MSc Coastal Zone Management and a BSc Natural and Environmental Science. Since graduating Elizabeth has >7 years development management experience including commercial and community development projects. Elizabeth is the main point of contact for all parties involved and is involved in the preparation of funding applications. Elizabeth also provides assistance with preparation of planning applications and associated consents. Elizabeth will continue to work on the Hydro project and assist the RCR board until the project reaches the commissioning stage.

1.2.2. Our Members

Our members experience, skills and knowledge will be vital to the development as we enter into construction and will continue to be paramount to our success as we move into operation of the hydro.

The board of Raasay Community Renewables will engage with our members through our website and social media as well as regular updates via a quarterly email newsletter.

There will be two classes of members

- Contributor member
    - has invested in the company
    - has a right to payment of interest
    - has a right to vote on resolutions and at AGM's
    - they are eligible to sit on the board as contributor directors
- Community Contributor member
    - As above plus
        - They must reside within the Raasay Community Council boundary
        - They must be registered to vote at the polling station on Raasay

1.2.3. The link between RCR and RDT

1.2.3.1. Feed in Tariff Pre-accreditation

RDT applied to OFGEM for pre-accreditation for the two hydro developments. As we applied for pre-accreditation in March 2019 we have until September 2022 to commission and apply for full accreditation – this includes a 12-month extension granted due to the delays resulting from the Covid-19 pandemic.

1.2.3.2. The Leases and Wayleaves

The leases and wayleaves have been negotiated and undertaken through the development work of RDT but will be assigned to RCR when finalised. Legal missives have been agreed with Forestry and Land Scotland (F&LS), the Scottish Ministers and a private landowner. The terms of the leases have been agreed for a period of 40 years and associated costs included in financial projections. Final leases will be signed on completion of a successful share offer.

1.2.3.3. The Grid Connection agreement

The Grid connection was applied for by RDT and is in the process of being assigned to RCR. Details of the accepted agreement can be found here

Final Inverarish and Mine Burn Hydro DC

1.2.3.4. The Anchor share

RCR are required to have one Community Anchor Share. The Community anchor share will be given to Raasay Development Trust. This will provide RDT with a certain number of reserved seats on the board and the ability to block changes that would fundamentally alter the nature of the society. The Community Anchor Share

- Does not carry any right to interest payments
- Is entitled to £1.00 if Raasay Community Renewables is wound up.
- Carries a limited right to vote on resolutions and at AGM's
- Can only be withdrawn or transferred under special circumstances
- Cannot appoint directors in such a way as to make up the majority of the boards constitution.

1.2.3.5. RDT Directors on the RCR board

The RDT directors that sit on the RCR board are details within table 1. They are classed as contributor members and holders of the Anchor Share.

1.2.3.6. Gifting of Profits to RDT

The profits from the hydro will be gifted to RDT to disseminate as part of a community benefit fund. This fund will benefit the community of Raasay and will have an environmental/carbon reduction focus. A Deed of Covenant documenting the relationship between RCR and RDT, including the gifting of profits, has been signed.

1.3. Why are we looking to developing renewable energy?

1.3.1. Community reasons

RCR's aims, as set out in its Governing Document, are to carry out business for the benefit of the community at large through furthering community development and rural regeneration within the geographical community served by Raasay Development Trust, as defined by the postcode units IV40 8NG, 8NS, 8NT, 8NU, 8NX, 8NY, 8NZ, 8PA, 8PB, 8PD, 8PE, 8PF, 8PG

Our Governing Document can be found here – n.b a name change application was successful and we are now listed as Raasay Community Renewables with the FCA

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The hydro development will generate a financial surplice, this will be gifted to RDT and invested into the Raasay community through a community benefit fund managed by RDT. The fund will have an emphasis on addressing the environmental challenges identified through supporting projects that improve the energy efficiency of our island, reduce our carbon footprint and reduce our high level of fuel poverty.

The RDT development plan details what is "**BEST**" (Business, Environment, Social and Tourism) for Raasay. Under environment the community wants to safeguard our environment for future generations and to explore renewable energy schemes to reduce our carbon footprint. Under social welfare the community is wanting to address fuel poverty. Fuel poverty is a key issue on Raasay with 44% of our residents identified as being in fuel poverty during a 2018 housing needs and demand assessment undertaken by the Highland Small Communities Housing Trust. Recent issues with coal deliveries have also highlighted concern over our reliance on imported fossil fuels.

Fuel poverty, sustainable energy and environmental protection were key challenges brought up at the National Island Plan consultation event held on Raasay. The feedback at the event shows that the community support the hydro development and projects that address the concerns raised. The report generated from the consultation can be accessed here

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Generating local employment opportunities is a key aim of the hydro development. During the construction phase a number of contractors will be required and, where possible, these will be local tradespeople. Once operational the hydro development will continue to generate and support secure, year-round employment within the Raasay community. A part time administrator/bookkeeper will be required. There will also be a maintenance contract to ensure the site operates safely and efficiently and metering reports are submitted as required.

Table 2 – The challenges Raasay faces

Challenges Raasay faces		Proposed action
High levels of fuel poverty	44% of our Island residents live in fuel poverty according to a report by the Highland Small Communities Housing Trust.	Increase capacity of our Woodfuel project Increase availability of well insulated affordable housing stock Raise awareness among the Raasay community of information and financial support services available to individuals and businesses. Encourage the switch to alternatives heating systems such as air or ground source heat pumps or other renewable technologies.
Grid Constraint	Current capacity limits the size of local renewable energy generation that can be connected to the national grid. This will be the case until Scottish and Southern Energy Network upgrades infrastructure on Skye.	Ensure current renewable energy projects are futureproofed to ensure they can take advantage of the grid constraint being lifted.
High vehicle ownership	No public transport or taxi/car share service on Raasay. Public transport on Skye does not link up with ferry.	Work with Raasay Community Council and transport operators on timetables. Develop community electric transport initiatives.
Insecurity of fuel supply	The recent liquidation of the islands coal supplier Ferguson Coal, highlighted the insecurity of our reliance on imported fossil fuels.	Investigate and take forward renewable energy projects. Encourage the installation of alternatives to fossil fuels such as air or ground source heat pumps or other renewable technologies. Continue to grow the Woodfuel enterprise to ensure a supply of locally sources sustainable wood fuel.
Habitat Conservation	Our islands natural heritage is important, and we need to protect and manage it for future generations.	Our islands habitats need protection and management, and this could be achieved through providing clear pathways, tree planting and conserving out peat lands.
The impact of tourism	Raasay is seeing an increase in visitor numbers and we lack appropriate signage and infrastructure.	Ensure visitors have the information and infrastructure to enjoy their stay sustainably. This could include facilities for campervans as well as signage and clear pathways.

1.3.2. Strategic reasons

As a response to the Covid-19 pandemic, and its economic implications, the Scottish Government is looking to a "green recovery" and is encouraging a just transition to net-0 as we move forward after the pandemic. https://www.gov.scot/news/scotlands-green-recovery/

Climate change is a global concern and everyone and every community will have to transition to a low carbon future.

The Scottish Government has recently declared a climate emergency which will amend *"the Climate Change Bill to set a legally binding target of net-zero greenhouse gas emissions by 2045 at the latest with Scotland becoming carbon neutral by 2040. The existing targets proposed in the Bill were already world-leading. In response to calls from young people, scientists and businesses across the country, Scottish Ministers have adopted the advice of independent experts, the UK Climate Change Committee. This means that in addition to the net-zero target for 2045, Scotland will reduce emissions by 70% by 2030 and 90% by 2040 – the most ambitious statutory targets in the world for these years."* https://www.gov.scot/news/climate-change-action-1/

As well as the targets noted above the Scottish Government is committed to generating 1GW of community and locally owned energy by 2020, rising to 2GW by 2030. The Scottish Government is supporting communities to develop renewables through the CARES scheme and we are grateful for the support provided. https://www.gov.scot/policies/renewable-and-low-carbon-energy/local-and-small-scale-renewables/

At a more local level the Highland Councils WESTplan is supportive of community renewable energy developments with a key theme of using the energy produced for district heating where possible. Highland Council has also declared a climate and ecological emergency and has a commitment to working towards a carbon neutral Highlands by 2025.
https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/582/west_highland_and_islands_local_development_plan

1.3.3. Target Audience

This document is primarily aimed at the Raasay community, a pool of c170 residents. Although the overall number of Raasay residents is increasing, the proportion of residents aged 16-44 has remained static since 2011 at 19% and the proportion of those aged under 16 has more than halved from 23% in 2011 to 11% today. This provides a small population within our community that may be interested in investing.

This document is, therefore, due to the financial scale of the share offer, also aimed at a wider community of interest and is open to those out with Raasay who have an interest in investing in renewables.

2. Raasay Community Hydro

RCR are proposing two run-of-river hydro schemes (99kW & 38kW) and such a development would consist of the following built structures:

- two independent intake structurers, built on the riverbeds of two streams to abstract water
- two independent buried penstocks (plastic pipelines), one from each intake to a powerhouse
- a shared powerhouse containing two turbine and generator sets, one set for each intake
- a tailrace and outfall to carry water from the powerhouse and return it to the watercourse
- a buried electrical cable from the powerhouse to a grid connection

A run-of-river hydro scheme only operates if and when there is adequate flow in the burn. Such a scheme does not store any water or create a large dam, as is the case in traditional, larger hydro developments.

Prior to RCR inception, RDT have worked with consultants and two independent hydro schemes have been proposed which share a powerhouse and grid connection to maximise generation returns. The intakes will be at Inverarish Burn (~100m head, 99kW) and Mine Burn (~70m head, 38kW).

Mine Burn (Intake 2 below) has an existing weir dating back to the iron ore mines that could easily be adapted by the addition of a pre-fab dropbox Coanda screen. The water taken from this dam (77L/Sec) would be piped towards the mine buildings vie a 315mm pipe where it would then share the penstock trench with an independent 400mm pipeline from the Inverarish Burn intake.

A new Coanda weir would need to be constructed to abstract flows (135L/Sec) from Inverarish Burn (Intake 1) as no historic infrastructure exists. Both intakes are designed to be low maintenance.

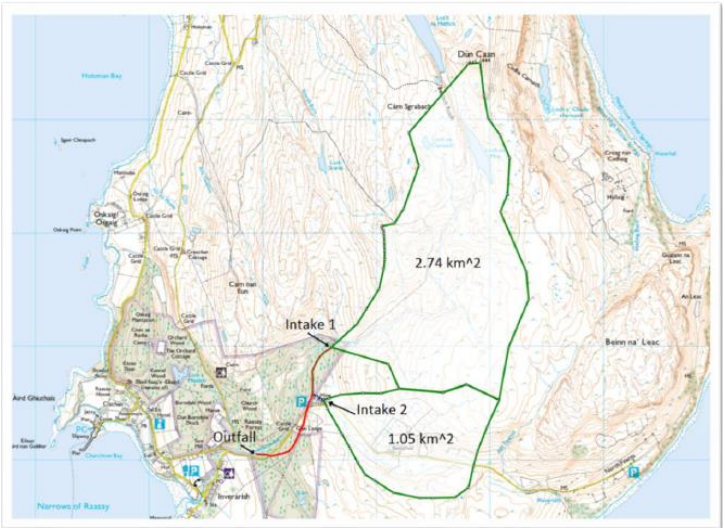

Figure 1 - Map of catchment areas and suggested penstock routes from each independent intake

Figure 2 – Inverarish Burn intake - a new Coanda weir would need to be constructed here

Figure 3 – Mine Burn intake – a pre-fab Coanda dropbox intake would be placed on the weir

The penstock from Inverarish Burn to the powerhouse would comprise of ~1,400 of 400mm diameter PE (Polyethylene) buried pipeline. 880m of 315mm buried PE pipe would be used to convey water from the Mine Burn intake to the powerhouse with both pipes sharing the same trench for the last ~700m. A shared pipeline cannot be used over this lower section as the intakes are at two different heads, so the pipelines operate at different pressures.

The powerhouse contains both turbine and generator sets, one set for each intake, along with the ancillary equipment required to produce electrical energy from the pressurised water in the pipelines. The tailrace transports water that has travelled through both turbines to the outfall where all abstracted water is returned to the same watercourse to which both intakes feed.

The proposed location for the outfall is situated approximately 270 metres upstream from Henderson's Bridge. This location is just upstream of the remaining pillars of the old Railway Bridge that crosses the Inverarish Burn. The powerhouse would be situated amongst the trees adjacent to the Fearns road with access been vie a permanent track.

Figure 4 – location of powerhouse, tailrace and outfall

The proposed powerhouse is approximately 440 metres from a grid connection point, although the final cable route may be up to 650m due to local constraints. The two independents schemes will enable a total combined power output of 137kW to be achieved (producing approximately 520,000 kWh per annum).

A flow duration curve, created using the Wallingford Hydro Solutions LowFlow 2000 software was obtained from an independent hydrologist. A flow duration curve is a measure of the range and variability of a stream's flow over the course of a year. The flow duration curve was adapted for the project catchment areas at each intake and SEPA guidance was used to determine the maximum flows which could be abstracted by each hydro scheme.

The data was then used to produce power duration curves based on the above flow data, coupled with the NET head and typical turbine efficiencies for each scheme. In some cases, more flow could be abstracted under SEPA guidance, however other engineering or permitting constraints such as grid connection capacities or FITs TIC payment bands reduced the sites capacity to optimize returns.

A summary of the engineering parameters and outputs for each scheme is given below in Table 3.

Table 3 – site parameters

Intake	**Intake 1, Inverarish Burn**	**Intake 2, Mine Burn**
Catchment area estimate	2.74 km^2	1.05 km^2
Gross head estimate	100 metres	70 metres
Design Flow	135L/Sec	77L/Sec
Intake Type	2.25m Coanda formed weir	1.05m Coanda pre-fab weir
Penstock Diameter	400mm PE	315mm PE
Approximate penstock length	1,400m	880m
Turbine Type	Turgo	Turgo
Maximum Power at full flow	99kW	38kW
kWh/ annum	390,000 units	130,000 units
Combined Power Maximum	137kW	
Combined kWh/ annum	520,000 units	

Current sources of income for the production and sale of electrical energy from hydropower include the Feed-in Tariffs (FITs) and the Export Tariff. FIT's is a government administrated scheme that pays people for generating their own renewable electricity. FIT's are claimed for every unit of energy generated, independent of whether it is used on site or exported to the grid. The export tariff is a payment that is received on top of FIT's for every unit of electricity that is sold to the national grid. RDT have pre-accredited the proposed schemes and have secured the FIT's at the January 2019 rate. Details of FiT Rates at January 2019 are available at https://www.ofgem.gov.uk/environmental-programmes/fit/fit-tariff-rates

FIT's are paid for a period of 20 years from the moment the plant is accredited. The value of FITs will be adjusted pro-rata to the Retail Price Index (RPI) change in the previous calendar year. The RPI adjustment will also be made on the generation tariff.

At present the schemes export would be limited to 50kW due to grid constraints beyond Raasay, upgrades are due to be completed by 2024/25 which may allow the full 137kW to be exported so providing additional income for RDT. Until the export constraint is removed any excess power will be used locally to pre-dry locally sourced timber at the RDT community timber yard so directly providing a benefit to Raasay. A community electrical car charging point may also be added to enhance the schemes low carbon credentials.

A new housing development, proposed for the south side of the Fearns road, approximately 150 metres south-east of Henderson's Bridge, includes affordable housing being built by RDT and Lochalsh and Skye Housing Association. Depending on the timing of both developments, it may be advisable to discuss these potential upgrades with the Distributed Network Operator (DNO) Scottish and Southern Energy Power Distribution as a cost savings and additional income generation may be possible.

3. Community Benefits

The Inverarish and Mine Burn Hydro developments will provide community benefit through.

- Community Shares – community shares will be offered and will generate finance to develop the hydro infrastructure. Investing in the hydro through community shares will provide a return on investment through interest on the shareholders initial investment.
- Community Benefit Fund – A Community Benefit Fund will be set up to disseminate a proportion of the income generated to members of the community and local organisations/causes. Participatory budgeting events will be held to ensure that the funds are distributed in a way that meets the communities needs, wants and priorities. There will be a focus on supporting environmentally beneficial projects.
- Employment opportunities – During the construction phase a number of contractors will be required and, where possible these will be local tradespeople. Once operational the hydro development will generate and support secure, year-round employment within the Raasay community. A part time (5hrs/week minimum) administrator/bookkeeper will be required. There will also be a maintenance contract to ensure the site operates safely and efficiently and metering reports are submitted as required.
- Potential for access to reduced cost or free electricity – Potential uses of the energy generated that cannot be exported to the grid during the constrained period are being considered.

4. Consultation

Consultation will be ongoing and is carried out under two headings

- Community – As part of our community consultation process, we utilise local notice boards, social media, direct mail, open days and surveys.
    - The Raasay Residents closed Facebook page is accessed regularly by most of the Islands residents and has proved to be an effective method of alerting the community to consultation events, stimulating discussion and generating feedback as well as a way of acknowledging the support we receive and providing progress updates on our projects.
    - We hold open days and drop-in sessions where the community is encouraged to provide feedback and to influence the decisions being made. Covid-19 has put such events on hold and we have increased the use of online consultation.
    - A National Islands Plan consultation event was held on Raasay and a report prepared by Strathclyde University. The event was well attended and provided the community with a platform to discuss Island life and the constraints and opportunities available – renewable energy and reducing fuel poverty were high on the agenda.
    - When the office was open we had an open-door policy to ensure members of the community have the opportunity to discuss projects on a one to one basis and we hope to resume this policy once current covid-19 restrictions are removed.
    - Our 5-year development plan is based on consultation with our community and reflects the community's needs, wants and priorities. All of our consultation work ensures that members, and local people, have the opportunity to become involved with, and aware of, RDT's work and to influence how our projects progress.

- Statutory/organisational – as part of the process of obtaining the necessary consents and permissions we have had to consult with
    - Highland Council – Planning Permission. Consultation during the planning process included SNH, Historic Environment Scotland, SEPA and various departments within Highland Council.
    - SEPA – CAR Licence.
    - SSEN – Grid Connection.
    - Forestry and Land Scotland – Land lease.
    - Scottish Ministers – Land lease

5. Reference project

Prior to RCR's inception, RDT received funding from the Climate Challenge Fund to visit an operational community owned hydro development.

On the 6th Sept 2019, 5 members of the Raasay Community met with the directors of BroomPower and visited the powerhouse. Our delegation included two local engineering students with an interest in renewables and they found the visit very informative and relevant to their studies. Both Ross and Rosie have now joined the inaugural board of RCR.

From the visit we learnt a lot about the funding of the project and received advice on choosing contractors, the legal entity they created and ongoing management. This information will be invaluable to RDT as we progressed with the project.

6. Professional and Technical Services

CARES – Community and Renewable Energy Scotland (CARES) have been providing support to RDT and RCR though providing access to a Development Officer and development funding. This has enabled us to undertake feasibility work, secure planning permission, SEPA CAR licence, SSEN Grid Connection and OFGEM FIT pre-accreditation.

Twin Deer Law – Twin Deer Law represent RDT and RCR in legal matters.

BluEnergy – During the construction and commissioning stage BluEnergy will be responsible for the project management, tendering and construction.

Community Shares Scotland – Community Shares Scotland have provided support and advice with preparing our share offer. The support included assistance with setting up the Community Benefit Society and creating a financial model to predict the developments cash flow through its first 20 years of operation.

Hugh Campbell Marketing – Hugh assisted RCR with creation of a website, social media presence, promotional videos, a share offer document and marketing leaflet

7. Risk Register

BluEnergy have provided a detailed review of the project risks and the resulting risk register can be accessed here. This is a dynamic document and will be updated as the project progresses.

Raasay Hydro Risk Register by Bluenerg

The critical risks and the mitigation proposed within the embedded risk register are summarised in table 4. Risk relating to construction costs have also been summarised in table 4.

Table 4 – Critical Risks and mitigation

Item	Risk Description	Pre-Mitigation			Mitigation	Post-Mitigation			
		Impact	Likelihood Score	Risk rating		Impact	Likelihood Score	Risk rating	Notes/updates
Raptor Nest/WTE	Cross cutting risk to all aspects of the works program. Works cannot take place within 500m of any WTE nest between Feb to Sep, which currently excludes works North of the F&LS bridge. Currently all works in this area (Intakes & upper pipeline) would need to be completed this winter after F&LS have felled trees leading to a very tight schedule & higher costs. Note that the WTE may move to a new nest site which could prevent any works on site and prevent the schemes being commissioned before the current FITs deadline.	5	4	20	F&LS to progress nest survey works to determine risk once travel to Raasay is possible via CalMac. Ask SNH for exemption to allow working within exclusion zone. A follow up survey may be required. Ask Ofgem for extension to FITs deadline for schemes to allow upper works to be conducted in late 2021. Take part in general Ofgem FITs deadline consultation for a 12-month extension. If no exemption or extension is likely, reschedule top end works to be conducted early in the project schedule. This is likely to incur additional costs. If this risk is mitigated successfully then other major supply chain risks (pipeline, intakes etc) would also be de-risked significantly.	3	3	9	SNH/F&LS guidance on possible raptor exclusion zone exemptions https://forestry.gov.scot/publications/31-managing-forests-for-white-tailed-eagles/viewdocument . As Ofgem have now grated a 12 month extension to the FITs deadline and F&LS have felled the working area in the 2020-21 WTE working window the 2021-22 WTE working window is open for hydro works only therefore the risk level has been reduced although all works in this area must still be completed in 5 months.

Covid - 19 & FITs Deadline Extension	Cross cutting risk to all aspects of the project. Possible delays to all aspects from funding & enabling works, to supply chain issues & construction. Key restrictions to CalMac travel to Raasay. All restrictions may be reinstalled should there be further waves.	5	4	20	Ofgem has already given a 6-month extension to all schemes which were to be commissioned by Sep 2020. There is a consultation (may report/be implemented by Aug 2020) to help determine if other schemes beyond this point could also benefit from a 12-month extension with an assumption that an extension will be given. If given a 12-month extension would allow commissioning by Sep 2022 which would also provide a second WTE working window. Currently assuming that no extension will be given and all works programs to progress as required. Ask Ofgem if a project specific extension is possible due to CV-19 & WTE issue as an early decision would help decongest the works program before total commitment.	3	3	9	As Ofgem has now given a 12 month extension to the FITs commissioning deadline some of the risk has been mitigated, however any delays in reaching financial close will erode the extension period. BEIS FITs extension consultation now granted, see link to details: www.gov.uk/government/consultations/feed-in-tariffs-scheme-accreditation-deadlines-proposed-changes

Construction Costs	In any complex project which has taken several years to develop and deliver, some upward variation to costing is expected. Bluenergy tend not to offer fixed price quotes due to the inherent groundwork uncertainties (bed rock etc) and other risks involved with such schemes (limited time until commissioning, current restrictions). Schemes are priced from past project experience were possible. If a fixed price is required, a premium will be added to the schemes cost to cover uncertainties, however due to the current restrictions and uncertainty regarding the project start date that latter offer is not possible.	4	4	16	Firm prices for major components such as, pipeline, turbines, control units, cables etc have been used, estimates are used for other items such as ground works and civils items based on past project experience. Additionally, any firm prices are time limited but are typically stable. F&LS has agreed that the depth to which the pipelines are buried may be reduced if the ground conditions would incur excessive groundworks. Ensuring that the maximum possible construction period remains before the FITs deadline and keeping as much flexibility in the project schedule as possible will help mitigate the risk of major cost increases as time pressures typically reduce contractor availability and increase premiums. Do not set artificial targets apart from the FITs commissioning deadline. To maximise workflows multiple items may be progressed together or priorities switched at short notice due to conditions/works ordering/other commitments.	2	2	4	

8. Project Timeline

The project timeline has been devised so we can reach the FiT deadline for commissioning of 27th September 2022.

Table 5 – Project Timeline

Pre – Construction	12/20	1/21	2/21	3/21	4/21	5/21	6/21	7/21	8/21	9/21	10/21	11/21	12/21	1/22	2/22	3/22	4/22	5/22	6/22	7/22	8/22	9/22	10/22
Share offer																							
Finalise Lease and wayleave agreements																							
Financial Close																							
Procurement																							

During Construction	12/20	1/21	2/21	3/21	4/21	5/21	6/21	7/21	8/21	9/21	10/21	11/21	12/21	1/22	2/22	3/22	4/22	5/22	6/22	7/22	8/22	9/22	10/22
Power House & Grid + E&M																							
Pipeline																							
Intakes																							
Turbine and controls																							
Commissioning																							
FiT accreditation and operational start																							

9. Project Finance

To date the following project finance has been secured by RDT.

- CARES Development Loan with write off facility – £154,342 (includes interest accrued to proposed financial close date)
- Climate Challenge Fund development Grant – £358
- SSE Sustainable Development Funding – £300,000
- SHECT Grid Connection grant – £7,700
- We do not require a Power Purchase Agreement as the schemes will be on a FiT export/generation tariffs (20yrs index linked) and this is reflected in the financial model

RCR hope to secure the remainder of the funding through the offering of community shares.

10. Financial information

Costs have been estimated by RCR with support from BluEnergy, Local Energy Scotland and their CARES financial model with the final model being produced by Co-operative and Mutual Solutions Limited.

The full Financial Model can be accessed here

Raasay Hydro financials 180121.xls

10.1. Financial Model Inputs: Scenario – Baseline (P50) with £307,700 in grant funding

- Development phase Feb 2016 onwards. Development costs are estimated at £154,342 and were covered by a CARES Development Loan made available to Raasay Development Trust. Repayment of the CARES loan is included in the financial model as a CAPEX cost. The CARES loan includes a write off facility should the project not go ahead therefore shareholders are not liable for repayments.

- Construction end September 2022

- 138kW power of turbine; P90 ~520,000 kWh per yr (Estimated of P90 for 2 hydro schemes WHS July 2017 report).

- FiT Tariff (pre-accreditation) Generation rate 8.41p/kWh and Export rate 5.6p/kWh (for 20 yrs – will increase with inflation

- Build costs are projected to be c£756,000 and are summarised in the table 6.

- Rent set at 2.5% and includes Forestry and Land Scotland land rent 2%, Department of Agriculture land rent 0.5%. A lease agreement has been entered into with a private Landowner where we will undertake groundwork in lieu of rental payments.

- Annual operating cost are projected to be c£22,270 in 2026 and are summarised in the table 7.

- Share offer opening on 12th January 2021 and closing on 23rd February 2021

Minimum investment	£125 (Community Contributor Members)
	£375 (Contributor Members)
Maximum investment	£65,000 (Community Contributor Members)
	£65,000 (Contributor Members)

- Our aim is to pay interest at 4%. At current Bank Base Rates rates of 0.1%, we could only pay a maximum of 3.1%. However, these are historically low rates of interest and we can reasonably expect Bank Base Rates rates to be higher from 2022 onwards. We will decide the interest payment level annually at an AGM.

- Returning investors initial investment is projected to start in 2026 and completed by 2040.

Table 6 – Build Costs

ITEM	COST
Stage 1 and 2 fees and costs	6,600
Site mobilization & temporary/accommodation compound build	10,000
SSEN optional including export payment	4,098
Mine Intake WIC	60,900
Order Turbine (30%)	10,800
Turbine delivery, 70%	25,200
Turbine MandE	10,524
Commissioning window (G99 tests)	2,400
FIT accreditation and post install	20,950
Order control (50%)	24,500
Control delivery (50%)	24,500
Control MandE	14,032
Track to Power House, Base and Discharge	34,140
Power House Basic Shell	11,250
Power House	11,250
Power House MandE	14,032
Order Pipeline	105,000
Pipeline delivery logistics	12,100
Pipe welding for lower site	12,100
Lower 650m combined pipeline trench	48,400
Pipe welding for upper site	12,100
750m upper pipeline + 250m to Mine Burn + 2 pipe bridges	60,471
Grid Connection and HH metering	5,000
Main Cable	56,490
Meter and EMS shed in RDT Woodyard	7,021
Meter and EMS shed, MandE	7,016
General Equip provision and Op costs with project fees, Mgt and Contingency	145,126
TOTAL	**756,000**

Table 7 – Operating costs

ITEM	COST
Insurances	3,394
Annual Maintenance	3,960
Metering	1,697
Repairs sinking fund	1,697
Land Rental (2.5% of revenue)	2,199
Hall Hire	113
Accounts	2,829
Admin Wages (5 hours * 52 * 15) + pension	4,633
SEPA Annual Fees	792
Share Offer costs (Platform)	-
Contingency (5%)	956
TOTAL	**22,270**

10.2. Project Funding

CARES Development Loan –

- A CARES development loan has enabled the project to progress through the development and consenting phase. Development costs are estimated at £154,342, including interest. Repayment of the CARES loan is included in the financial model as a CAPEX cost and will be repaid on reaching financial close. The CARES loan includes a write off facility should the project not go ahead therefore shareholders are not liable for repayments. Details can be found at the following link https://www.localenergy.scot/media/24724/CARES-Pre-Planning-Loan-Guidance-V2.pdf

Grants -

- Our successful SSE Development Fund application has been included as an input. This £300,000 grant is ringfenced and has to be spent on the capital costs of building the hydro. If the project is unsuccessful RCR will have to repay RDT, as the grant recipient, any unclaimed funds which they will then repay to SSE.

- Our successful application to the Scottish Hydro Electric Community Trust (SHECT) of £7,700 has been included as an input. This grant has to be used towards covering the cost of the grid connection. If the project is unsuccessful RCR will have to repay RDT, as the grant recipient, any unclaimed funds which they will then repay to SSE.

Community Shares –

We are aiming to raise £650,000 in Community Shares and this represents the capital costs of construction as well as repaying the CARES development loan while also allowing for an element of working capital and the cost of utilising an online platform for administering the share offer.

Details of the share offer can be found in the share offer document available at www.raasayrenewables.com and through our crowdfunder link WWW.CROWDFUNDER.CO.UK/RAASAY-COMMUNITY-HYDRO

The Share offer opens on 12th January 2021 and closes on 23rd February 2021, Raasay Community Renewables reserves the right to alter these dates if longer is required to raise the minimum required or we reach the maximum before the closing date.

The share Price will be £25 with a minimum investment of £125 for investors with a Raasay postcode. For those out with Raasay a minimum investment of £375 is applicable. The maximum Investment that can be made by any investor is £65k. Our aim is to pay interest at 4%. At current Bank Base Rates rates of 0.1%, we could only pay a maximum of 3.1%. However, these are historically low rates of interest and we can reasonably expect Bank Base Rates rates to be higher from 2022 onwards. We will decide the interest payment level annually at an AGM. We aim to pay interest on investment from 2024 and start returning investment to investors from 2026 with all investment returned by year 2040.

If, after extending the share offer closing date, sufficient funds have yet to be raised we will take forward the following options in the order noted.

- BluEnergy have offered to defer contractor fees. Typically, as part of Bluenergy's turnkey project delivery, once a scheme has been commissioned Bluenergy will continue to support the project during the initial "bedding in period" by deferring all of their project fees (excluding direct costs and site overheads) alongside a mandatory rolling maintenance & management contract for a period of up to 5 years to ensure that a site is operated and maintained as intended. During the 5 year deferral period RCR will repay a portion of the fees annually.
- We will also look to raise funds through an ethical/social lender such as Social Investment Scotland or the Energy Investment Fund.
- We also have the opportunity of securing a bridging loan from CARES/Local Energy Scotland and the guidance can be found below. This is a short-term option to assist with cash flow issues and incurs a high interest rate of 10% and we will look to refinance the CARES bridging loan once construction is completed and the hydro developments are operational. Refinancing at this point will ensure we are receiving a lower interest rate. Loan finance repayments may impact on interest repayments to investors, interest payments are agreed by members annually at an AGM.

To secure the bridging loan the project is required to undergo an "investment ready overview" where CARES appoint an external advisor to review the project before agreeing to offer the loan. Our developments have been through the investment ready overview and was assessed by Ricardo Energy, the assessment can be accessed below


Bridging loan pre-app guidance.d


v.4 cares-investment-rea

10.3. Financial Model Outputs:

- Cost per kW =£6,990/kW worst case scenario

- Project IRR (%) = 8% P50

- Investor interest = £182,433 over the 20 years of the financial model.

- Investor retuned investments = £650,000

10.4. Profit and loss

The profit and loss forecast detailed in table 8 starts in September 2022 when generation commences (partial year). It shows the first 5 years (2026), then 2031 and then the final (FULL) year of the projections. Retained losses are brought forward from year 0: community share raising costs. The schemes are forecast to be immediately profitable. Some of the depreciation is offset by capital grant release as detailed in the assumptions.

Table 8 – Profit and Loss forecast

Raasay Hydro	**£**	**£**	**£**	**£**	**£**	**£**	**£**
PROJECTIONS							
PROFIT & LOSS ACCOUNT	**2022**	**2023**	**2024**	**2025**	**2026**	**2031**	**2041**
Feed in Tariff	11,206	45,946	47,095	48,272	49,479	55,981	71,660
Export	3,866	16,333	17,252	18,223	38,499	50,627	87,550
Sales	15,072	62,279	64,347	66,495	87,978	106,608	159,210
Operating expenses							
Insurances	769	3,152	3,231	3,311	3,394	3,840	4,916
Annual Maintenance	897	3,677	3,769	3,863	3,960	4,480	5,735
Metering	384	1,576	1,615	1,656	1,697	1,920	2,458
Repairs sinking fund	384	1,576	1,615	1,656	1,697	1,920	2,458
Land Rental (2.5% of revenue)	377	1,557	1,609	1,662	2,199	2,665	3,980
Hall Hire	26	105	108	110	113	128	164
Accounts	641	2,627	2,692	2,760	2,829	3,200	4,097
Admin Wages	1,049	4,302	4,410	4,520	4,633	5,242	6,710
SEPA Annual Fees	179	735	754	773	792	896	1,147
Contingency (5%)	216	888	910	932	956	1,081	1,384
Operating expenses	4,923	20,195	20,712	21,244	22,270	25,374	33,049
Earnings before Interest, tax and depreciation	10,149	42,084	43,634	45,252	65,707	81,234	126,161
Depreciation	11,379	45,517	45,517	45,517	45,517	45,517	45,525
Deferred capital grant release	3,846	15,385	15,385	15,385	15,385	15,385	15,385
Earnings before Interest and tax	2,616	11,952	13,502	15,120	35,575	51,102	96,021
Shareholder interest	-	-	6,500	18,200	22,533	13,867	-
Bank interest	106	49	91	105	106	84	-
Profit/(loss) before tax	2,722	12,001	7,093	(2,975)	13,148	37,319	96,021
Community Benefit Provision	-	-	3,455	3,934	6,574	27,989	72,120
Net profit/(loss)	**2,722**	**12,001**	**3,639**	**(6,909)**	**6,574**	**9,330**	**23,902**
Retained profit/(loss)	(12,185)	(184)	3,455	(3,455)	3,119	62,168	235,181

10.5. Funds Flow

Table 9 summarises the funds flow if sufficient cash is raised through the grants and the community share issue to cover the hydro capital expenditure, the repayment of the CARES development loan and for working capital. The summary shows that the schemes are cash positive from generation to the final full year of the projections. This includes repaying the share capital to investors and significant community benefit payments.

Table 9 – Summary Funds Flow

Raasay Hydro	**£**	**£**	**£**	**£**	**£**	**£**	**£**
SUMMARY FUNDS FLOW							
	2022	**2023**	**2024**	**2025**	**2026**	**2031**	**2041**
Earnings before Interest, Tax and Depreciation	10,149	42,084	43,634	45,252	65,707	81,234	126,161
Investment in working capital	77	-406	-421	20,676	209	-904	-1,951
Net cash inflow/(outflow) from operating activities	10,226	41,678	43,213	65,928	65,917	80,331	124,210
Cash inflow/(outflow)	-248,075	41,727	33,349	566	-6,418	-4,775	52,229
Opening cash	278,370	30,295	72,022	105,371	105,937	83,657	138,341
Closing cash	30,295	72,022	105,371	105,937	99,519	78,882	190,571

10.6. Balance sheet

Table 10 shows a strong balance sheet is forecast throughout the project. Fixed assets are depreciated over 20 years and there is always sufficient cash for share withdrawals and community benefit payments.

Table 10 – Summary Balance Sheet

Raasay Hydro	**£**	**£**	**£**	**£**	**£**	**£**	**£**
SUMMARY BALANCE SHEET							
	2022	**2023**	**2024**	**2025**	**2026**	**2031**	**2041**
Fixed Assets	898,962	853,446	807,929	762,412	716,895	489,309	34,129
Current Assets	44,594	86,775	120,595	123,670	118,414	115,466	250,769
Current Liabilities	1,887	1,936	1,985	25,170	26,541	30,551	38,087
Net current Assets/(liabilities)	42,706	84,840	118,610	98,500	91,873	84,915	212,681
Creditors due after more than 1 year	303,854	288,469	273,084	257,699	242,314	165,389	11,539
Net Assets	637,815	649,816	653,455	603,213	566,453	408,835	235,272
Capital	650,000	650,000	650,000	606,667	563,333	346,667	0
Reserves	-12,185	-184	3,455	-3,454	3,120	62,169	235,272
Total Capital and Reserves	637,815	649,816	653,455	603,213	566,453	408,835	235,272

11. Technical review

The latest technical review of the project, undertaken by BluEnergy, can be found here

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12. Consents

Any run-of-river hydro development, such as proposed by RCR, will have an impact on a watercourse. All hydropower developments in Scotland require a Controlled Activities Regulation (CAR) authorisation for abstractions, impounding works (weirs and dams) and any other engineering works associated with the schemes. The Scottish Environmental Protection Agency (SEPA) is the authorising body for CAR licences. It is tasked with balancing any risk to the natural environment or to the recreational use of the watercourse arising from the construction and operation of a schemes with any benefits gained under the Scottish Government's aims of increasing renewable energy production.

SEPA CAR licences have been granted to RDT under the following references and we are in the process of assigning the consents to RDT more details can be found here


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- **CAR/L/1137561 – Inverarish Burn**
- **CAR/L/1137829 – Mine Burn**

The licences detail the locations, authorised activities, abstraction rates and flow requirements and set out the following conditions

- Fish screens are required at set locations detailed within the licence.
- Two months prior to construction starting detailed drawings and a construction method will be required and construction cannot commence without the written approval from SEPA.
- SEPA require notification 7 days prior to construction commencing.
- Construction should take place out with periods where fish are likely to be spawning.
- All monitoring equipment is required to be calibrated and maintained in good working order at all times.
- Records are to be kept on site and should be readily accessible.
- SEPA requires that they are notified within 24hrs of any incident with the potential to impact on the water environment.

Highland Council's planning department will look to SEPA for guidance on the suitability of the schemes for the area in question. Their focus will on disruption to the area from traffic, roads issues, the aesthetic appeal of structures associated with the schemes, etc.

Planning permission has been granted under the following references and further details can be found here


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- **19/00314/FUL – Inverarish Burn**
  Conditions
  - The external finishing of the powerhouse must be approved by the planning authority.
  - The development cannot be undertaken in a phased approach and must be completed within 2 years and in accordance with the application and environmental statement.
  - To investigate, evaluate, preserve and record archaeological and historic features potentially affected by the development a programme of work will be agreed with the planning authority.
  - To minimise disturbance to protected species an otter survey is required to be undertaken within 2-3 months of the anticipated date of commencement.
  - Noise levels during construction and operation cannot exceed NR 20 at nearby premises.
  - a private water supply appraisal is required and should be submitted to the Planning Authority.
  - Access to core paths must be maintained.

- **19/00310/FUL – Mine Burn**
  Conditions
  - The development must be completed within 2 years and in accordance with the application.
  - To minimise disturbance to protected species an otter survey is required to be undertaken within 2-3 months of the anticipated date of commencement.
  - Access to core paths must be maintained.

Historic Environment Scotland require RDT to obtain Scheduled monument consent as the development has the potential to impact on the old mine works. Scheduled Monument Consent has been granted to RDT and the process of assigning the consent to RCR is underway. Further information can be found here.


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13. Grid Connection

A grid connection offer has been received and accepted by RDT. The process of assigning the grid offer to RCR is underway. Details can be found here.


Final Inverarish and Mine Burn Hydro DC

Our most recent allows us to export that full capacity of the developments once the 50kw constrain is lifted in 2024/25. Options for local use of the energy are being considered.

14. Land Leases

Legal missives have been agreed with Forestry and Land Scotland (F&LS), the Scottish Ministers and a private landowner. The terms of the leases have been agreed for a period of 40 years and associated costs included in financial projections. Final leases will be signed on completion of a successful share offer.

Details of the F&LS Heads of Terms agreed can be found here.


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