POWERHOUSE ENERGY GROUP PLC

COMPANY NUMBER: 03934451

Annual Report and Financial Statements
For The Year Ended 31 December 2021

COMPANY INFORMATION

Directors	Keith Riley	*Interim Non-Executive Chairman*
	Paul Drennan-Durose	*Chief Executive Officer*
	Paul Emmitt	*Chief Technical Officer*
	Myles Kitcher	*Non-Executive Director*
	Gill Weeks	*Non-Executive Director*
	Hugh McAlister	*Non-Executive Director*
	James Greenstreet	*Non-Executive Director*
Company secretary	Delgany Corporate Services Limited	
Company number	03934451	
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Website	www.powerhouseenergy.co.uk	
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Nominated Adviser	WH Ireland 24 Martin Lane London EC4R 0DR	
Registrar	Neville Registrars Limited Neville House, Steelpark Road Halesowen B62 8HD	
Auditor	Jeffreys Henry LLP Finsgate 5-7 Cranwood Street London EC1V 9EE	

Forward-looking statements

This report includes forward-looking statements. Whilst these forward-looking statements are made in good faith, they are based upon the information available to Powerhouse Energy Group PLC at the date of this report and upon current expectations, projections, market conditions and assumptions about future events. These forward-looking statements are subject to risks, uncertainties and assumptions about the Company and should be treated with an appropriate degree of caution.

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INTERIM CHAIRMAN'S STATEMENT

At time of writing this statement, I have been in the Chair at Powerhouse Energy Group for a very short time, but having been involved with the first application of its plastics-to-hydrogen DMG technology since October 2020, and a non-executive director since September 2021, I feel more than qualified to present this statement in support of our results for the year ending 31 December 2021.

Despite the difficulties caused by the Covid pandemic that impacted a good part of the year and some major changes in Board members, including the Chairmanship, the focus of the Powerhouse executive team was almost exclusively in support of Peel NRE on the development at their Protos Plastics Park in Cheshire, UK. The pathway of development of complex capital projects, is rarely smooth, and Protos Plastics-to-Hydrogen has been no exception. A change of project management and a realignment of the contracting strategy meant that earlier target dates were not achieved,

Late 2021 saw a major reorganisation of the Peel project team, which substantially increased its level of experience and professionalism. The fact is that it took the project team most of the year to complete the restructuring and prepare for engaging with the construction contractor market. Powerhouse provided its full support to the team, as well as strengthening its own engineering capability by the acquisition of 48% of the share capital of Engsolve Ltd.

There is much more work involved in specifying the technical requirements, tendering and contract negotiation, and putting into place the myriad of items required for a project to proceed than most people realise. Powerhouse was, and is, a key contributor to Peel NRE's Protos development, but is only one of a number of organisations involved. To carry out these tasks and deliver them comprehensively takes time and effort, and whilst there is disappointment in missed targets, doing this properly also lays down a solid foundation for the future. Once done, it can be reproduced and used again. The Powerhouse engineering team has done its very best in supporting the Protos project, which has now obtained robust, contractable offers for the construction of the project from some very substantial contractors. It has been difficult reporting to shareholders on this phase of the development, particularly due to the sensitive commercial nature of the process being led by Peel NRE and its project team.

The need to concentrate on Protos meant that development of Powerhouse's business in other areas took a back seat. Even so, the Company continued to work with its development partners and entered into a collaboration agreement with Hydrogen Utopia International Plc ("HUI"). An application for approval of an environmental impact assessment of a project in Konin, Poland was submitted to the Polish authorities by HUI, response to which is still pending.

With the arrival of Paul Drennan-Durose as Chief Executive Officer, the Company is now looking to expand its capabilities and activities. We welcome Paul to the Company at a time when a transformation of the world's behaviour towards the environment is being openly demanded by the people, placed at the heart of the public agenda and economic players throughout the world. Powerhouse has developed a technology that can make a significant contribution to achieving net zero. This contribution will only be achieved, however, if we build and develop the competence and capability of the Company to create a high-performance, purpose-led culture. Paul outlines in his statement to this Annual Report the measures he is taking to achieve that.

I look forward to the next stage of the evolution of the Company that will see Powerhouse technology implemented and the business of the Company being able to grow.

We would also like to take this opportunity to thank all our staff for their continued efforts and hard work as well as all our investors and stakeholders for their continued support.

Keith Riley

Keith Riley
Interim Non-Executive Chairman
28 June 2022

CHIEF EXECUTIVE OFFICER'S REPORT

This is my first report as Chief Executive Officer of Powerhouse Energy Group, having been appointed in February 2022.

In the period since my appointment as Chief Executive Officer, much has already been started, completed and achieved. As set out in the Strategic Report which follows this statement, this work will provide a foundation for the establishment of a clear set of imperatives and direction for the Company.

Discovery, Engagement and Direction

My initial approach was to embark upon an intense discovery phase to fully evaluate our business. Time has been invested with a wide and deep cross section of stakeholders, starting with existing and potential partners and players in our markets. Engagement with key collaboration partners during the first weeks of appointment was a high priority. Meetings with Peel NRE's leadership commenced on day two and have resulted in a refresh of previous plans aimed at supporting Peel NRE delivering what could be the first commercial project utilising Powerhouse's technology. Naturally, the Company is supporting Peel NRE, and doing what it can to mitigate any risk of delay Peel NRE has on this first project.

During this initial period, a comprehensive 360-degree understanding has been developed by the team, and key imperatives and collaboration positions have been re-established and prioritised. Many of these imperatives have already been completed or initiated and included within a plan for relevant periods in the near, mid, and longer terms. These are set out in the Strategic Report.

In parallel, we have also taken time to form a new strategy team, made up by the nucleus of the leadership team, and a set of trusted advisors, including the cementing of relationships with our Nominated Adviser, brokers, lawyers and accountants. This new strategic team will be tasked to ensure that the Company continues to deliver its stated objectives whilst also delivering better communications and engagement with the Company's shareholders and the market.

Evolving Strategy

In 2022, the new leadership team and the Board has started to build a robust, flexible business model and three-year strategy, designed to meet the challenges of each phase of the Company's evolution. The Company will elaborate on this further later this year as the strategy is developed.

The Company must build trust from its key stakeholders. Relationships with our customers and partners remain core to the Company's growth strategy. Our plan is to launch in developed markets close to our operational base, developing and testing repetitively and with rigor, cultivating close and strong relationships with our customers and partners. As the dynamic of change is so fast flowing in economies, Powerhouse has embarked on a process to reassess its purpose, its values, its structure, its processes, and its markets.

Powerhouse understands that it must create value for all its stakeholders, and it intends to deliver this through a refreshed strategy. Reducing energy dependency, providing more effective solutions for increasing levels of non-recyclable waste, creating more sources of newer non-fossil fuel energy are all unmistakably of ever-increasing relevance. Powerhouse intends to play a role in this transition.

The Strategic Report outlines the challenges met, and the progress made by the team last year. Although early days for the new team, this is a good opportunity to share some early assessments:

- **Technology and Innovation** – a renewed focus on improving the technology readiness level and ensuring it is process capable.
- **Commercial Development** – support development of the first of a kind commercial project, commit fully to early users and reduce dependencies by building quality of choice in developer/channel partner pipeline and project pipeline.
- **Business Model Evolution** – ensure the target business model of being a prominent leader of technology innovation and an attractive licensing partner is enabled.

- **Go-to-market engagement**
  - Creation of a combined Marketing Centre & Global Technology and Innovation Centre – to support the development of technology readiness levels, expand the range of products the Company can offer, and lessen the risk of impact to growth from delays the Company has experienced at its first of a kind commercial site in the UK.
  - Marketing Pillars - investing in developing a marketing pathway which will underpin and support the commercialisation and scale up of the Company.
- **Invest in Talent** – enrich, invest and engage partners and talent at all levels of the enterprise.

Board

The Board of Powerhouse has been through a period of significant change. We are delighted to have welcomed some high calibre individuals to the board including Gill Weeks OBE, Hugh McAlister and Paul Emmitt as well as Keith Riley and myself. A brief biography on each is outlined below, and biographies of all Directors are contained within the Directors Report within this document.

Gill Weeks joined the Powerhouse in Board in January 2022 as a Non-Executive Director and is a leader of compliance and regulatory teams in global environmental business, advising on environmental law changes. Over the course of her career Gill has developed expertise in public policy, environmental law, stakeholder management, governance and risk, environmental science and regulatory compliance and enforcement.

Hugh McAlister was appointed to the Powerhouse Board in February 2022 as a Non-Executive Director and has over 40 years' stockbroking experience in the City of London. Hugh has been the executive chairman of Novum Securities Limited since 2018, having been its Chief Executive Officer for the previous nine years. Prior to this, Hugh was a founding partner and head of trading a Kaupthing Singer & Friedlander Capital Markets and Head of Pan European Equities at Dresdner Kleinwort Benson.

Paul Emmitt joined Powerhouse in July 2021 and was appointed to the Board as an Executive Director in March 2022. He will continue as CTO, leading the management, planning, development, and operation of the DMG technology. Paul is a Chartered Engineer, has an MBA in Engineering Management, and has over twenty years of multi-sector engineering and operational management experience. He is also the Managing Director of Engsolve Limited, the engineering consultancy in which Powerhouse has a 48% stake.

I recently joined the Board of Powerhouse as Chief Executive Officer. I have just spent over three years as the investor appointed Chief Executive Officer of Heliex Power Limited, a private equity backed cleantech energy business. Whilst there, I led the transformation of the start-up new technology company, leading the roll-out of its technical development, and commercial market recovery.

Keith Riley joined the Board as a Non-Executive Director in 2021 and stepped in as Interim Non-Executive Chair on 27 June 2022. Mr Riley is also the proprietor and Chief Executive Officer of Vismundi Limited, a consultancy company providing services to the resources and waste management industry. Prior to that, between 1993 and 2012 he worked for what is now known as Veolia Environmental Services plc in a number of senior roles.

It is the intention of the Board for the interim Chair and myself, to evaluate and re-assess the composition, scale and relevance of the Board ensuring its alignment with the strategy being created and deployed in this phase of the Company's evolution.

The outcome of these evaluations will include options for the Board to consider and implement where appropriate.

It is intended that a permanent Chair will be recruited in quarter three of 2022.

Once this process is complete, the Board's focus will be on continuity, stability, cost, and effectiveness.

Financial Results

The Company increased revenues in the year ended 31 December 2021 to £701k (2020: £100k) primarily due to further engineering support works provided to the Protos SPV. Once the project enters construction, it is currently intended that Powerhouse enters an agreement with the Protos SPV for provision of owner's engineer services.

Chief Executive Officer's Report

The total loss for the year is £1.87m (2020: £15.83m). This substantial reduction is due to a reduction in the impairment of goodwill to £nil (2020: £14.2m). The carrying value of goodwill, which arose on the acquisition of the Waste2Tricity Limited, is independently assessed on an annual basis, with no impairment deemed to have arisen in 2021.

The loss per share for the year is 0.05p (2020: 0.57p) with the change reflecting the reduction in the total loss detailed above.

Cash at year end amounted to £9.64m (2020: £3.46m). The Company raised an additional £10m pre-expenses from the market during the year. The Company also provided a loan facility to the Protos SPV of £3.8m of which £1.15m had been advanced by the year end.

Market Outlook

There is no question that most stakeholders now expect companies to embrace reducing waste effectively, and to play an active role in decarbonising the economy. This shift in expectations represents significant opportunities for Powerhouse. The transition to net zero continues to evolve, with different economies moving at different speeds. The pace of change, and the level of available capital to support decarbonisation, is vastly different in developing and developed countries. Being quoted on the London Stock Exchange means Powerhouse can benefit from a widely available pool of public capital, in a market where investors have a proven track record of supporting companies involved in the energy transition.

Russia's invasion of Ukraine, and the on-going appalling war, has seen the launch of an economic conflict too. Western countries' dependence on Russian energy is in the spotlight, and it is anticipated that companies and governments will also be looking more broadly at their energy dependencies and energy security strategies, as well as on their fossil fuel consumption.

This would suggest that a focus by Powerhouse on countries within closer proximity to its UK base, would be an appropriate scalable market in terms of available capital, motivation, and attractiveness for dealing with unrecyclable waste and decarbonisation in those regions, and would avoid the company overreaching in its commercialisation phases. However, we are committed to serving all markets should the right opportunity present itself.

Engaging and Communicating with Shareholders

We must share that it is not lost on the new leadership team that the engagement the Company has with its investor community is not where it needs to be. As explained in the Chairman's Statement, much of the reason has been the commercially delicate stage the Protos project has been in. The project will shortly be through that stage and working with the Chairman, one of my aims is to maintain more regular communications with shareholders without overburdening them. The new implemented structure will foster strong, balanced coordination of the Company's image and messaging to investors, and to other key stakeholders. This is intended to help drive valuation, sales, and overall image. Our investor community will be updated on this in short order.

Thank you

I would also like to take this opportunity to thank all the Powerhouse staff and our associates at Engsolve for their continued efforts and hard work, and our investors and stakeholders for their continued support. The Board believe that Powerhouse is well placed and that we are implementing a strategy that is not only appropriate but will enable the Company to take full advantage of the significant opportunities that are available to deliver long term value.

Paul Drennan-Durose
Chief Executive Officer
28 June 2022

STRATEGIC REPORT

This Strategic Report addresses the Directors' management of the Company and contains certain forward-looking statements. These statements are made by the Directors in good faith based on the information available to them up to the time of the report preparation and approval and such statements should be treated with caution as they address uncertainties.

Business Descriptor

Powerhouse develops, designs, co-designs, integrates, delivers and licenses technology and its know-how, its DMG solution. This has an advanced thermal conversion technology at its centre, which converts calorific waste streams into synthetic gas (syn-gas), a valuable product that can be used as an intermediary for producing new high-value products such as hydrogen, or as a fuel in its own right for power generation.

Powerhouse's central capability is its know-how in the integration of the processes and technology, the application of the pyrolysis and gasification processes involved, and the research and development of the complex variables, which make it operationally and financially viable. This includes development and testing of equipment, but also testing of assorted feedstock materials and mixes, and in the process, calibration, and programming of control systems, which maximise yield and process productivity.

The process can convert a wide range of end-of-life and other feedstocks, including the Company's initial focus of end-of-life, non-recyclable waste plastic, to produce a range of 'end of waste' products, including:

- Hydrogen
- Electrical power
- Thermal Energy
- Natural gas replacement
- Chemical feedstocks
- Biochar

Business Strategy

To position Powerhouse's technology as a converter of waste to wellness, and to support its growth and scale-up, the Company has centred its main focus on several **key strategic imperatives**:

1. Technology and Innovation

A successful year of tests, trials and development using the Company's test unit at its Thornton site in the northwest of England, was completed in 2021.

Several developments are worthy of highlighting in this report:

The team has made noteworthy progress in enhancing the Hydrogen output of the system, and there has been a tangible increase in evidence-based confidence from the systematic testing of feedstocks in 2021 and in 2022, in the generation of optimum levels of Hydrogen.

More understanding and control of the technology has been achieved which has allowed in certain cases, optimized carbon retention in the residue (biochar). This is a form of carbon sequestration.

The 2021 period is being followed by a doubling down on the Company's efforts in 2022 and 2023.

In 2022, the new leadership team and the Board intend to have a robust three-year strategy for technology development and a solid detailed level plan every year. This is designed to meet the challenges of each phase of the Company's evolution, truly generate continuous improvement, and maintain relevance to its target markets.

Technology and System Readiness and Capability

The thrust of focus in 2022 is on the Company setting about applying more rigour and scrutiny to delivering the technology and system readiness level of the core technologies it is developing and adopting and ensuring that the technology the Company is forming and integrating is process capable. This is a critical foundation, necessary for minimising risk and optimising potential when the Company rolls-out a full-scale commercial operation.

In quarter two of 2022, the Company initiated the formation of effective engineering leadership structures for this next phase in its evolution. This structuring includes, but is not restricted to, Powerhouse's CTO Paul Emmitt being appointed to the

Board to generate more positional authority and to position technology and innovation at main Board level, given its criticality. The Company has also embarked on a process of partnering meaningfully with technologists, engineers, universities, and industrial partners for this next phase.

The technological developments will be underpinned and supported by the creation of a Global Technology & Innovation Centre. This will have pyrolysis and gasification technology at its core, and the £1.3m turnkey supply, installation and commissioning contract announced and awarded in June 2022 is intended to see the centre operational by Q2 2023. Funded by the Company from current reserves, the Company is at the same time underway with a search for a site for this in the UK. Doing so simultaneously with launching the award for the long lead time equipment build is designed to reduce the total operational completion timeframe.

The location profile brief has been defined and includes the environment it will be situated in, its proximity to supply and manufacturing networks as well as being located within reach of relevant technology and research networks, and of course being easily accessible for customers in near to-door as well as near to shore markets.

The centre will house up-scaled R&D facilities for testing capabilities in a live environment. This will be the pre-commercial plant core and will provide an environment to support the improvement of the technology readiness level and demonstrate the process capability. At the same time, of course, it will generate visibility and proof of scalability for the Company, and its stakeholders.

Quarter two 2022 has already seen a new relevant relationship forged with the Department of Mechanical, Aerospace and Civil Engineering at Manchester University, which is collaborating with Powerhouse and one of the Company's key vendors. This first venture together is to develop further the understanding of the thermal transfer and fluid dynamic flows associated with the reactions within the Thermal Combustion Chamber in the gasification process. This project will have several phases extending throughout 2022.

Business Acquisition – Engsolve

In Q3 2021, the Company acquired a 48% stake in Engsolve Limited, a privately owned engineering solutions company with significant experience in undertaking engineering design and support, cost estimating and control, project management and safety risk assessments across a range of industries including energy from waste, renewables, and green energy. The shares were acquired for a consideration of £99,990.

Engsolve has worked closely with the Company for more than four years and the acquisition is intended to maintain Engsolve's continued support of the Company's projects and developments and will ensure that their expertise remains available going forward. This follows the appointment of Paul Emmitt, Engsolve's Managing Director, to the position of Chief Technical Officer of the Company.

Engsolve is a profit generating business and, as an associate of the Company, its post-acquisition results are reflected in these accounts.

Technology Endorsement

The international consultancy DNV completed the assessment and updated report on the enhanced technology design against their standards and provided a positive technology endorsement in the third quarter of 2021. In addition to this, as part of the Protos development work, an independent red flag review was undertaken by GHD Engineering for Peel NRE which raised no technical red flags.

The Company continues to actively ensure that the process is enhanced to be compliant with established and emerging legislation.

Intellectual Property Management

The Company has initiated the development and formation of IP and has filed patents pending in 2021 the operational conditions within the Powerhouse Thermal Conversion Chamber at their centre. The leadership team have assessed this as being low in value for the short term until patents are market assessed and granted. However, it has identified that the Company can also supplement this with the highly valuable technical, market and commercial knowhow it has, and continues to create. This can be incorporated in new future IP development and generation where possible.

The most important IP remains the chemical engineering model of the process to create the clean gas – and Powerhouse maintain strict protocols to ensure this information is protected, including limited access and isolated control over the design documents, calculations, and process development models for the process.

Through last year and into 2022, the technical development team of Powerhouse has continued to assess and develop the DMG control system. This work was further enhanced during the basic engineering phase where third party control vendors and the Thermal Combustion Chamber (TCC) supplier engaged in the progression of the system.

Further works on the development of patent protection had been undertaken in the period, with patents now filed in Europe, Australia, Japan, Brazil, Canada, USA, Indonesia, South Korea, GCC, Hong Kong and the United Kingdom.

Future Product Developments

In addition to developing the core technologies, the Directors recognise that the evolving hydrogen and associated energy transition market offers opportunities to develop other advanced complimentary technologies and applications in future. The decision to invest in a Global Technology and Innovation Centre, will permit the technical team to optimise the technology development, and provide the platform to advance complimentary processes and technologies in supporting this, and future value. This will ultimately enhance the Powerhouse offering.

2. Commercial Development

UK - Planned first of a kind

In 2020's strategic report, the business model and arrangements of the Company's potential first of a kind commercial project and pipeline for the UK were the dominant feature and the subsequent focus of shareholders and stakeholders.

Peel NRE is part of the Peel Group, one of the leading infrastructure, transport, and real estate investors in the UK, with collective investments owned and under management of more than c£5 billion.

The business model agreed by Powerhouse Energy with Peel NRE is unchanged, in so much as that it will derive revenues in the UK principally from annual licence fees payable by the plant owner in respect of each process application of the Powerhouse technology. Under the UK Exclusivity Option Agreement Peel NRE, on payment of £500,000 to Powerhouse, can also acquire the exclusive rights to develop Powerhouse's technology in the UK.

In addition, Powerhouse can generate revenues in the project development stage from the engineering services and technical assurance services for specific client feedstock analysis and laboratory services, from engineering during project development, and then from operational support services when plants are in operation.

The first commercial scale application of Powerhouse technology is under development at the Protos Energy Park, Ellesmere Port, Cheshire, UK by Peel NRE, who owns that site. Peel NRE completing the construction of this first commercial scale plant remains a key milestone and priority for the Company. In 2021 these experienced delays to financial close which continued into 2022. This was related to a combination of factors experienced by Peel NRE and the Protos SPV which included contractor and vendor engagement, an amended procurement strategy and planning delays associated with the development of the engineering design.

A competitive tender process, including pre-qualification of potential tenderers, was commenced by Peel NRE midway through February 2022 and Peel NRE indicates that this is expected to complete in September 2022.

UK - Pipeline Development

Peel NRE's plan is that it will replicate the development model at the Protos site, incorporating its 'Plastic Parks' vision where there is scope, coupled with the community-based provision of hydrogen at various sites across the UK. Each park/site is intended to have Powerhouse technology to divert non-recyclable plastic from landfill and produce hydrogen and clean power.

Recently, Powerhouse introduced the concept of having two process streams at future pipeline sites, doubling capacity and capability - which improved the return on investment, sweated the land asset, and provided future system redundancy for the plant operators and owners. Peel NRE has introduced this into its rollout considerations, with the size of sites and local waste volumes influencing the mix of sites between single and twin processes. It is not planned to have twin processes until the single process configurations are established and delivering repeatable performance and reliability.

Under the CA Business Planning, Peel NRE is maintaining a long-term plan of more than seventy sites. These sites will be a mixture of Peel NRE developed sites together with a pipeline of third-party sites enacted by Peel NRE on tolling commercial terms or by capital sales on waste processing sites around the UK. Each application of DMG will carry the Powerhouse licence fee.

The development counterparties vary and current interest in the pipeline arises from waste management companies, councils, companies in the plastics and consumer goods production sectors and developers.

In 2021 Peel NRE announced that it had submitted planning applications for the second of its eleven primary target sites for a waste to hydrogen plant in the UK. The second site is in Scotland, at Rothesay Dock on the north side of the Clyde River, opposite Glasgow Airport. Peel NRE announced in June 2022 that West Dunbartonshire council's planning board has approved planning consent for that site.

International Development

Development activities by the Company in territories outside of the UK have focused on developing project, regional and territory-by-territory partnership agreements to roll out Powerhouse's technology.

The Company has previously stated that the pipeline from these activities was embodied in collaboration or project agreements, country agreements and memoranda of understanding. And that the project or collaboration agreements allow developers access to initial limited information to undertake project screening. The work in these phases has included supporting the review of feedstock alternatives, offtake, and environmental constraints.

This process had not developed consistent traction. The recruitment of a UK based Business Development Manager was completed in late 2021. The appointment of a new CEO in February 2022 has generated a new sense of direction and purpose for this resource. Pipeline opportunities are being qualified, with in-person visits to perspective clients in close to door/shore markets such as UK and Ireland, and in far from shore markets such as Australia completed in Quarter two 2022. These are aimed at understanding client needs, perspective project status, and assessing the probability and prospects from the existing pipeline.

A modification of the go-to-market approach will be implemented in quarter three.

Why? The transition to net zero is already uneven with different parts of the world economy moving at different tempos. The pace of change will be vastly different between developing and developed countries. But all markets will require unprecedented investment in decarbonisation technology. In response to the energy shock caused by the war in Ukraine, many European countries are looking more urgently for new sources of energy and more broadly at their dependencies on other nations. This is a market where the offtakes from the technology Powerhouse is developing are of increasing relevance.

The Company will of course develop relationships with existing partners in other territories and cultivate these for more mid to longer term pipeline conversion. It will naturally continue to centre its initial focus on the UK's first of a kind commercial site, which will generate validation and consensus with Peel NRE, supporting the conversion of their pipeline with the next site being the Rothesay Dock site in West Dunbartonshire, Scotland. This first commercial site will also provide supportive validation and consensus as Powerhouse builds pipeline elsewhere.

The progress of our go-to-market approach includes a reliance on growing an effective, relevant network of license distributors, developers, contractors, and other partners across target geographies.

The intent is that each of these markets will ultimately have its own, growing pipeline of opportunities, developed, and managed by a professional team and with a growing, local network of partners to support development, construction, and operations & maintenance.

3. Business Model Evolution

Through its arrangement with Peel in the UK, PHE extracts its share of value primarily from delivered projects through licence fees per system delivered and operational.

This follows an early establishment of roles with Peel acting as Developer and PHE as technology provider. This was also a reflection of the relative strengths of the two businesses at the time the arrangements were made, when PHE had limited funding and accordingly a limited ability to resource and deliver multiple projects through development.

In last year's report, it was explained that just as it has under the arrangements with its UK development partner, Powerhouse intends to license the use of its technology to project owner companies which will operate plants using technology it provides and integrates. The Company held this out as its business model.

The Company's new CEO's focus has been on how best to maximise shareholder value. A range of evaluations conducted included one of the business models.

This demonstrated that the type of model that had been adopted by the Company has relevance and value, but conversely, that it can create a prominent level of dependency on developer partners, or even sole dependency where exclusivity rights to, for example, a territory, have been granted. It can generate a loss of traction where delays develop and can confine Powerhouse to a smaller-part player, with a low influence level over the pace of progression of the project, its financing or achieving key value points within the gated process.

These assessments have also shown clearly that Powerhouse's technology value to a project is represented in the value of the outputs the technology can produce (i.e., hydrogen, syngas, power, heat) or, to a lesser extent, the costs that can be avoided (e.g., waste disposal to landfill or incineration). Fresh financial modelling revealed the level of, for example, potential development revenues, project management incomes, as well as build and technical support revenues the Company could generate if it adopted a more flexible business model, including considering being, for example, co-developer, developer, or project lead.

In doing so, these assessments have established that the target business model of being a prominent leader of technology innovation and an attractive licensing partner, is likely to be more effectively realised and achieved by a more flexible model in the initial stages of commercialisation and scale-up by the company. Naturally, this would include Powerhouse creating an investor grade, qualified and well-integrated group of partners, who could deliver a deep and wide range of roles and activities essential to the integration of Powerhouse's technologies into its plants of the future.

The Board is currently exploring this evolution of its current business model for its effectiveness and how best to structure this, to serve as part of a market entry strategy, validating and demonstrating with clients and markets the value and credibility of the plants and the technology, generating consensus and subsequently further pipeline opportunities.

It is envisaged that that this could see a switch to development and operational fees dominating revenue streams, and as scale-up evolves that Powerhouse subsequently migrates more to generating revenues from its technology, integration, and engineering know-how, as client's take-over operations or fund the project pipeline.

4. Go-to-market engagement

Marketing Centre

Within the Commercial development imperative referred to earlier in this report, the Company has outlined how it will enrich its global network of partners and clients, and the Company has also outlined how it is considering adapting its current business model. The Company is clear that there is a strong market, and that scale-up will be supported by a range of imperatives, which includes proof of operation and scalability.

As reported above, in Q2 of 2022, the Company deployed its own capital to invest up to £1.3 million in the supply, installation, and commissioning of equipment, which has a pre-commercial scale thermal gasification technology at its centre. This will form the nucleus of a Global Innovation and Technology Centre.

This is designed to achieve several outcomes. Firstly, as mentioned earlier, it will support a doubling down on the development of the readiness of the technologies the Company is leading the development of, and to deliver and demonstrate process capability.

It is also intended to mitigate any risk of impact to growth. Specifically, from interruptions the Company may experience with in-operation development on a commercial scale facility at its first of a kind site, until a repetitive consistent performance and reliability is established and assured consistently. At the same time, it will lessen any impact on growth from risks of delays the Company has experienced on reaching Financial Close at its first of a kind commercial site in the UK. The Company has the quality of using the centre as a market reference site when operational.

Importantly, however, it as well as supporting the development and further proving Powerhouse's proposition and offering, it will also be a marketing centre, serving as a focal point to grow the pipeline with prospective partners and clients, providing proof that a larger scale technology operation can perform, and is scalable.

Marketing Pillars

Finally, we are commencing investing in developing a marketing pathway which will underpin and support the commercialisation and scale up of the Company. This will include investment in appropriate professional marketing resources and collateral.

5. Invest in Talent

As well as enriching its network of partners, the Company also intends to enrich and invest in its talent. 2021 saw growth in our technical team, and the addition of a business development manager. In 2022, we are restructuring and investing in replacing two engineering personnel with more seasoned engineering talent. This will underpin the Technology and Innovation imperative.

The Company will also be recruiting a Financial Controller by the end of 2022; will see migration from outsourced functions, providing the Company with greater control over financial functions including accounting records and timely production of financial and management information, to enable more accurate decision making, governance and reporting to investor markets.

Board Strengthening

There has been a high level of attrition at Board level historically and up to present day. The Board's strategy has been to keep the composition of the Board and related corporate governance issues under constant review. The aim is to ensure that the Directors have the right mix of skills, experience, and qualifications to carry out their duties in a way which ensures the Company's future success. The appointment of a new Non-executive Chairman in Q3, to replace Russell Ward, will continue with the work he had started on supporting the CEO in the aim of ensuring that the relevance, composition, and scale of the Board is appropriate for the forthcoming stage of its evolution.

Financial Strategy

At 31 December 2021, the Company had £9.6m of available cash with commitments forward, outside of normal operational spend, only in respect of the Protos short term loan facility. The Company considers the impacts of forward plans by producing regular forecasts, considering forward running costs of the business.

Under the Protos short term loan facility of £3.8m, the Company had lent £1.15m as at 31 December 2021, excluding accrued loan interest. During 2022, the amount drawn down under the facility has increased to £1.89m.

In 2022, the Company has committed £1.3m for the supply, installation, and commissioning of equipment in respect of its planned Global Technology and Innovation Centre.

The Company will consider alternative financing routes for project initiatives and will explore appropriate ways to invest funds in the development of projects internationally. The Company is prepared to function as developer or as co-developer in key markets, where appropriate, to accelerate progress. Whilst the use of future fund raises where appropriate will also be considered, there are no firm plans to do so at this time.

2022 Key Performance Indicators

The Board of Powerhouse remains focused on the first application for DMG. The principal Key Performance Indicator for 2022 is to support Peel NRE, and its SPV team to complete the procurement and construction phase, generate investment committee sign off at Peel NRE and reach financial close, leading to proving the process in operation.

The Company intends to build the Global Technology and Innovation Centre in early 2023, and the technical team will complete the key imperatives within the Technology and Innovation detailed plan for the year.

The Company puts safety to the fore in our activities and for 2022 our target will be to operate without harm and to ensure that our operating systems and process are developed with safety of all as the prime concern. Continued incident free activity is a key performance indicator for 2022.

CORPORATE SOCIAL RESPONSIBILITY

Our Commitment

The Company cares profoundly about the environment and is committed to addressing two of the world's current challenges in the eradication of unrecyclable plastic waste and the production of hydrogen energy to replace diesel in heavy goods vehicle use improving air quality around our communities.

The Company is committed to operating with an inclusive, transparent, and respectful culture and places particular emphasis on operating to the highest ethical and environmental standards and our applications target the best achievable energy efficiency.

The Directors take personal ownership of the policies and maintenance of the necessary exacting standards of business conduct throughout the organisation and for delivering these Corporate Social Responsibilities.

Health and Safety

Powerhouse cares profoundly about the health and safety of our employees, customers and the communities who could be affected by our activities and aims to protect them from any foreseeable hazard or danger arising from our activities or our products. To this end in 2020 and 2021 the Company completed a series of safety related studies and reviews, including hazard and operability studies, quantified risk assessments and layer of protection analysis using external experts to review the product risk and the application on sites such as Protos. In all instances the findings of the safety risk assessments have demonstrated that the risk arising from the DMG technology is well within acceptable tolerable risk levels. In 2022 and 2023 the Company will revisit these assessments to identify any changes that have been introduced which may represent new or variants of risk.

The Directors recognise that the key to successful health and safety management requires an effective policy, organisation, and arrangements which reflect the commitment of senior management. The Chief Executive Officer will implement the Company's health and safety policy and ensure that the Company Health and Safety (HSE) management system and safety standards are all maintained, monitored, and improved where necessary.

The Company's research and development activities and activities at Protos were delivered HSE incident free in 2021.

Environment Policies

The Company's Environmental Policy recognises the importance of our technology from a global challenge perspective. The Company will regularly evaluate the environmental impact of its activities, products, and services, taking all actions necessary to continually improve the Company's and its products' environmental performance.

Product Emissions in Operation

The Company is committed to providing a solution for utilising problem waste streams with its current UK focus being to use non-recyclable plastics within its technology to produce hydrogen as a clean fuel for buses and trucks which minimise emissions and to comply with all relevant environmental legislation, regulations, and other environmental requirements. The Company passionately believes that its process is a far better alternative to incineration and / or landfill.

The application of the Company's technology in waste to hydrogen plants produces residues in two forms, a char like solid residue and waters with hydrocarbon content. During the last period progress has been made on the characterisation and utilisation of the residue (Biochar) and we are confident that we can develop it into a saleable product for a given feedstock mix. This work will continue through 2022. Similarly, once the Protos plant is in operation, the technical development team is looking to implement further cleaning processes to treat and use the emitted water to return into the process.

Under the Powerhouse Environmental Policy, Powerhouse has committed to improving the product emission performance, and Directors are confident that the technology performance in this area will be improved, and we will report annually on this matter.

Strategic Report

Stakeholder Engagement

Recruitment and employee management are undertaken in line with the Company Employment Policy which has committed to a working environment with equal opportunities for all, without discrimination and regardless of sex, sexual orientation, age, race, ethnicity, nationality, religion, or disability.

Furthermore, the Company has committed to continuous development schemes and will support employees to attain the best for themselves and the Company through personal assessment, training, and mentoring.

Powerhouse recruited a Chief Executive Officer in February 2022. During 2021, the Company recruited a Chief Technical Officer and a Business Development Executive.

The Board is mindful of the duties of Directors under S.172 of the Companies Act 2006. The Directors believe strongly in the importance of solid and exemplary corporate governance to help achieve our corporate goals. The Board takes its accountability to each of Powerhouse's stakeholder groups very seriously.

The Directors have committed to promoting a company culture that treats everyone fairly and with respect and this commitment extends to all principal stakeholders including shareholders, employees, consultants, suppliers, customers, and the communities where it is active.

All Directors are encouraged to act in a way they consider, in good faith, to be most likely to promote the success of the Company for the benefit of its shareholders. In doing so, they each have regard to a range of matters when making decisions for the long-term success of the Company.

PRINCIPAL RISKS AND UNCERTAINTIES

The Company is subject to various operational risks and the following issues are particularly relevant to the Company's business activities:

Business Risk

Technology Risk

The Company continues to manage technology risks within the detailed Technology Management Program. The risks are identified from our test and design activities, tests on potential waste materials and the residues arising. The strategy of selecting proven components with extensive operating hours in similar service in other plants significantly reduces the risk profile for its DMG system. The Directors' objective is to reduce technology risk wherever practical, however the risk of the first application will remain with the project SPV until the Protos plant is commissioned.

Throughout 2021 and the current year, engineering design contractors and independent experts including DNV have reviewed the design. The feedback from these reviews has allowed the removal of some of the risk issues completely and the refinement of other matters. The design has been validated by commissioning experiences that Powerhouse and our specialist suppliers have experienced, and further challenged by the independent reviews that have been undertaken by the FEED contractor, specialist consultants such as DNV and GHD addressing the chemical engineering, gas, and hydrogen activities.

A key aspect in risk reduction is process development. The inception of the Global Technical and Innovation Centre ("GTIC") will focus on improving the technology readiness level of the technologies Powerhouse is developing and adopting and allow the development and integration of technologies to further enhance its offering whilst reducing overall risk.

The GTIC will allow the technical team to focus on specific aspects arising from risk assessments and an active technical risk register. It will also commence development of in-house technologies to reduce any risks posed by third party systems within the process.

In conjunction with the development of the GTIC, we will continue to build on the initial work with Manchester University by taking the initial computational fluid dynamic output and begin a program of works with the University to optimize the internals of the TCC. The aim of this works will be to gain a better understanding of the intricacies of gas flow but also allow us to build additional IP relating directly to the TCC design.

The Protos final contractor selection to be made in 2022 by Peel NRE's SPV for the Protos site, will allow the final detailed design to be completed and the control system logarithm functionality to be defined. This design detail, and the commissioning and testing program will allow the closure, or mitigation, of detail design related risks noted as outstanding against the risk management program that was assessed by DNV during the second stage of their Technology Validation process.

Research and Development Activity Risk

Throughout 2021 and into 2022, research and development has continued using the demonstration unit at Powerhouse's Thornton, Cheshire site. The test time has been utilised to further refine the feedstock/output model along with allowing the testing of numerous potential feedstock sources. All testing, maintenance and modifications to the unit are undertaken after formal design and functional safety reviews with all activities being subject to risk assessments in accordance with the Company Health & Safety Management processes.

Powerhouse operates its research and development laboratory equipment and testing programme in accordance with the Company Health and Safety Management system.

The Research and Demonstrator rig has been optimised further during the year and has resulted in a design package that has allowed the placement of the order for a larger feedstock testing unit to be sited at the new Global Testing and Innovation Centre, as reported above. The design, fabrication, construction, and commissioning of the new equipment will follow all required external and internal Health, Safety and Environmental guidelines.

Competition Risk

In quarter two 2022, the Company commenced an in-depth re-assessment of competitive technologies to maintain a current and forward-looking vision of the landscape it operates within.

Powerhouse remains well-placed to address current and future waste market potential. As an innovator at the leading edge of integrating associated technologies and advanced gasification technologies, Powerhouse can pursue and deliver on UK and international opportunities in line with the Company's focused strategy.

Market Adoption Risk

In the UK, Peel NRE, as our main collaboration partner, has been leading the commercial engagement for waste plastic and hydrogen, and contract negotiations with waste suppliers available to the first of a kind plant they are developing plant.

The Company acknowledges that once this facility at the Protos Park is operating successfully, commercial scale-up can be achieved.

The Company also has a collaboration with Hydrogen Utopia International Plc (HUI). It is pursuing a project at Konin in Poland. To date, the project is reported to be on programme, but is at risk of delay and other negative impacts due to the situation regarding Ukraine.

Reliance on client parties

The Company depends on key developers and counterparties for its business pipeline. The failure of a key business partner, supplier, subcontractor, financer, or other provider could materially affect the operational and financial effectiveness of the Company. Ensuring ongoing professional collaborative relationships with our early-stage clients is mission critical.

Central to achieving our strategy is winning and successfully delivering projects and supplying our technology services, and the product ecosystem.

Winning new, and retaining and converting, existing client pipeline continues to be critical for the future success of the business.

To mitigate some of this risk, the Company has also signalled and recently launched several imperatives to begin to limit dependency on any one or similar number of projects and development partners. The Company aims to build and create a quality of pipeline choice, whilst having a professional supportive collaborative position with key partners.

Intellectual Property and Know-How Risk

The Company undertakes reasonable endeavours to protect its know-how and has filed patents in 2021 to generate IP. However, any patents and other IP may not prevent competitors from independently developing or selling products and services like or duplicative of those filed.

If the Company can generate and protect IP, the value of the brand and other intangible assets may be increased, and our business positively affected. In addition to the IP patents, the Company possesses a wide-ranging level and breadth of proprietary know-how that drives our capabilities and excellence.

The Directors are aware of the risks of IP leakage and, through our IP attorneys, are maintaining and monitoring compliance of any potentially conflicting technologies as well as maintaining protection around the freedom to operate worldwide. The Company follows a dual route of IP protection via a suite of patents and maintaining control of disclosure over the design documents, calculations, and chemical engineering models for the process through systems management.

All contracts robustly define the IP and Employees are trained to limit data made available to third parties

Finally, the GTIC and material partner collaborations are designed to form a platform which will support building further know-how and IP potential for the Company.

Employee Risk

Attracting and retaining the best, skilled people at all levels of the business is critical. This is particularly the case in ensuring the Company has access to a diverse range of views and relevant experience, and in attracting specific expertise at both board, managerial and operational levels where the market may be highly competitive.

As the Company evolves, this risk will take more prominent focus with the Board. Employees should not become a hurdle to progress for the Company.

The Board is also aware that the value of the Company is inherently embedded in its employees and the remuneration committee has made commitments to make Powerhouse an attractive workplace, both in terms of suitably attractive packages but also commitment to development through training and compliance and other Employees benefits.

As part of the Covid-19 measures all employees were supported to ensure that their home working facilities were compliant and, as the Directors are also aware of the pressures on employees, that well-being support and instruments were introduced.

Supply Chain Risk

As a hangover from the pandemic, global shortages in raw material shortages, supplier capacity constraints, supplier production disruptions, supplier quality and sourcing issues or price increases are widespread and touching a wide range of industries.

It is not beyond the realms of possibility that this could increase aspects of the technology, or development and operating costs, and adversely impact the competitive positions of the Company's products or service. The reliance on its development partners, and their reliance on contractors, third-party suppliers and manufacturers, and raw material markets exposes enterprises like Powerhouse to volatility in the prices and availability of such items. A disruption in deliveries, including as a result of catastrophic events or war, could have an adverse effect on our ability to meet our development partner's commitments to customers or increase operating costs.

It is however also anticipated that the prices of offtakes such as gas, power, heat, and hydrogen produced by Powerhouse will see increases in the same environment.

Financial Risk

Capital management

In January 2021, the Company raised £10 million before expenses by way of a fund raise. This was primarily intended to support the delivery of the Protos project, evidenced by the provision of the £3.8m loan facility to the Protos SPV.

Due to changes in the Protos contracting strategy, the facility was not fully utilised during 2021 and has been made available until August 2022 in keeping with updated cashflows for the project development phase. Powerhouse had a cash balance of £9.6 million at 31 December 2021.

Whilst this is a healthy position, until the Company can secure forward revenues in excess of its running costs, this amount will deplete over time. The Company produces regular cashflows to assess plans forward and the use of its cash resources based on business strategy. The Company assesses investment opportunities, either in its technology development or in project engagement, on their individual merits but also in terms of how funds can be used to generate future revenues in line with Business Strategy.

To enhance financial control procedures and to strengthen the oversight and monitoring and control of financial performance and cash, the Company will bring activities which are outsourced currently, in-house and will recruit a Financial Controller who will report to the CFO. The Company will also invest in an upgraded finance software system appropriate for this current and immediate stage in its evolution.

The Company manages its capital according to budgets with the aim of ensuring it can continue as a going concern. Capital sources include debt and equity instruments.

Board members review cash balances available for ongoing spend on a weekly basis against budget and income forecasts in assessing needs forward and timing for any future equity raises.

Other financial risks are considered as follows:

Foreign Currency Risk

The execution of the first project does not expose the Company to any foreign currency risk and the Company does not hold any cash in foreign currencies. Foreign currency value fluctuations are therefore insignificant. In future, as international contracts are signed, the Board will examine the currency risk exposure of each project and protect any revenues and expenses against currency volatility.

Interest Rate Risk

The Company does not have any corporate or project related debt outstanding, so the Board considers that there is currently no material risk of any exposure to interest rate variations.

Credit risk

The Company has provided a loan facility and billed for engineering services to the Protos SPV during the year and into 2022. Amounts due will be dealt with as part of the funding arrangements for the project during 2022. The Company has exposure on these amounts should the project fail to reach a financial close, although security is in place in the event of a default in repayment.

Other Financial Risk

The Company considers price risk and liquidity risk to be negligible in relation to their performance and financial position at this early stage of its development, except as referenced elsewhere in this report.

Before entering any contract, partnership, or collaboration arrangements for service providers to Powerhouse, the Board ensures that steps are taken to confirm the ability to deliver of any contractor or partner to avoid business disruption.

External Risks

The Company is subject to various risks originating from external events including political, economic, legal, business, and financial conditions. The assessment of these risks, their evaluation and mitigation are essential parts of the Company's planning and internal control system.

Projects that utilise the Company's technology are subject to price risk in respect of project build and operational costs and market risks in respect of commodity pricing relating to project outputs. As the Company's ability to generate revenues is dependent upon projects materialising, the Company is indirectly exposed to these risks. The Company is actively involved with its customers in assisting management of these risks.

The following risk factors, which are not exhaustive, are particularly relevant to our current business activities:

COVID-19

Since 2020, the engineering development work avoided significant interruption.

In 2022, as the different regions of the UK moved more into the phases of ‘living with Covid-19’, more normalised operations were established within society, and in our business environment. Despite this, the flow through impact of Covid-19 on global supply chain is still prevailing. The Company and its collaboration partner in the UK, Peel NRE, and the SPV team on the Protos project, monitor the supply chain related effects of the pandemic on the project (including cost volatility), and on the business. They deploy appropriate risk mitigation strategies where possible.

The Company continues to closely monitor the coronavirus situation, are following health authority and government guidelines. The Company is prepared to take further action to deal with any situational changes.

Implications of the war in Ukraine

The Company does not consider there to be a direct impact on its assets and liabilities as a result of the war in Ukraine. The Company notes that the situation is impacting commodity pricing, exchange rates and the supply chain, as well as the possibility of an economic downturn. The Company will continue to monitor events and potential impacts on the business and relating projects, mitigating where appropriate and possible.

Regulatory and Compliance Risk

The international markets available to Powerhouse expose the Company to risk across a spectrum of different political and regulatory regimes with different risk profiles.

The steps being taken to adopt a more strategic and tactical development of territories and markets by the Company of late reduces this risk and allows the Company to focus on aligning with relevant markets where there is existing or potential market fit and attractiveness, which includes the political, regulatory and compliance elements.

Statement of Directors' Duties to Stakeholders under s.172 Companies Act 2006

Promoting the success of the Company

The Directors are aware of their duty under section 172 of the Companies Act 2006 to act in the way which they consider, in good faith, would be most likely to promote the success of the Company for the benefit of its members as a whole and, in doing so, to have regards (amongst other matters) to:

- The likely consequences of any decision in the long term;
- The interests of the Company's employees;
- The need to foster the Company's business relationships with suppliers, customers and others;
- The impact of the Company's operations on the community and the environment;
- The desirability of the Company maintaining a reputation for high standards of business conduct; and
- The need to act fairly between members of the Company.

The Board recognises that the long-term success of the Company requires positive interaction with its stakeholders. Positive engagement with stakeholders will enable our stakeholders to better understand the activities, needs and challenges of the business and enable the Board to better understand and address relevant stakeholder views which will assist the Board in its decision making and to discharge its duties under Section 172 of the Companies Act 2006.

Key stakeholders are discussed in more detail in the Corporate Social Responsibility section of this report.

Paul Drennan-Durose
Chief Executive Officer
28 June 2022

DIRECTORS' REPORT

The Directors present their report together with the audited financial statements for the year ended 31 December 2021 for Powerhouse Energy Group Plc ("Powerhouse" or the "Company"). The financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB), as adopted for use in the United Kingdom (UK) and with those parts of the Companies Act 2006 applicable to companies reporting under IFRS (except as otherwise stated.

Principal Activities

Powerhouse is a company incorporated in England and Wales with company number 03934451. The Company is a public limited company which trades on the AIM market of the London Stock Exchange. The address of the registered office is 15 Victoria Mews, Mill Field Road, Cottingley Business Park, Bingley BD16 1PY.

The Company has a Distributed Modular Generation ("DMG") product platform for the regeneration of plastic to power and hydrogen. The Company engineers, sells, licenses and supports operations of the DMG process for applications in UK and throughout the world.

Business Strategy

The Company Business strategy is described in the Strategic Report.

Business Review

The review of the year and the Directors' strategy are set out in the Strategic Report and the Chairman & CEO's Reports.

Key Performance Indicators

For the year ended 31 December 2021, the Directors consider that performance is measured against the commercialisation and business development milestone activities reported in the Strategic Report.

Future Developments

Expected future developments and the Company's corporate development strategies are reported in the Chairman & CEO's Report and the Strategic Report.

Management of Capital

Matters related to the management of capital are set out in the Strategic Report.

Subsidiaries, associates and other investments

The Company's only UK subsidiaries are non-trading and not material. There are also long-term restrictions on the operations of the Company's subsidiaries in the US and Switzerland. With these restrictions in place, the Company is also unable to exert control over the subsidiaries. As such the Company has claimed exemptions applicable to it under Companies Act section 405 (2) and 405 (3b) and IFRS 10 to not present any Consolidated financial statements for the year ended 31 December 2021.

The Company has one associate, Engsolve Limited, in which a 48.39% interest was acquired on 12 August 2021 for a cash consideration of £99,990. Engsolve Limited is incorporated and operates in the UK. The accounts include the Company's share of Engsolve's profits made after the acquisition. The rationale for the acquisition is detailed in the Strategic Report.

During 2021, the Company's investment in Waste2Tricity International (Thailand) Limited was transferred into a new Thailand based entity, Altec Energy Limited ('Altec"). The Company has not taken part in fund raises investment made by Altec subsequent to its formation such that the Company's interest has reduced to 33.8% as at 31 December 2021 and to 30.4% since year end. Due to the passive nature of the Company's involvement, the interest is held in other investments.

Directors' Report

Results and Dividends for the Year

The Company financial statements for the year ended 31 December 2021 are set out in this annual report. The Company loss for the year after taxation amounted to £1,870,496 (2020: loss of £15,837,741). The net assets of the Company are £55,085,971 (2020: £46,857,836) with the movement in the year set out in the Statement of Changes in Equity.

The Company has not paid a dividend during the year ended 31 December 2021 (2020: £nil) and the Directors do not recommend the payment of a dividend at 31 December 2021 (2020: £nil).

Research and Development

Research and development related costs incurred during the year, relating to the DMG product, amounted to £585,195 (2020: £407,071). This excludes amounts expended on client projects that are expected to be recovered.

Financial Risk

Financial risk management and exposure are set out in the Strategic Report.

Events after the Reporting Period

There have been no significant events since the balance sheet date other than those discussed in the Strategic Report and note 29 to the Company financial statements.

Directors

The Directors who held office during the period and up to the date of the Annual Report are as follows:

Current Board Members:

Paul Drennan-Durose (appointed 14 February 2022)
Paul Emmitt (appointed 2 March 2022)
James Greenstreet (resigning on 30 June 2022)
Myles Kitcher
Hugh McAlister (appointed 4 February 2022)
Keith Riley (appointed 27 September 2021)
Gillian Weeks (appointed 18 January 2022)

Board Members who served and left during period:

Mark Berry (resigned 29 July 2021)
Dr William Cameron Davies (resigned 31 March 2021)
Kirsten Gogan (resigned 12 October 2021)
David Ryan (resigned 30 June 2021)
Allan Vlah (resigned 31 December 2021)
Russell Ward (appointed 4 February 2022, resigned 10 June 2022)
Tim Yeo (resigned 20 August 2021)

Company Secretary

Delgany Corporate Services Limited

A brief biography of the current Directors can be found below:

Directors' Report

Executive Directors:

Paul Drennan-Durose, Chief Executive Officer

Paul Drennan-Durose recently joined (14 Feb 2022) the Board of Powerhouse, having spent over three years as the investor appointed Chief Executive Officer of Heliex Power Limited, a private equity backed cleantech energy business. Whilst there, he led the transformation of the start-up new technology company, leading the roll-out of its technical development, and commercial market recovery.

Paul has many years of Board level experience in complex, new technology, distribution, engineering services, and manufacturing companies. He has PLC, SME, PE, and VC business experience internationally, and has extensive experience in a range of sectors, including cleantech energy, oil & gas, waste to energy, marine, automotive and process manufacturing industries.

Paul Emmitt, Chief Technical Officer

Paul Emmitt was appointed as Chief Technical Officer in June 2021 and joined the Board as an Executive Director on 2 March 2022. Mr Emmitt is a Chartered Materials Engineer and Chartered Environmental Engineer with over twenty years engineering and operational management experience both in the UK and overseas.

Paul holds an MBA in Engineering Management. His experience encompasses work in the oil, gas, energy-from-waste and chemical industries as well as periods with major international companies at levels from Engineer to Director. In all sectors he has been a designer as well as a project and HSE manager.

Non-Executive Directors:

Keith Riley, Interim Non-Executive Chair

Keith Riley joined the Board as a Non-Executive Director in 2021 and stepped in as Interim Non-Executive Chair on 27 June 2022. Mr Riley is also the proprietor and Chief Executive Officer of Vismundi Limited, a consultancy company providing services to the resources and waste management industry. Prior to that, between 2005 and 2012 he worked for Veolia Environmental Services plc as Group Managing Director for Technology and as Managing Director for Group Technical Services.

Over the course of his career Mr Riley has worked with several specialist waste and resource management companies and was a Non-Executive Director of Waste2tricity Limited. He continues to be a Partner of BH Energy Gap LLP on behalf of Vismundi, which develops projects in the renewables sector and raises the finance to implement them.

James Greenstreet, Non-Executive Director

James Greenstreet has over 20 years of corporate and structured finance experience. Having started his career at Arthur Andersen, he joined BAE Systems in 1994 to work in the corporate finance team.

After leaving BAE, Mr Greenstreet held corporate finance positions at IBM and XL Capital, once more focusing on asset and lease finance. James has been a non-executive director of Powerhouse since 2011 and is a founder of aircraft lessor, Falko Regional Aircraft. He also sits on the board of regional airline, CityJet DAC and Electric Aviation Group Ltd an early-stage company developing hydrogen electric commercial aircraft.

Myles Kitcher, Non-Executive Director

Myles Kitcher is Managing Director of Powerhouse's development partner for Protos, Peel NRE and the leading force behind Protos, – Peel NRE's flagship destination for energy, innovation and industry where the first application of Powerhouse DMG technology is to be built. Myles is a Chartered Surveyor with extensive experience in both the public and private sectors managing the development process for several large waste infrastructure projects.

Prior to joining the Peel Group, Mr Kitcher worked for Lancashire County Council where he held senior positions within the planning and waste management functions of the authority.

Directors' Report

Gill Weeks, Non-Executive Director

Gill Weeks OBE joined the Board as a Non-Executive Director in January 2022. With a scientific and legal background and widely considered to be an industry expert within the field of waste, environment and resource management, Ms Weeks has chaired key government, trade body and Environment Agency committees and has served on the Environment Agency Board.

As a leader of compliance and regulatory teams in global environmental business, advising on environmental law changes, over the course of her career Ms Weeks has developed expertise in public policy, environmental law, stakeholder management, governance and risk, environmental science and regulatory compliance and enforcement. Ms Weeks was a board member at the Environment Agency for seven years until 2021 where she was chair of the Environment and Business Committee. She is currently the chair of Trustees at the Welcome Charity.

Hugh McAlister Non-Executive Director

Hugh McAlister joined the Board in February 2022. Mr McAlister has over 40 years' stockbroking experience in the city and has been the executive chairman of Novum Securities Limited since 2018, having been its Chief Executive Officer for the previous nine years.

Prior to this, Mr McAlister was a founding partner and head of trading a Kaupthing Singer & Friedlander Capital Markets and Head of Pan European Equities at Dresdner Kleinwort Benson.

Directors' Service Contracts

Details of the Directors' service contracts and their respective notice terms are detailed in the Remuneration Committee report.

Directors' Interests

The interests of the Directors who held office at 13 June 2022, being the latest practicable date before the publication of the Annual Report and at 31 December 2021, in the ordinary shares of the Company, were as follows:	**Number of ordinary shares**	
	13 June 2022	**31 December 2021**
James Greenstreet	1,840,000	1,840,000
Myles Kitcher	-	-
Keith Riley	12,128,986	12,128,986
Paul Drennan-Durose	-	N/A
Paul Emmitt	-	N/A
Gill Weeks	-	N/A
Hugh McAlister	-	N/A

Directors' Report

Significant Shareholders

As at 13 June 2022, being the latest practicable date before the publication of the Annual Report, the Company is aware of the following significant interests in its ordinary, voting share capital:

Holder	Amount	Percentage
White Family* consisting of: -	994,461,055	25.13%
* Josh White	377,746,610	9.55%
* Ben White	224,065,330	5.66%
* Serena White-Reyes	214,584,086	5.42%
* Howard White	178,065,029	4.50%
Jarvis Investment Management Limited A/C Jarvis	665,345,487	16.81%
Vidacos Nominees Limited A/C CLRLUX	539,957,293	13.64%
Hargreaves Lansdown (Nominees) Limited A/C 15942	290,900,668	7.35%
Hargreaves Lansdown (Nominees) Limited A/C HLNOM	199,380,589	5.04%
Hargreaves Lansdown (Nominees) Limited A/C VRA	183,664,418	4.64%
Interactive Investor Services Nominees A/C SMKTISAS	180,291,605	4.56%
Interactive Investor Services Nominees A/C SMKTNOMS	157,235,756	3.97%
Barclays Direct Investing Nominees Limited A/C CLIENT1	122,579,893	3.10%

Corporate Governance

The Company complies with the AIM Rules for Companies, including AIM Rule 26, concerning the disclosure of information. It also complies with the provisions of the Quoted Companies Alliance Corporate Governance Code ("QCA Code"). More details are provided in the Corporate Governance Report in this document.

Payment to Suppliers

The Company does not have a standard or code which deals specifically with the payment of suppliers. Total creditor days for the Company for the year ended 31 December 2021 were 24 days (2020: 22 days).

Risk Management and Principal Risks

The principal risks to the Company, including financial risks and exposures and descriptions of how they are managed is explained in detail in the Strategic Report and in Note 26 to the financial statements.

Going Concern Basis

The financial statements have been prepared on a going concern basis and is explained in Note 1.3 to the financial statements.

Political Donations

The Company has not made any political donations in the year ended 31 December 2021 (2020: nil).

Auditors

Jeffreys Henry LLP were re-appointed as auditors at the Company's 2021 AGM. A resolution is to be proposed at the 2022 AGM for the re-appointment of Jeffreys Henry LLP as auditors to the Company, at a rate of remuneration to be determined by the Audit Committee.

Directors' Report

Each of the persons being a Director at the date of approval of this report confirms that:

- So far as the Director is aware there is no relevant audit information of which the Company's auditor is unaware; and
- The Director has taken all the steps that he ought to have taken as a Director in order to make himself aware of any relevant audit information and to establish that the Company's auditor is aware of that information.

This confirmation is given, and should be interpreted, in accordance with the provisions of s.418 of the Companies Act 2006.

Approved by the Board of Directors and signed on behalf of the Board on 28 June 2022.

Paul Drennan-Durose
Director

CORPORATE GOVERNANCE REPORT

Introduction

The Directors attach great importance to maintaining high standards of corporate governance to help achieve the Company's goals. To that end they have adopted the principles set out in the Quoted Companies Alliance Corporate Governance Code for Small and Mid-Size Quoted Companies (the 'QCA Code') 2018. The QCA Code, which is constructed around 10 broad principles, sets out a standard of minimum best practice for small and mid-size quoted companies, including AIM companies. Companies are required to disclose how the implementation of the QCA Code has been applied or, to the extent not done so, to explain any areas of departure from its requirements.

We have considered how we apply each principle to the extent that the Board judges these to be appropriate for our circumstances, and below we provide an explanation of the approach taken in relation to each. Our compliance with the QCA Code is based on the Company's current practices and the improvements in its governance made since the last Annual General Meeting.

The QCA Code makes clear it is the prime responsibility of the Chairman to ensure the Company applies the QCA Code for the benefit of all the Company's stakeholders. The Chairman and the Board accept their responsibility for setting the Company's corporate culture, its values and for the behaviour of all its employees.

This report sets out our approach to the QCA Code and governance. Our compliance with the 10 principles is also available to view on the Company's website: www.powerhouseenergy.co.uk

We have identified three principal areas where we are not in full compliance:

The first relates to the position of the Company's Chair. Since the recent resignation of the Chair, other Directors assumed the Chair's responsibilities until Keith Riley, existing Non-Executive Director, was elected by the Board as Interim Chair. The Company is in the process of searching for a permanent Chair with a view to making a relevant appointment as soon as practicable. See Principle 5 for further details.

Secondly, due to changes on the board during 2021, there were no formal meetings of the Remuneration Committee in the year under review. See Principle 5 for further details. New members have been appointed and there has been a recommencement of the meetings of the Remuneration Committee in 2022.

The third is that Powerhouse allows non-executive Directors to participate in the Company's share options schemes. See Principle 5 for further details.

The QCA Code allows cross reference to disclosures made on the website rather than repeating them all in this Report. The principal disclosures such as the Remuneration Committee and Directors' Report will continue to be included in the Annual Report. However, for a full assessment of the Company, shareholders are encouraged to review the Company's website for regulatory disclosures and for up-to-date information on activities.

QCA Principles

Principle 1 - Establish a strategy and business model which promote long-term value for shareholders

Powerhouse has a clear business model and growth strategy. Our objective is to be a leading sustainable technology provider and to enable the rapid deployment of modular distributed hydrogen production, distributed electricity generation and the provision of heat. This will be done using non-recyclable and end-of-life waste material, including plastic. Powerhouse's proprietary process technology is one of the world's first proven, distributed, modular, hydrogen from waste (HfW) processes.

Details of the Company's strategy and business model are set out in the Strategic Report. This describes progress to date, our commercial partnerships, our DMG development programme and our plans. Key challenges facing the Company and how they will be addressed are set out in the Strategic Report in the section headed Principal Risks and Uncertainties.

Corporate Governance Report

Principle 2 - Seek to understand and meet shareholder needs and expectations

Powerhouse is committed to open communication with all its shareholders. The Company believes it is important to explain business development and financial results to its shareholders and to ensure that suitable arrangements allow the issues and concerns of shareholders to be heard and understood.

The Chair is normally primarily responsible for shareholder liaison. However, with the recent changes to the Board, the Chief Executive Officer has assumed this role on a temporary basis in conjunction with the Interim Chair appointed on 27 June 2022 until the appointment of a new permanent Chair is made. Since joining Powerhouse in February 2022, the Chief Executive Officer and the former Chair made it a priority to meet the Company's largest shareholders and held discussions with the Company's broker to understand shareholders needs and expectations. The Chief Executive Officer, together with the new Chair when appointed and the Interim Chair in the meantime, intends to make presentations to shareholder events from time to time where investors can discuss the Company's progress and performance. Trading updates and press releases are issued as appropriate.

Hard copies of the Annual Report and Accounts are issued to all shareholders who have requested them and these, together with the interim results are also published on the Company's website at www.powerhouseenergy.co.uk. The Company makes full use of its website to provide information to shareholders, other stakeholders, potential customers, and other interested parties.

Shareholders are given the opportunity to raise questions at the Annual General Meeting ("AGM") and the Directors are normally available both before and after the meeting for further discussion with shareholders. As a matter of policy, the level of proxy votes (for, against and votes withheld) lodged on each resolution is declared at the meeting. In the event there were a significant number of votes against a resolution, the Directors would seek to communicate with the shareholder(s) concerned to discuss their issues.

The Board receives regular share register analysis reports to monitor the Company's shareholder base and help identify the types of investors on the register.

Principle 3 - Take into account wider stakeholder and social responsibilities and their implications for long-term success

The Company regards its shareholders, employees, customers, contractors, consultants and advisors, business partners and suppliers as forming part of the wider stakeholder group. The Company recognises the contribution of each of these stakeholder groups and seeks to build meaningful and mutually beneficial relationships with them all.

As the needs and growth of the business evolves, management identifies key relationships and aims to ensure they are managed appropriately.

The Company's internal stakeholders are its employees and its consultants. The Company is fully committed to promoting a working environment of equal opportunities for all without discrimination or harassment and regardless of part-time working, gender, sexual orientation, age, race, ethnicity, nationality, religion, or disability. The Company will report against this commitment in future annual reports.

The Company proactively seeks feedback to enable the management to make improvements and changes to products and processes. All stakeholders have access to contact information for communication with the Company. Feedback is respectfully acknowledged by the Company and appropriately dealt with.

The Board believes that investment in the wider stakeholder network assists the achievement of its long-term goals and helps create an environment of trust which will promote the long-term success of the Company.

There are further details of the Company's approach to corporate social responsibility in the Strategic Report of this Annual Report and Financial Statements.

Corporate Governance Report

Principle 4 - Embed effective risk management, considering both opportunities and threats, throughout the organisation

Risk assessment and evaluation is an essential part of the Company's planning and an important aspect of the Company's internal control system.

The Board had established a comprehensive risk register relating to significant aspects of the Company's business. Given the level of Board changes in the period 2021 to current, the Board will complete a comprehensive revalidation and reassessment of the risks and mitigations within the register in quarter three and continue to review regularly thereafter.

Standards and policies

The Board is committed to maintaining appropriate standards for all the Group's business activities and ensuring that these standards are set out in written policies. Key examples of such standards and policies include:

Policy for Authorities and Approvals
Share Dealing Code
Social Media Policy
Terms of Reference for the Board Committees
Business Ethics Policy
Environmental Policy
Health and Safety Policy
Employment Policy

Approval process

All significant contracts are required to be reviewed and signed by a Director of the Company.

For further details of the Company's approach to risk and its management, please refer to the Principal Risks and Uncertainties section of the Strategic Report in this Annual Report and Financial Statements.

Principle 5 – Maintain the board as a well-functioning, balanced team led by the chair

The Board comprises two executive and five non-executive Directors and it oversees and implements the Company's corporate governance programme.

James Greenstreet is stepping down from his role as Non-Executive Director on 30 June 2022, having served on the Board since 2011. James acted as interim Non-Executive Chair following the resignation of previous chair, Tim Yeo, until the appointment of Russell Ward on 1 March 2022. Russell Ward recently resigned and left the Company on 10 June 2022. The Company is actively searching to appoint a new Chair and, in the meantime, has appointed existing non-executive Director, Keith Riley, as Interim Chair.

The executive Directors are Paul Drennan-Durose and Paul Emmitt. The non-executive Directors are Keith Riley, James Greenstreet, Myles Kitcher, Gill Weeks and Hugh McAlister.

The Chair is responsible for the Company's approach to corporate governance and the application of the principles of the QCA Code. Myles Kitcher, James Greenstreet, and Gill Weeks are the Company's independent Directors and, as such, are independent of management and any business or other relationships which would interfere with the exercise of their independent judgement.

James Greenstreet does not meet the strict criteria for independence set out in the QCA Code, due to his length of service, ownership of ordinary shares and/or his participation in the Company's share option arrangements, as part of his remuneration arrangements. Mr Greenstreet has been a non-executive Director since 2011, having served as non-executive Chair from 20 August 2021 until 1 March 2002. However, there has been no concurrent tenure with management which could otherwise hinder his ability to be independent.

Corporate Governance Report

The Board considers that the ownership of shares and participation in the Company's share option scheme by certain non-executive Directors encourages the alignment of their interests with those of the Company's shareholders and not material enough to compromise their independence, character and judgement. Therefore, the Company considers Mr Greenstreet to be independent for the purposes of the QCA Code.

Each Board member commits sufficient time to fulfil their duties and obligations to the Board and the Company. They attend board meetings, join ad hoc board calls and are available for consultation when needed. The contractual arrangements between the Directors and the Company specify the minimum time commitments which are considered sufficient for the proper discharge of their duties. When exceptional circumstances arise all Board members understand the need to commit additional time.

Board packs include information on business developments, progress and risks faced as well as financial performance and are circulated ahead of board meetings. Key issues are highlighted and explained, providing board members with sufficient information to enable full discussion in the board meeting. From time to time, members of the Company's senior management present to the Board to update them on issues and developments.

The Board is supported by its Audit Committee, its Remuneration Committee and its Environmental, Social and Governance (ESG) Committee.

Board and committee meetings

Attendances of Directors at Board and committee meetings convened in 2021, and which they were eligible to attend, are set out below:

Director	Board Meetings Attended	Remuneration Committee Attended	Audit Committee Attended	ESG Committee Attended
Number of meetings in year	7	0	1	2
Tim Yeo*	5/5	N/A	N/A	2/2
Dr Cameron Davies*	3/3	N/A	N/A	N/A
David Ryan*	4/4	N/A	N/A	2/2
James Greenstreet	7/7	N/A	0/1	N/A
Myles Kitcher	7/7	N/A	1/1	N/A
Allan Vlah*	5/7	N/A	1/1	0/2
Kirsty Gogan*	4/5	N/A	N/A	2/2
Mark Berry*	4/4	N/A	N/A	2/2
Keith Riley*	2/2	N/A	N/A	N/A

***Notes:**

Tim Yeo resigned from the Board on 20 August 2021.
Allan Vlah resigned from the Board on 31 December 2021.
Kirsty Gogan resigned from the Board on 12 October 2021.
Mark Berry resigned from the Board on 29 July 2021.
Dr Cameron Davies resigned from the Board on 31 March 2021.
David Ryan resigned from the Board on 30 June 2021.
Keith Riley joined the Board on 27 September 2021.

2021 was a year of many Board changes. Two of the non-executive directors of the Remuneration Committee resigned from the Board during the year and the remaining non-executive Director managed matters in conjunction with other Board members.

There was only one formal meeting of the Audit Committee in 2021 in which the audit of the financial statements for the year ended 31 December 2020 was discussed. The same financial statements were discussed by the full Board with the auditors before being approved by the Directors of the Company in June 2021.

Appointment and tenure

The Board makes decisions regarding the appointment and removal of Directors. There is a formal, rigorous and transparent procedure for appointments, some of which have been delegated to the Remuneration Committee which, when needed, also acts as Nomination Committee, to make recommendations to the Board about the appointment of Directors and senior executives. Appointments are made on merit, taking account of the balance of skills, experience and knowledge required.

As part of its commitment to improve accountability to shareholders, the Board has decided that, in future, any director who is over the age of 70 or has been on the board for eight years at the date of the Annual General Meeting will submit themselves for re-election annually, in addition to those Directors retiring by rotation in accordance with our Articles of Association.

Principle 6 – Ensure that between them the Directors have the necessary up-to-date experience, skills and capabilities.

The Board comprises two executive Directors and five non-executive Directors, three of whom are independent. Details of the Directors are set out in the Directors' Report of this Annual Report and Financial Statements.

The Chair believes that the Board should always have a suitable mix of skills and competencies covering all essential disciplines bringing a balanced perspective that is beneficial both operationally and strategically.

The nature of the Company's business requires the Directors to keep their skillset up to date. Periodic advice on regulatory matters is given by the Company's professional advisers. Directors joining the Board and new employees are offered full familiarisation briefings with the Company's technology, the development programme and the current status of technology risk. During the period of Covid-19 restrictions in parts of 2021, the opportunity for Directors to visit the R&D facilities was limited but since restrictions have been lifted, familiarisation visits to the Company's facilities have been resumed. In addition, the Company periodically holds board meetings at the site of the facilities.

The Board is supported by senior management and by its key partners and professional advisers. The advice provided to the Board is often commercially sensitive. It is used by the Board to inform their decisions but typically will not be disclosed.

The Company Secretary supports the Board and reports directly to the Chair on governance matters.

The Board is supported and advised by a Chief Financial Officer, a chartered accountant with extensive experience, who works closely with the Board and is managing financial procedures and controls.

Principle 7 - Evaluate board performance based on clear and relevant objectives, seeking continuous improvement

Board performance effectiveness process

The assessment of the Board's performance has to date been largely focused on its contribution to the achievement of the Company's financial and strategic goals. As the Company moves towards full commercial operation the Board intends to consider how to make the evaluation of its own performance more formal and rigorous.

Each Board member is subject to a review by the Remuneration Committee based on their professional contribution as well as their contribution to the performance of the Company.

The terms and conditions of the arrangements, including remuneration are set by the Remuneration Committee.

Board appointments

The Remuneration Committee, which acts as Nomination Committee as needed, meets when necessary to consider the appointment of new Directors. Board members all have appropriate notice periods so that if a board member indicates his or her intention to step down, there is sufficient time to appoint a replacement, whether internal or external.

Board appointments are made after consultation with advisers in all cases. The Nomad undertakes due diligence on all new potential board candidates.

Corporate Governance Report

Each Director is required to offer themselves for re-election at least once every three years as per the Company's articles of association. In addition, any Director who is over the age of 70 or has been on the board for eight years at the date of the Annual General Meeting will submit themselves for re-election annually, in addition to those Directors retiring by rotation in accordance with our Articles of Association.

Succession planning
Succession planning was undertaken by the Chairman in consultation with the Board in 2021. However, with recent Board changes, succession planning is to be a responsibility of the Remuneration Committee which acts as a Nominations Committee as needed.

Principle 8 – Promote a corporate culture that is based on ethical values and behaviours

Consistent with Principle 3 above, the Company operates an inclusive, transparent and respectful culture.

The Board places particular emphasis on operating to the highest ethical and environmental standards. HS&E is a specific agenda item at every board meeting. In December 2020, the Board established a new Environmental Social and Governance (ESG) Committee with the aim of placing sustainability at the heart of all decision-making and business activities. The Company's objectives include observing the highest level of health and safety standards, developing our Employees to their highest potential and being a good corporate citizen in all the countries where we operate. A health and safety management system has been developed for operation in 2021 with policies for healthy and safety, environment and quality in place.

Management engages with independent environmental and safety engineering specialists to review the Company's product and demonstrate that it will have minimal environmental and safety impact on the communities in which the Company operates.

The Company's employment policies follow best practice, based on equal opportunities for all employees, irrespective of ethnic origin, religion, political opinion, gender, marital status, disability, age or sexual orientation.

The Company strives to create a diverse and inclusive working environment where every employee feels welcome and can do their best work. Powerhouse believes in the benefits of diversity and the importance of bringing a wide range of skills, experience and perspectives into our business. The Directors continually work with senior management to promote the Company's values and to monitor attitudes and behaviours to ensure that they are consistent with its culture.

Principle 9 – Maintain governance structures and processes that are fit for purpose and support good decision- making by the board.

The Board has undergone significant change in the last year and is now working to ensure that its processes and culture are appropriate for the Company's current size and complexity. It continues to review its practices as the Company evolves and grows as part of its commitment to improve accountability to stakeholders.

The Chief Executive Officer has overall responsibility for managing the day-to-day operations of the Company and has assumed responsibility for investor relations, PR and business development. The Board as a whole is responsible for implementing the Company's strategy. Management systems and procedures implemented in 2020 were followed in 2021 in parallel with project execution and licencing readiness activities.

The Company has established an Audit Committee, a Remuneration Committee and an Environmental Social and Governance Committee with formally delegated duties and responsibilities.

Audit Committee
The duties of the Audit Committee include reviewing, in draft, form the Company's annual and half-yearly report and accounts and providing advice to the Board. Members of the Audit Committee are also responsible for reviewing and supervising the financial reporting process and internal control systems of Powerhouse. The Audit Committee is comprised of two non-executive Directors.

Corporate Governance Report

Remuneration Committee

The Remuneration Committee is responsible for determining the policy for Directors' remuneration and setting remuneration for the Company's chair, executive Directors and senior management including share option schemes and any bonus arrangements. The Remuneration Committee also acts as a Nomination Committee as needed. No director plays any role in determining his or her own remuneration.

2021 was a year of many Board changes. Two of the non-executive Directors of the Remuneration Committee resigned from the Board during the year and the remaining non-executive Director managed matters in conjunction with other Board members. In 2022, two new non-executive Directors have been appointed to the Remuneration Committee and normal Committee activities have resumed.

Environmental Social and Governance (ESG) Committee

The ESG Committee was established in December 2020 with the aim of integrating sustainability best practice into all decision making and business activities as part of the Company's commitment to ensuring sustainable and ethical best practice in all its work. Powerhouse is pioneering clean fuel technology and the ESG Committee supports the Board in developing the technology that could help accelerate the UK's clean energy transition. The Committee ensures that Powerhouse promotes achievement of the UN Sustainable Development Goals throughout its business.

Furthermore, the ESG Committee monitors the Company's recruitment policies and its progress towards employing a fully diverse work force and engagements with stakeholders.

The appropriateness of the Company's governance structures will be reviewed annually in light of further developments of accepted best practice and the development of the Company.

Principle 10 – Communicate how the company is governed and is performing by maintaining a dialogue with shareholders and other relevant stakeholders

The Company maintains a regular dialogue with stakeholders including shareholders to enable interested parties to make informed decisions about the Company and its performance. Regular communication enables the Board to receive shareholders' views by various means as set out in Principle 2 above.

The Company regularly releases appropriate price sensitive information regarding its activities and progress to the market. In 2022, the Company intends to foster strong, balanced co-ordination of messaging to investors and to other key stakeholders.

The Board discloses the result of general meetings by way of announcement and discloses the proxy voting numbers to those attending the meetings. In order to improve transparency, the Board has committed to announcing proxy voting results in future and disclosing them on the Company's website. In the event that a significant portion of voters have voted against a resolution, an explanation of what actions it intends to take to understand the reasons behind the vote will be included.

Keith Riley

Keith Riley
On behalf of the Board
28 June 2022

REMUNERATION COMMITTEE REPORT

I am pleased to present the Committee's report for the year ended 31 December 2021. The following pages provide an insight into how the Committee discharged its responsibilities during the year and the key topics that it considered in doing so. The composition and terms of reference for the Remuneration Committee were updated in the final quarter of 2020 to reflect the Company's renewed commitment to corporate governance and enhanced practices. Following several changes to the Board during 2021, the Remuneration Committee membership was refreshed in 2022 and terms of reference reviewed and approved by the Board.

Due to the timing of the various changes to the Board in 2021 and the Remuneration Committee's membership, there were no formal meetings of the Remuneration Committee in 2021. However, the remaining member of the Committee took responsibility for its affairs, supported by the wider Board of Directors.

Composition

The membership of the Remuneration Committee was renewed in 2020 and in part of 2021 comprised Kirsty Gogan and Tim Yeo and was chaired by Myles Kitcher. Further to the Board changes in 2022 mentioned above, the Remuneration Committee is now chaired by Gill Weeks with Myles Kitcher and Hugh McAlister being the other members and normal activities have resumed.

The Remuneration Committee is responsible for determining the policy for Directors' remuneration and setting remuneration for the Company's chair, executive Directors and senior management including share option schemes and any bonus arrangements. The Remuneration Committee also acts as a Nomination Committee as needed.

Remuneration Policy

The Remuneration Committee is aware that the remuneration package should be sufficiently competitive to attract, retain and motivate individuals capable of achieving the Group's objectives and thereby enhancing shareholder value without paying more than is necessary, having regard to views of shareholders and other stakeholders. In determining remuneration policy, the Remuneration Committee considers all other factors which it deems necessary including relevant legal and regulatory requirements. No director or senior manager is involved in any decisions as to their own remuneration outcome.

Service Contracts

Paul Drennan-Durose and Paul Emmitt have service contracts which can be terminated by providing six months' written notice. James John Pryn Greenstreet, Gill Weeks, Hugh McAlister and Keith Riley have service contracts which can be terminated by providing three months' written notice. Myles Kitcher has a service contract which can be terminated without provision of notice.

Prior to his resignation, David Ryan had a service contract which could be terminated by providing six months' written notice. Mr Ryan resigned on 30 June 2021.

Prior to their resignations, Russell Ward, Tim Yeo, William Cameron Davies Allan Vlah, Kirsty Gogan and Mark Berry held service contracts which could be terminated by providing three months' written notice.

Tim Yeo's remuneration includes amounts paid to Rivermill Partners Limited, a company wholly owned by Tim Yeo and Mrs Diane Yeo, for executive corporate management services provided during the year. These services are contracted for to September 2022.

Remuneration Committee Report

Basic Salary and Benefits

The remuneration of the Directors of the Company paid for the year or since date of appointment, if later, to 31 December 2021 is set out below:

	2021 £ Salary/Fee	2021 £ Pension	2021 £ Share based payments	2021 £ Other	2021 £ Total	2020 £ Total
Tim Yeo	**92,444**	**-**	**-**	**35,500**	**127,944**	27,004
David Ryan	**97,996**	**-**	**-**	**-**	**97,996**	196,856
William Cameron Davies	**7,500**	**-**	**-**	**-**	**7,500**	54,421
Nigel Brent Fitzpatrick	**-**	**-**	**-**	**-**	**-**	26,868
James Greenstreet	**30,000**	**-**	**-**	**-**	**30,000**	31,061
Allan Vlah	**15,000**	**-**	**22,500**	**-**	**37,500**	13,306
Kirsten Gogan	**23,468**	**-**	**-**	**-**	**23,468**	7,500
Keith Riley	**8,167**	**-**	**-**	**-**	**8,167**	-
Mark Berry	**-**	**-**	**17,500**	**-**	**17,500**	1,129
Total	**274,575**	**-**	**40,000**	**35,500**	**350,075**	358,145

Notes:

David Ryan resigned from the Board on 30 June 2021.
Mr Yeo resigned from the Board on 20 August 2021.
Allan Vlah resigned from the Board on 31 December 2021.
Mr Davies resigned from the Board on 31 March 2021.
Kirsty Gogan resigned from the Board on 12 October 2021.
Mark Berry resigned from the Board on 29 July 2021.
Keith Riley joined the Board on 27 September 2021.

Share options held by the Directors are detailed in note 27 in the Notes to the Accounts. Total remuneration includes share-based payments arising from the issue of options amounting to £40,000 (2020: £8,399) and details are set out in note 27 in the Notes to the Accounts. There have been no awards of shares to Directors under long term incentive plans.

Bonus Schemes

There was no bonus scheme in place for 2021 and therefore no bonuses are payable in respect of the year ended 31 December 2021 (2020: nil).

Share Options

In April 2021, non-executive Directors were granted options under the Company's Non-Employee Share Option Plan in lieu of part or all of the fees to which they were entitled.

Tim Yeo was the highest paid Director in the year. There were no shares received or receivable by him in respect of qualifying services under long term incentive schemes.

For details of the total number of options outstanding at 31 December 2021 please refer to Note 27 to the Accounts.

Remuneration Committee Meetings and Attendance

Please see the table in the Corporate Governance Report in this document for attendance by the members of the Remuneration Committee.

On behalf of the Directors of Powerhouse Energy Group plc

Gill Weeks
Chair of Remuneration Committee
28 June 2022

REPORT OF THE AUDIT COMMITTEE

I am pleased to present the Committee's report for the year ended 31 December 2021. The following pages provide an insight into how the Committee discharged its responsibilities during the year and the key topics that it considered in doing so. The composition and terms of reference for the Audit Committee were updated in the final quarter of 2021 to reflect the Company's renewed commitment to corporate governance and enhanced practices.

Composition

The Audit Committee is comprised of two non-executive Directors, currently Myles Kitcher and Keith Riley, with Myles Kitcher acting as Chair. The Chair is considered by the Board to have recent and relevant financial experience and the other members have competence relevant to the Company's sector of operation.

Other members of the Board, the Chief Financial Officer and other members of senior management may also be invited to attend the meetings as guests.

Role and Responsibilities

The Audit Committee determines and examines any matters relating to the financial affairs of the Group including the terms of engagement of the Group's auditors and, in consultation with the auditors, the scope of the audit. In 2021 and onwards, the Audit Committee intends to meet at least twice in each financial year.

The Audit Committee is responsible for monitoring the integrity of the Company's financial statements, reviewing significant financial reporting issues, reviewing the effectiveness of the Group's internal control and risk management systems. In addition, it considers the financial performance, position and prospects of the Group and the Company and ensures they are properly monitored and reported on. It oversees the relationship with the Auditor (including advising on their appointment, agreeing the scope of the audit and reviewing the audit findings).

The Board and the Audit Committee do not consider it appropriate for the current size of the Group to establish an internal audit function. However, this will be kept under review.

Principal activities during the year

The Committee held one meeting during the year under review and considered the following:

- An overview of the planned work by the external auditors on the 2020 audit including the scope and regulatory requirements of the audit and the fees; and
- The Committee's Terms of Reference.

A further review of the audit and the financial statements for the year ended 31 December 2020 was undertaken by the full Board.

The Committee's planned activities during 2022 include:

- Review and approve the FY21 and FY22 external Auditor's plan, including the proposed materiality threshold, the scope of the audit, the significant audit risks and fees;
- Review the Company's procedures, systems and controls for the prevention of bribery or fraud;
- Review the adequacy and security of the Company's arrangements for its employees to raise concerns, in confidence, about possible wrongdoing in financial reporting or other matters. The Committee shall ensure that these arrangements allow proportionate and independent investigation of such matters and appropriate follow up action;
- Review the Committee's internal audit role, in the absence of an external provider of an internal audit service;
- Risk – review and challenge the Risk Register and consider the risk appetite of the business.

Audit Committee Report

External Auditor

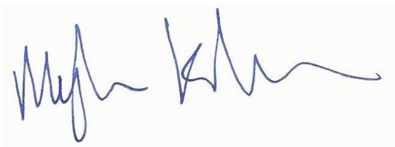
Jeffreys Henry has been the external Auditor of the Group since 2018. The continued appointment of Jeffreys Henry is to be reviewed by the Committee each year, taking into account the relevant legislation, guidance and best practice appropriate for a Company of Powerhouse's size, nature and stage of development.

The Committee will consider a number of areas when reviewing the external Auditor appointment, namely its performance in discharging the audit, the scope of the audit and terms of engagement, its independence and objectivity, and its reappointment and remuneration.

The breakdown of fees between audit and non-audit services paid to Jeffreys Henry during the financial year is set out in Note 4 to the Financial Statements. The non-audit fees relate to taxation advisory and compliance services.

Attendance at Audit Committee Meetings

Please see the table in the Corporate Governance Report in this document for attendance by the members of the Audit Committee.



Myles Kitcher
Chair of the Audit Committee
28 June 2022

REPORT OF THE ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) COMMITTEE

I am pleased to present the Committee's report for the year ended 31 December 2021. The Committee was established in December 2020 with the aim of integrating sustainability best practice into all decision making and business activities as part of the Company's commitment to ensuring sustainable and ethical best practice in all decision-making and business activities.

Composition
In 2021 the ESG Committee was comprised of three non-executive Directors, Kirsty Gogan, Allan Vlah and Mark Berry, with Kirsty Gogan acting as Chair. Two executive Directors, Tim Yeo and David Ryan, were also part of the Committee. The Chair was considered by the Board to have recent and relevant experience with more than 15 years' experience as a senior advisor to Government on climate and energy policy.

Further to multiple changes to the Board during 2021, the membership of this Committee was refreshed in April 2022. The Committee comprises Keith Riley and Gill Weeks, with Keith acting as Chair.

Role and Responsibilities
The overall mission of the ESG Committee is to support the Board in ensuring that Powerhouse attaches the highest priority to environmental, social and governance issues and managing the associated ESG risks.

As a sustainable hydrogen company, Powerhouse is pioneering clean fuel technology and the ESG Committee supports the Board in developing the technology that could help accelerate the UK's clean energy transition along with helping to clean up unrecyclable plastic and improving air quality. The Committee ensures that Powerhouse promotes achievement of the UN Sustainable Development Goals throughout its business.

The ESG Committee will monitor Powerhouse's performance in relation to its stated aims of providing a solution to the global problem of plastic waste and producing a sustainable low carbon alternative to fossil fuels whose adoption will accelerate the world's progress to net zero emissions. Where appropriate it will make recommendations to the Board to ensure these aims are achieved.

Powerhouse technology aims to be used at a local level providing a closed loop solution within the community for non-recyclable plastic waste, cleaning up our oceans and helping to accelerate the clean energy transition to reach the target of net zero emissions by 2030. Importantly the ESG Committee will scrutinise particularly closely the greenhouse gas emissions caused by Powerhouse's own activities as well as those of its suppliers and customers with the aim of achieving continuous improvement in performance.

As a business which is helping accelerate the clean energy transition, the welfare of the environment and the impact of climate change are key issues for the business. Powerhouse technology aims to work at a local level, therefore engaging with communities will be a vital part of this Committee's work.

The ESG Committee will monitor Powerhouse's recruitment policies and its progress towards employing a fully diverse work force at all levels, including consultants.

The ESG Committee will keep all aspects of Powerhouse's governance under continuous review and make recommendations to the Board for improvements where necessary.
during the year.

Principal activities during the year
The Committee held two meetings in the first half of 2021, and considered the following:

- Engaging with research consultancies
- Options for plastic waste sites

- An overview of the potential activities under consideration including scrutinising greenhouse gas emissions, engaging with agencies who could undertake an ongoing assessment of the environmental impact of Powerhouse's processes and the Company's approach to recruitment bearing in mind the aims of the ESG Committee.

Attendance at ESG Committee Meetings

Please see the table in the Corporate Governance Report in this document for attendance by the members of the ESG Committee.

Keith Riley

Keith Riley
Chair of the ESG Committee
28 June 2022

STATEMENT OF DIRECTORS' RESPONSIBILITIES

The Directors are responsible for preparing the Annual Report and the financial statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare financial statements for each financial year. Under that law the Directors have elected to prepare the financial statements in accordance with International Financial Reporting Standards (IFRSs) as adopted for use in the United Kingdom. Under company law the Directors must not approve the accounts unless they are satisfied that they give a true and fair view of the state of affairs of the company and of the profit or loss of the company for that period. In preparing these financial statements, International Accounting Standard 1 requires that Directors:

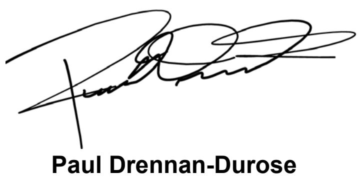
- properly select and apply accounting policies;
- present information, including accounting policies, in a manner that provides relevant, reliable, comparable and understandable information;
- prepare the Financial Statements on the going concern basis unless it is inappropriate to presume that the company will continue in business;
- provide additional disclosures when compliance with the specific requirements in IFRS Standards is insufficient to enable users to understand the impact of particular transactions, other events and conditions on the entity's financial position and financial performance.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the company's transactions and disclose with reasonable accuracy at any time the financial position of the company and enable them to ensure that the financial statements comply with the Companies Act 2006. They are also responsible for safeguarding the assets of the company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities. The Directors are responsible for the maintenance and integrity of the corporate and financial information included on the company's website. Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Responsibility Statement

We confirm that to the best of our knowledge that:

- the financial statements, prepared in accordance with International Financial Reporting Standards, give a true and fair view of the assets, liabilities, financial position and profit or loss of the Company;
- the strategic report includes a fair review of the development and performance of the business and the position of the Company together with a description of the principal risks and uncertainties that it faces; and
- the annual report and financial statements, taken as a whole, are fair, balanced and understandable and provide the information necessary for shareholders to assess the Company's performance, business model and strategy.



Paul Drennan-Durose
Director
On behalf of the Board
28 June 2022

INDEPENDENT AUDITOR'S REPORT
TO THE MEMBERS OF POWERHOUSE ENERGY GROUP PLC

Opinion

We have audited the financial statements of Powerhouse Energy Group Plc (the 'Company') for the year ended 31 December 2021 which comprise the statement of comprehensive income, the statement of financial position, the statement of cash flows, the statement of changes in equity and notes to the financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in the preparation of the financial statements is applicable law and International Financial Reporting Standards (IFRSs) as adopted by the United Kingdom as applied in accordance with the provisions of the Companies Act 2006.

In our opinion, the financial statements:

- give a true and fair view of the state of the Company's affairs as at 31 December 2021 and of its loss for the year then ended;
- have been properly prepared in accordance with IFRSs as adopted by the United Kingdom; and,
- the financial statement has been prepared in accordance with the requirements of the Companies Act 2006.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We are independent of the company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard as applied to listed entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Conclusions relating to going concern

In auditing the financial statements, we have concluded that the directors' use of the going concern basis of accounting in the preparation of the financial statements is appropriate. Our evaluation of the directors' assessment of the entity's ability to continue to adopt the going concern basis of accounting included, as part of our risk assessment, review of the nature of the business of the company, its business model and related risks including where relevant the impact of the COVID-19 pandemic and Brexit, the requirements of the applicable financial reporting framework and the system of internal control. We evaluated the directors' assessment of the Company's ability to continue as a going concern, including challenging the underlying data and key assumptions used to make the assessment, and evaluated the directors' plans for future actions in relation to their going concern assessment.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the Company's ability to continue as a going concern for a period of at least twelve months from the financial statements are authorised for issue.

Our responsibilities and the responsibilities of the directors with respect to going concern are described in the relevant sections of this report.

Our approach to the audit

Key audit matters
Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) we identified, including those which had the greatest effect on: the overall audit strategy, the allocation of resources in the audit; and directing the efforts of the engagement team. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. This is not a complete list of all risk identified by our audit.

Carrying value of intangible assets	Our audit procedures:
A key balance on the statement of financial position is intangible fixed assets of £43,554,498 (2020: £43,519,582) at 31 December 2021 as detailed in Note 10. In the prior year the Company acquired and hived up Waste2Tricity Limited. This transaction was a share for share exchange and qualified for merger relief as described further in Note 1.1. The treatment of the merger reserve resulted in a large goodwill and intangible asset increase as is described in Note 10. Like the previous year, the Company obtained a third-party opinion of the Goodwill value that was accounted for as a result of the hive up of the Waste2Tricity Limited acquisition. The report of the third-party valuer concluded that no impairment of the Goodwill value was necessary this year (2020: included an initial impairment of £14,192,699) leaving a residual value for Goodwill at 31 December 2021 of £42,960,000 (2020: £42,960,000). Note, in the prior year, the Goodwill impairment had been accounted for in the statement of comprehensive income. The Group's policy in 1.18(iii) is that impairment losses on Goodwill are not reversed. On initial acquisition of Waste2Tricity Limited, the Company identified £500,000 exclusivity rights as intangible assets. This balance is being held at fair value and assessed each year for impairment as described in Note 1.10. In the same review as Goodwill, the third-party valuer concluded that there was no impairment of the exclusivity rights (2020: £Nil).	The Company used the same third-party valuer as in the prior year. We reviewed the scope of his work and attended meetings with the valuer and the client to discuss our findings in our review of the model prepared for us. We went through the assumptions and corroborated the information to our understanding of the business and information that was provided by the management of the Company. We discussed the model and its assumptions internally to determine whether the valuation model and assumptions used were still appropriate. Overall, we were satisfied that the Company remained independent of the valuation process. The valuers' model was based on a discounted cash flow and their assumptions are reflected in Note 10. The model remained broadly similar to the prior year. We discussed with members of the Board the implication of delays since our previous audit report and concluded that the valuation assumptions were appropriate given the information shared with us. We corroborated the discount rates to check if they were applicable. We also checked the income streams and the number of expected projects based on a probability matrix which we challenged and the outcome of which is very much dependent on the roll out of UK sites over the next 5 years post-delivery of the Protos project. Following discussions with us, the key sensitivities in the assumptions made in the model were strengthened in Note 10. The key areas being: the number and roll out of systems and sites; the discount rate used; and, the effect of inflation. Valuations based on this methodology were both compliant with IFRS and the International Private Equity and Venture Capital Valuation (IPEV) guidelines. The assumptions and workings in the goodwill model are UK specific and not dependent on any other potential source of activity or income outside the UK. The valuation report acknowledged that the development of revenues from international (non-UK) sources were not sufficiently developed to be included within his valuation model at the year-end but may have an impact following delivery of the first project at Protos. The start date and delivery of the first project is based on the system being delivered by the Company's agreement with Peel NRE and subsequent roll out of additional sites. However, should the agreement with Peel NRE be unfulfilled for any reason, the Company may still be able to continue the delivery of systems with a new partner. A new model would need to be prepared and these assumptions and conclusions may be different from those disclosed in Note 10.
Correct calculation of share-based payments	**Our audit procedures:**
The share-based payment charge recognised in profit or loss for the year is £34,829 (2020: 40,634).	We have understood and assessed the methodology utilised to estimate the Company's share-based payment charge calculations and checked that the calculation of the provision was mathematically accurate.

All share-based payments are equity-settled and are made up of share issues, share option issues and share warrant issues. These share-based payments have been reviewed for the purpose of calculating an appropriate share-based payment charge. The fair value of services was used to value share-based payments where the fair value of services may be directly calculated. Where the fair value of services may not be directly calculated, the Black-Scholes model was used. The vesting period of share options and warrants are fixed.	
Exemption from preparing consolidated financial statements The Company has claimed exemptions applicable to it under Companies Act section 405 (2) and 405 (3b) and IFRS 10 to not present any Consolidated financial statements for the year ended 31 December 2021. This is on the basis that the Company's only UK subsidiary is non-trading and not material and there being long-term restrictions on the operations of the Company's subsidiaries in the US and Switzerland.	**Our audit procedures:** We have reviewed and discussed with the Directors applicable legislation and accounting standard and assessed that based on the Directors' explanation, the Company satisfies the conditions under Companies Act section 405 (2) and 405 (3b) and IFRS 10 to not present any Consolidated financial statements for the year.

Our application of materiality

The scope of our audit was influenced by our application of materiality. We set certain quantitative thresholds for materiality. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures on the individual financial statement line items and disclosures and in evaluating the effect of misstatements, both individually and in aggregate on the financial statements as a whole.

Based on our professional judgement, we determined a materiality of £430,000 (2020: £470,000) for the review of the goodwill and its impairment. In respect of other balances, we considered that a level of £100,000 (2020: £80,000) was more appropriate for our review. A benchmark of 1% of the net book value of Goodwill (2020: 1% of gross assets of the company) was used to calculate the materiality when reviewing goodwill and its impairment. A benchmark of 5% of net losses (excluding goodwill impairment) was used for other areas (2020: 5% of net losses (excluding Goodwill impairment)). We believe that net losses are a primary measure used by the shareholders in assessing the performance of the company and are a generally accepted auditing benchmark.

We agreed with management that we would report to them misstatements identified during our audit above £5,000 (2020: £4,000) as well as misstatements below those amounts that, in our view, warranted reporting for qualitative reasons.

An overview of the scope of our audit

As part of designing our audit, we determined materiality and assessed the risks of material misstatement in the financial statements. In particular, we looked at where the Directors made subjective judgments, for example in respect of significant accounting estimates that involved making assumptions and considering future events that are inherently uncertain. As in all of our audits we also addressed the risk of management override of internal controls, including evaluating whether there was evidence of bias by the Directors that represented a risk of material misstatement due to fraud.

How we tailored the audit scope

We tailored the scope of our audit to ensure that we performed enough work to be able to give an opinion on the financial statements as a whole, taking into account the structure of the Company, the accounting processes and controls, and the industry in which they operate.

We performed an audit of the financial information of Powerhouse Energy Group Plc. Our engagement team performed all audit procedures.

Other information

The other information comprises the information included in the annual report other than the financial statements and our auditor's report thereon. The directors are responsible for the other information contained within the annual report. Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon. Our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements, or our knowledge obtained during the audit or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether this gives rise to a material misstatement in the financial statements or a material misstatement in the financial statements themselves. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

Opinions on other matters prescribed by the Companies Act 2006

In our opinion, based on the work undertaken in the course of the audit:

- the information given in the strategic report and the Directors' report for the financial year for which the financial statements are prepared is consistent with the financial statements; and
- the strategic report and the Directors' report have been prepared in accordance with applicable legal requirements.

Matters on which we are required to report by exception

In the light of the knowledge and understanding of the Company and its environment obtained in the course of the audit, we have not identified material misstatements in the strategic report or the Directors' report.

We have nothing to report in respect of the following matters in relation to which the Companies Act 2006 requires us to report to you if, in our opinion:

- adequate accounting records have not been kept by the company, or returns adequate for our audit have not been received from branches not visited by us; or
- the company financial statements are not in agreement with the accounting records and returns; or
- certain disclosures of Directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

Responsibilities of Directors

As explained more fully in the Directors' responsibilities statement set out on page 40, the Directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the Directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Directors are responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Directors either intend to liquidate the company or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud.

Our approach to identifying and assessing the risks of material misstatement in respect of irregularities, including fraud and non-compliance with laws and regulations, was as follows:

- the senior statutory auditor ensured the engagement team collectively had the appropriate competence, capabilities and skills to identify or recognise non-compliance with applicable laws and regulations;
- We focused on specific laws and regulations which we considered may have a direct material effect on the financial statements or the operations of the company;
- we assessed the extent of compliance with the laws and regulations identified above through making enquiries of management and inspecting legal correspondence; and
- identified laws and regulations were communicated within the audit team regularly and the team remained alert to instances of non-compliance throughout the audit.

We assessed the susceptibility of the Company's financial statements to material misstatement, including obtaining an understanding of how fraud might occur, by:

- making enquiries of management as to where they considered there was susceptibility to fraud, their knowledge of actual, suspected and alleged fraud;
- considering the internal controls in place to mitigate risks of fraud and non-compliance with laws and regulations.

To address the risk of fraud through management bias and override of controls, we:

- performed analytical procedures to identify any unusual or unexpected relationships;
- tested journal entries to identify unusual transactions;
- assessed whether judgements and assumptions made in determining the accounting estimates set out in Note 1.2 of the Company financial statements were indicative of potential bias; and,
- investigated the rationale behind significant or unusual transactions.

In response to the risk of irregularities and non-compliance with laws and regulations, we designed procedures which included, but were not limited to:

- agreeing financial statement disclosures to underlying supporting documentation;
- reading the minutes of meetings of those charged with governance;
- enquiring of management as to actual and potential litigation and claims; and,
- reviewing correspondence from local authorities and the company's legal advisor.

There are inherent limitations in our audit procedures described above. The more removed that laws and regulations are from financial transactions, the less likely it is that we would become aware of non-compliance. Auditing standards also limit the audit procedures required to identify non-compliance with laws and regulations to enquiry of the directors and other management and the inspection of regulatory and legal correspondence, if any.

Material misstatements that arise due to fraud can be harder to detect than those that arise from error as they may involve deliberate concealment or collusion.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at: www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditor's report.

Other matters which we are required to address

We were reappointed as auditors by the company at the Annual General Meeting on 29 July 2021 to audit the financial statements for the period ending 31 December 2021. Our total uninterrupted period of engagement is 5 years, covering the periods ending 31 December 2017 to 31 December 2021.

The non-audit services prohibited by the FRC's Ethical Standard were not provided to the Company and we remain independent of the company in conducting our audit.

In addition to the audit, the firm provides tax compliance services to Powerhouse Energy Group Plc.

Our audit opinion is consistent with the additional report to the audit committee.

Use of this report

This report is made solely to the Company’s members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the company’s members those matters we are required to state to them in an auditor’s report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company’s members as a body, for our audit work, for this report, or for the opinions we have formed.

Sachin Ramaiya (Senior Statutory Auditor)
For and on behalf of Jeffreys Henry LLP

Chartered Accountants
Statutory Auditor

Finsgate
5-7 Cranwood Street
London EC1V 9EE
28 June 2022

STATEMENT OF COMPREHENSIVE INCOME
For The Year Ended 31 December 2021

	Note	**31 December 2021 £**	31 December 2020 £
Revenue	2	**701,435**	100,000
Cost of sales		**(599,914)**	(99,868)
Gross Profit		**101,521**	132
Administrative expenses	4	**(2,147,476)**	(1,477,415)
Acquisition costs		**(11,735)**	(303,224)
Share of associate	5	**50,062**	-
Goodwill impairment	6	**-**	(14,192,699)
Operating loss		**(2,007,628)**	(15,973,206)
Net finance income/(cost)	7	**10,987**	(3,032)
Loss before taxation		**(1,996,641)**	(15,976,238)
Income tax credit	8	**126,145**	138,497
Total comprehensive loss		**(1,870,496)**	(15,837,741)
Loss per share (pence)	9	**(0.05)**	(0.57)
Diluted loss per share (pence)	9	**(0.05)**	(0.57)

All activities are in respect of continuing operations and there are no other items of comprehensive income.

The notes numbered 1 to 30 are an integral part of the financial information.

STATEMENT OF FINANCIAL POSITION
As At 31 December 2021

	Note	2021 £	2020 £
ASSETS			
Non-current assets			
Intangible fixed assets	10	**43,554,498**	43,519,582
Tangible fixed assets	11	**33,092**	53,020
Investments in subsidiary undertakings	12	**1**	2
Investments in associated undertakings	12	**140,540**	49
Total non-current assets		**43,728,131**	43,572,653
Current Assets			
Loans receivable	13	**1,165,286**	-
Contract costs	14	**-**	14,550
Trade and other receivables	15	**963,648**	200,310
Corporation tax recoverable	16	**155,227**	138,497
Cash and cash equivalents	17	**9,637,460**	3,464,475
Total current assets		**11,921,621**	3,817,832
Total assets		**55,649,752**	47,390,485
LIABILITIES			
Current liabilities			
Creditors: amounts falling due within one year	18	**(563,781)**	(509,194)
Total current liabilities		**(563,781)**	(509,194)
Total assets less current liabilities		**55,085,971**	46,881,291
Creditors: amounts falling due after more than one year	19	**-**	(23,455)
Net assets		**55,085,971**	46,857,836
EQUITY			
Share capital	22	**22,900,856**	21,689,288
Share premium	23	**61,291,710**	52,594,934
Merger relief reserve	23	**36,117,711**	36,117,711
Accumulated deficit	24	**(65,224,306)**	(63,544,097)
Total surplus		**55,085,971**	46,857,836

The financial statements of Powerhouse Energy Group Plc, Company number 03934451, were approved by the Board of Directors and authorised for issue on 28 June 2022 and signed on its behalf by:

Paul Drennan-Durose
Director

The notes numbered 1 to 30 are an integral part of the financial information.

STATEMENT OF CASHFLOWS
For The Year Ended 31 December 2021

	Note	2021 £	2020 £
Cash flows from operating activities			
Operating Loss		**(2,007,628)**	(15,973,206)
Adjustments for:			
Share based payments		**34,829**	40,634
Amortisation		**5,049**	2,170
Depreciation		**28,824**	2,311
Goodwill impairment		**-**	14,192,699
Share of associate result		**(50,062)**	-
Provision against investments		**49**	-
Changes in working capital:			
Decrease/(Increase) in contract costs		**14,550**	99,868
Decrease/(Increase) in trade and other receivables		**(763,338)**	(143,504)
Increase/(Decrease) in trade and other payables		**55,015**	(171,998)
Tax credits received		**118,927**	195,708
Net cash used in operations		**(2,563,785)**	(1,755,318)
Cash flows from investing activities			
Purchase and hive up of subsidiary		**-**	1,934
Purchase of interest in associate	12	**(99,990)**	-
Loans advanced	13	**(1,150,000)**	-
Purchase of intangible fixed assets	10	**(39,965)**	(45,238)
Purchase of tangible fixed assets	11	**(8,896)**	(5,852)
Net cash flows from investing activities		**(1,298,851)**	(49,156)
Cash flows from financing activities			
Proceeds from issue of shares		**10,063,802**	5,170,314
Payments of principal under leases	21.3	**(23,882)**	(1,913)
Net finance costs	7	**(4,299)**	(3,032)
Net cash flows from financing activities		**10,035,621**	5,165,369
Net increase/(decrease) in cash and cash equivalents		**6,172,985**	3,360,895
Cash and cash equivalents at beginning of year		**3,464,475**	103,580
Cash and cash equivalents at end of year		**9,637,460**	3,464,475

The notes numbered 1 to 30 are an integral part of the financial information.

STATEMENT OF CHANGES IN EQUITY
For The Year Ended 31 December 2021

	Ordinary share capital £	Deferred shares £	Share premium £	Merger relief reserve £	Accumulated deficit £	Total £
Balance at 1 January 2020	9,808,942	3,113,785	48,778,651	-	(61,714,360)	(12,982)
Transactions with equity parties:						
- Share issues in lieu of services	261,141	-	9,757	-	-	270,898
- Share issues on exercise warrants	318,219	-	38,963	-	-	357,182
- Share issues to acquire W2T	7,187,201	-	-	50,310,410	-	57,497,611
- Share issues in year	1,000,000	-	4,000,000	-	-	5,000,000
Share based payments	-	-	-	-	(184,695)	(184,695)
Share issue costs	-	-	(232,437)	-	-	(232,437)
Reserve transfer- goodwill impairment	-	-	-	(14,192,699)	14,192,699	-
Total comprehensive loss	-	-	-	-	(15,837,741)	(15,837,741)
Balance at 31 December 2020	18,575,503	3,113,785	52,594,934	36,117,711	(63,544,097)	46,857,836
Transactions with equity parties:						
- Share issues on exercise warrants	24,477	-	174,603	-	-	199,080
- Share issues to exercise options	278,000	-	253,982	-	-	531,982
- Share issues in year	909,091	-	9,090,909	-	-	10,000,000
Share based payments	-	-	-	-	190,287	190,287
Share issue costs	-	-	(822,718)	-	-	(822,718)
Total comprehensive loss	-	-	-	-	(1,870,496)	(1,870,496)
Balance at 31 December 2021	19,787,071	3,113,785	61,291,710	36,117,711	(65,224,306)	55,085,971

The following describes the nature and purpose of each reserve within equity:

Deferred shares: Represents the combined total of all deferred shares (0.5p, 4p and 4.5p)

Share premium: Amount subscribed for share capital in excess of nominal value

Merger relief reserve: Amount subscribed for share capital in excess of nominal value where merger relief applies (Note 1.1)

Accumulated deficit: Accumulated deficit represents the cumulative losses of the company and all other net gains and losses and transactions with shareholders not recognised elsewhere

The notes 1 to 30 are an integral part of the financial information.

NOTES TO THE ACCOUNTS
For The Year Ended 31 December 2021

1. ACCOUNTING POLICIES

Powerhouse Energy Group Plc is a company incorporated in England and Wales. The Company is a public limited company quoted on the AIM market of the London Stock Exchange. The address of the registered office is 15 Victoria Mews, Mill Field Road, Cottingley Business Park, Bingley BD16 1PY. The principal activity of the Company is to continue the development of its technology and to support its customers in order to achieve its full commercial roll-out. The following accounting policies have been applied consistently in dealing with items which are considered material in relation to the financial information.

1.1. Basis of preparation

This financial information is for the year ended 31 December 2021 and has been prepared in accordance with International Financial Reporting Standards ("IFRS") issued by the International Accounting Standards Board (IASB), as adopted for use in the United Kingdom (UK) and with those parts of the Companies Act 2006 applicable to companies reporting under IFRS (except as otherwise stated). These accounting policies and methods of computation are consistent with the prior year, unless otherwise stated. There were no retrospective adjustments required either on 1 January 2020 or in the corresponding amounts for the period ended 31 December 2020 due to the transition to UK-adopted IFRS.

The Company's only UK subsidiaries are non-trading and not material. There are also long-term restrictions on the operations of the Company's subsidiaries in the US and Switzerland. With these restrictions in place, the Company is also unable to exert control over the subsidiaries. As such the Company has claimed exemptions applicable to it under Companies Act section 405 (2) and 405 (3b) and IFRS 10 to not present any Consolidated financial statements for the year ended 31 December 2021. Investments in subsidiaries that are not consolidated are carried at cost less any provision for impairment.

The acquisition of Waste2Tricity Limited during 2020 was transacted by way of a share for share exchange and qualifies for merger relief, meaning that no share premium is recorded on the issue of the consideration shares. The excess of the fair value of consideration shares over their nominal value has been recorded in a merger relief reserve.

Associates are entities which the Company has significant influence but not control or joint control as defined under IAS 28. This is generally the case where the Company holds between 20% and 50% of the voting rights. Investments in associates are accounted for using the equity method of accounting.

Under the equity method of accounting, investments are initially recognised at cost and adjusted thereafter to recognise the Company's share of the post-acquisition profits or losses of the investee in the Income statement. Dividends received or receivable from associates and joint ventures are recognised as a reduction in the carrying value of the investment.

When the Company's share of losses in an equity-accounted investment exceeds or equals its interest in the equity, the Company does not recognise further losses, unless it has incurred obligations or made payments on behalf of the other entity. Unrealised gains on transactions between the Company and its associates and joint ventures are eliminated to the extent of the Company's interest in these entities. Unrealised losses are also eliminated unless the transaction provides evidence of an impairment in the asset transferred.

Accounting policies of the equity accounted investees are changed where necessary to ensure consistency with the policies adopted by the Company. The carrying value of equity accounted investments is tested for impairment in accordance with the policy described in Note 1.18 (ii).

The Company has one associate, Engsolve Limited, the interest in which was acquired during the year.

Other investments, which are not publicly traded, are initially measured at cost and subsequently measured at cost less accumulated losses.

1.2. Judgements and estimates

The preparation of financial statements in conformity with IFRS requires management to make judgements, estimates and assumptions that affect the application of policies and reported amounts in the financial statements.

Areas involving a higher degree of judgements or complexity, or areas where assumptions or estimates are significant to the financial statements such as the exercise to assess the fair value of goodwill, share based payments (share options and warrants) and going concern are disclosed within the relevant notes.

Notes to the Accounts for the Year Ended 31 December 2021

1.3. Going concern

The financial statements have been prepared on a going concern basis. The Company has a total comprehensive loss of £1.87m (2020: £1.65m after excluding £14.19m of goodwill impairment) and net operating cash outflows of £2.56m (2020: 1.76m). However, the Directors believe the going concern basis to be appropriate for the following reasons.

As at the balance sheet date, the Company has available cash of £9.64m (2020: £3.46m) which is considered by the Directors to be sufficient to enable the Company to continue in operational existence for the foreseeable future by meeting its liabilities as they fall due for payment.

The Directors' views are based upon working capital projections which take into account the intended uses of the funds in hand over the next 12 months.

In the event that the Protos project did not proceed then the Company would need to consider alternative ways to commercialise the DMG technology, including the potential introduction of third-party developers. However, the Directors do not see that this would impact the going concern basis on which these accounts are drawn up.

The Directors have assessed the effects on the business arising from Covid-19 and from Brexit in respect of potential tariff charges and do not consider these to impact the going concern basis on which these accounts are drawn up.

1.4. Foreign currency translation

The financial information is presented in sterling which is the Company's functional currency.

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies are revalued to the exchange rate at date of settlement or at reporting dates (as appropriate). Exchange gains and losses resulting from such revaluations are recognised in the Statement of Comprehensive Income.

Foreign exchange gains and losses are presented in the Statement of Comprehensive Income within administrative expenses.

1.5. Revenue

(i) Engineering services

The Company provides engineering services for the application of the DMG Technology, the intellectual property which the Company owns. Revenue from providing services is recognised in the accounting period in which services are rendered. For fixed-price contracts, revenue is recognised based on the actual service provided to the end of the reporting period as a proportion of the total services to be provided to the extent to which the customer receives the benefits. This is determined based on the actual labour hours spent relative to the total expected labour hours.

Where contracts include multiple performance obligations as specified by the work scope, the transaction price will be allocated to each performance obligation based on estimated expected cost-plus margin.

Estimates of revenues, costs or extent of progress toward completion of services are revised if circumstances change. Any resulting increases or decreases in estimated revenues or costs are reflected in profit or loss in the period in which the circumstances that give rise to the revision become known by management.

In case of fixed-price contracts, the customer pays the fixed amount based on a payment schedule. If the services rendered by the Company exceed the payment, a contract asset is recognised. If the payments exceed the services rendered, a contract liability is recognised.

If a contract includes an hourly fee, revenue is recognised in the amount to which the Company has a right to invoice.

(ii) Exclusivity fees

Where the Company grants a developer exclusive rights to utilise its technology in a particular territory for an exclusivity fee, the fee is recognised in the income statement over the agreed exclusivity period.

1.6. Leases

For any new contracts entered into, the Company considers whether a contract is, or contains, a lease. A lease is defined as 'a contract, or part of a contract, that conveys the right to use an asset for a period of time in exchange for consideration'. To apply this definition the Company assesses whether the contract meets three key evaluations which are whether:

(i) the contract contains an identified asset which is either explicitly defined in the contract or implicitly specified by being identified at the time the asset is made available to the Company;

(ii) the Company has the right to obtain substantially all of the economic benefits from use of the asset throughout the period of use, considering its rights within the defined scope of the contract;

(iii) the Company has the right to direct the use of the identified asset throughout the period of use.

Where the above evaluations are met, at lease commencement date, the Company recognizes a right of use asset and a lease liability on the balance sheet. The right of use asset is measured at cost, which is made up of the measurement of the initial lease liability, any direct initial costs incurred by the Company, an estimate of any costs to dismantle and remove the asset at the end of the lease, and any lease payments made in advance of the lease commencement date.

The Company depreciates right of use assets on a straight-line basis from the lease commencement date to the earlier of the end of the useful life of the right of use asset or the end of the lease term. The Company assesses the right of use asset for impairment when such indicators exist.

At the commencement date the Company measured the lease liability at the present value of the lease payments unpaid at that date, discounted using the interest rate implicit in the lease if that rate is readily available or the Company's incremental borrowing rate. For the assessment of the lease entered into in 2020 the Company applied a rate of 7.5%.

Subsequent to initial measurement the liability will be reduced for payments and increased for interest. It is remeasured to reflect any reassessment or modification or is there are any changes to the repayment schedule.

1.7. Finance income and expenses

(i) Income

Interest income is calculated by applying the effective interest rate to the gross carrying amount of a financial asset except for financial assets that subsequently become credit impaired. For credit impaired financial assets, the effective interest rate is applied to the net carrying amount of the financial asset (after deduction of the loss allowance).

(ii) Expense

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period, to the net carrying amount on initial recognition.

1.8. Income tax expense

The tax expense for the period comprises current and deferred tax.

UK corporation tax is provided at amounts expected to be paid (or recovered) using the tax rates and laws that have been enacted or substantively enacted by the balance sheet date.

Deferred tax is recognised in respect of all temporary differences that have originated but not reversed at the balance sheet date where transactions or events that result in an obligation to pay more tax in the future or a right to pay less tax in the future have occurred at the balance sheet date. Temporary differences are differences between the Company's taxable profits and its results as stated in the financial statements that arise from the inclusion of gains and losses in tax assessments in periods different from those in which they are recognised in the financial statements.

A net deferred tax asset is regarded as recoverable and therefore recognised only to the extent that, on the basis of all available evidence, it can be regarded as more likely than not that there will be suitable taxable profits from which the future reversal of the underlying temporary differences can be deducted.

Deferred tax is measured at the average tax rates that are expected to apply in the periods in which the temporary differences are expected to reverse, based on tax rates and laws that have been enacted or substantively enacted by the balance sheet date. Deferred tax is measured on a non-discounted basis.

1.9. Property, plant and equipment

Property, plant and equipment is stated at cost less accumulated depreciation. Cost represents the cost of acquisition or construction, including the direct cost of financing the acquisition or construction until the asset comes into use.

Depreciation on property, plant and equipment is provided to allocate the cost less the residual value by equal instalments over their estimated useful economic lives of 3 years, once the asset is complete.

The expected useful lives and residual values of property, plant and equipment are reviewed on an annual basis and, if necessary, changes in useful life or residual value are accounted for prospectively.

1.10. Intangible assets

Goodwill represents the future economic benefits arising from a business combination that are not individually identified and separately recognised. Goodwill is carried at cost less accumulated impairment losses. Refer to note 1.18 for impairment testing procedures. Goodwill impairment losses are not reversible as explained in note 1.18 (ii).

Exclusivity rights acquired in a business combination that qualify for separate recognition are recognised as intangible assets at their fair value and subsequently assessed for impairment loss.

Costs associated with patent applications are capitalised in the year of spend and amortised over their estimated useful lives of 20 years on a straight-line basis commencing from the date of patent application. Any cost associated with the upkeep of a patent is amortised over the remaining useful life of that patent.

An internally generated intangible asset arising from development is only recognised where all of the following have been demonstrated: (i) the technical feasibility of completing the asset; (ii) the intention to complete the asset and the ability to use or sell it; (iii) the availability of resources to complete the asset; and (iv) the ability to reliably measure the cost attributable to the asset during its development.

<u>Research and development</u>
In all other instances research and development expenditure is recognised as an expense as incurred. Development costs previously recognised as an expense are not recognised as an asset in a subsequent period.

1.11. Other non-current assets

Other non-current assets represent investments in subsidiaries. The investments are carried at cost less accumulated impairment. Cost was determined using the fair value of shares issued to acquire the investment.

Financial assets
The Company classifies financial assets as loans and receivables within current assets, except for maturities greater than 12 months after the balance sheet date. These are classified as noncurrent assets. Assets are initially recognised at fair value plus transaction costs. Loans and receivables are subsequently carried at amortised cost using the effective interest rate method.

1.12. Contract costs

The Company recognises costs incurred in fulfilling contracts with customers that are directly associated with the contract as an asset if those costs are expected to be recoverable. Contract costs are amortised on a basis consistent with the transfer of goods and services to which the asset relates.

1.13. Trade and other receivables

Trade receivables are initially recognised at fair value. Subsequently they are carried at amortised cost less any provision for impairment.

1.14. Cash and cash equivalents

Cash and cash equivalents comprise cash balances and call deposits and are recognised and subsequently carried at fair value. For the purpose of presentation in the statement of cashflows, cash and cash equivalents include cash on hand, deposits held at call with financial institutions, other short term, highly liquid investments with original maturities of three months or less that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value, and bank overdrafts. Bank overdrafts are shown within borrowings in current liabilities in the balance sheet.

1.15. Trade and other payables

Trade payables are obligations to pay for goods or services that have been acquired in the ordinary course of business from suppliers. Trade and other payables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest method.

1.16. Financial assets and liabilities

i) Financial assets

Loans receivable, where forward receivables comprise solely of payments of principal and interest, are measured at amortised cost. Interest income from these financial assets is included in finance income using the effective interest rate method.

ii) Financial liabilities

Loans payable are financial obligations arising from funding received and used to support the operational costs of the Company. These are initially recognised at fair value. Loans are subsequently carried at amortised cost using the effective interest method.

1.17. Adoption of new and revised standards

i) New and amended standards adopted by the Company

New and amended standards for the current period and effective from 1 January 2021 have been applied by the Company, including:

Covid-19 Related Rent Concessions (Amendment to IFRS 16)
Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39 and IFRS 7)

There are no transition adjustments relating to the adoption of these standards.

ii) Standards issued but not yet effective

Certain new accounting standards and interpretations have been published that are not mandatory for 31 December 2021 reporting periods and have not been adopted early by the Company. These standards are not expected to have a material impact on the entity in the current or future reporting periods and on foreseeable future transactions.

1.18. Impairment

(i) Goodwill

Goodwill and intangible assets that have an indefinite useful life are not subject to amortisation and are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired.

(ii) Other assets

At each balance sheet date, the carrying amounts of assets are reviewed to determine whether there is any indication that those assets have suffered an impairment loss. An impairment loss is recognised whenever the carrying amount of an asset or its cash generating unit exceeds its recoverable amount. Impairment losses recognised in respect of cash generating units are allocated first to reduce the carrying amount of any goodwill allocated to cash generating units and then to reduce the carrying amount of the other assets in the unit on a pro-rata basis. A cash generating unit is the group of assets identified on acquisition that generate cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The recoverable amount of assets or cash generating units is the greater of their fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. For an asset that does not generate largely independent cash inflows, the recoverable amount is determined for the cash generating unit to which the asset belongs.

(iii) Reversals of impairments

An impairment loss in respect of goodwill is not reversed. In respect of other assets, an impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount.

An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

1.19. Share based payments

Share based payments are made to employees and third parties and all are equity settled.

(i) Third party provision of services

a) Via issue of shares

Contractors receive remuneration in the form of share-based payments, whereby services are provided and settled by the issue of shares. The cost of equity settled transactions is determined at the fair value of the services provided, based upon invoiced amounts or formal agreements in place with suppliers.

b) Via issues of share warrants

The Company also issues share warrants to third parties in relation to services provided by suppliers. The cost of equity settled transactions is determined at the fair value of the services provided, based upon invoiced amounts or formal agreements in place with suppliers. Where no fair value of services can be directly obtained, the fair value at the grant date is determined using the Black and Scholes valuation model. At each reporting date the Company revises its estimates of the number of options that are likely to be exercised with any adjustment recognised in the income statement.

(ii) Directors and employees

c) Via issues of share options

The Company has issued share options to Directors and employees through approved and unapproved option plans. The fair value of options issued is determined at the date of grant and is recognised as an expense in the Income Statement. The fair value at the grant date is determined using the Black and Scholes valuation model. At each reporting date the Company revises its estimates of the number of options that are likely to be exercised with any adjustment recognised in the income statement.

Where share-based payments give rise to the issue of new share capital, the proceeds received by the Company are credited to share capital and share premium when the share entitlements are exercised.

1.20. Employee benefits

Liabilities for wages and salaries, including non-monetary benefits, annual leave and accumulating sick leave that are expected to be settled wholly within 12 months after the end of the period in which the employees render the related service are recognised in respect of employees' services up to the end of the reporting period and are measured at the amounts expected to be paid when the liabilities are settled. The liabilities are included within creditors in the balance sheet.

For defined contribution pension plans, the company pays contributions to publicly or private administered pension insurance plans on a mandatory, contractual or voluntary basis. The Company has no further payment obligations once the contributions have been paid. The contributions are recognised as employee benefit expense when they are due. Prepaid contributions are recognized as an asset to the extent that a cash refund or a reduction in the future payments is available.

The Company does not contribute to any defined benefit pension plans.

1.21. Segmental reporting

An operating segment is a component of the Company:

- that engages in business activities from which it may earn revenues and incur expenses (including revenues and expenses relating to transactions with other components of the Company);
- whose operating results are reviewed regularly by the Company's chief decision maker to make decisions about resources to be allocated to the segment and assess its performance; and
- for which discrete financial information is available.

The Company considers it has one business segment, being a UK based development company intending to license its technology to projects in the UK and internationally.

2. Revenue

	2021	2020
	£	£
Engineering and related services	**628,859**	100,000
Exclusivity fees	**71,829**	-
Other	**747**	-
	701,435	100,000

During the year, the Company billed for engineering work carried out on projects. All revenue generated has arisen in the UK.

3. Employee costs

	2021	2020
	£	£
Directors' fees	**274,575**	332,746
Wages and salaries	**178,710**	11,473
Social security costs	**48,835**	35,659
Pensions	**3,960**	17,000
	506,080	396,878

The number of average monthly employees (including Directors) are as follows:

	2021	2020
Management	**7**	6
Operations	**3**	-
Total	**10**	6

The total number of employees as at 31 December 2021 (including Directors) was 9 (2020: 11) comprising 5 in management and 4 in operations (2020: 8 in management, 3 in operations). All Directors are classed as management.

Notes to the Accounts for the Year Ended 31 December 2021

4. Administrative expenses

Included in administrative expenses are:	2021 £	2020 £
Lease charges	**-**	14,250
Research and development costs	**585,195**	407,071
Amortisation	**5,049**	2,170
Depreciation	**4,199**	259
Depreciation – right of use asset	**24,625**	2,052
Share based payments	**34,829**	40,634
Foreign exchange (gains)/losses	**(429)**	-
Auditor's remuneration for audit services:		
Fees payable to the Company's auditor for the audit of the Company's annual financial statements	**25,000**	20,000
Fees payable to the Company's auditor and their associates for other services:	**1,000**	1,000
Non-audit fees paid to auditors		
Taxation advisory and compliance services	**10,000**	13,850
Other services	**-**	5,000

There are no other fees paid to the Company's auditor other than those disclosed above.

5. Share of associate

	2021 £	2020 £
Share of profits	**50,062**	-
	50,062	-

The Company acquired a 48.39% stake in Engsolve on 12 August 2021 as explained in note 12. The above result represents the Company's share of the associate's profits arising since acquisition. The Company's share of the associate's tax is included in the tax charge (see note 8).

6. Goodwill impairment

	2021 £	2020 £
Goodwill impairment	**-**	14,192,699
	-	14,192,699

In 2020, Goodwill of £57,152,699 was recognised on the acquisition and hive up of Waste2tricity Limited. An independent fair value assessment is commissioned by the Directors on the carrying value at each balance sheet date as explained in note 10. Impairments are made based upon the results of those assessments.

7. Net finance income/(cost)

	2021 £	2020 £
Loan interest receivable	**15,286**	-
Other interest receivable	**47**	83
Bank and other interest payable	**(4,346)**	(3,115)
	10,987	(3,032)

8. Income tax and deferred tax

As the Company incurred a loss, no current tax is payable (2020: £nil). In addition, as there is no certainty about future profits from which accumulated tax losses could be utilised, accordingly no deferred tax asset has been recognised. The Company submitted a claim for research and development tax credits during the year amounting to £135,657 (2020: £138,497) which has been recognised in the accounts. Accumulated tax losses amount to an estimated £17.0 million (2020: £12.9 million) and reflect tax losses submitted in tax returns and arising during the period less any relief taken for research and development credits. The tax credit rate is lower (2020: lower) than the standard rate of tax. Differences are explained below.

Current tax	**2021**	2020
	£	£
Loss before taxation	**1,996,641**	15,976,238
Tax credit at standard UK corporation tax rate of 19% (2019: 19%)	**379,362**	3,035,485
Effects of:		
Goodwill impairment not deductible for tax purposes	**-**	(2,696,613)
Expenses not deductible for tax purposes	**(9,837)**	(63,003)
Allowable deduction on exercise of share options	**445,750**	-
Research and development tax credits claimed	**135,657**	138,497
Deferred tax asset not recognised	**(824,787)**	(275,869)
Income tax credit	**126,145**	138,497

9. Loss per share

	2021	2020
Total comprehensive loss (£)	**(1,870,496)**	(15,837,741)
Weighted average number of shares	**3,918,497,299**	2,782,088,358
Loss per share in pence	**(0.05)**	(0.57)
Diluted loss per share in pence	**(0.05)**	(0.57)

For the year ended 31 December 2021, 1,062,692 of the options in issue and 9,090,910 of the warrants in issue were excluded from the diluted loss per share calculation due to being anti-dilutive.

For the year ended 31 December 2020, 6,000,000 of the options in issue and 376,839,329 of the warrants in issue were excluded from the diluted loss per share calculation due to being anti-dilutive.

There have been no shares issued since the year end.

10. Intangible fixed assets

	Goodwill	Exclusivity rights	Patent costs	Total
	£	**£**	**£**	**£**
Cost				
At 1 January 2020	-	-	16,514	16,514
Additions – hive up of W2T	57,152,699	500,000	-	57,652,699
Additions	-	-	45,238	45,238
At 31 December 2020	57,152,699	500,000	61,752	57,714,451
Accumulated amortisation & impairment				
At 1 January 2020	-	-	-	-
Amortisation charge for the year	-	-	2,170	2,170
Impairment charge for the year	14,192,699	-	-	14,192,699
At 31 December 2020	14,192,699	-	2,170	14,194,869
Carrying amount				
At 31 December 2020	42,960,000	500,000	59,582	43,519,582
Cost				
At 1 January 2021	57,152,699	500,000	61,752	57,714,451
Additions	-	-	39,965	39,965
At 31 December 2021	57,152,699	500,000	101,717	57,754,416
Accumulated amortisation & impairment				
At 1 January 2021	14,192,699	-	2,170	14,194,869
Amortisation charge for the year	-	-	5,049	5,049
At 31 December 2021	14,192,699	-	7,219	14,199,918
Carrying amount				
At 31 December 2021	42,960,000	500,000	94,498	43,554,498

Notes to the Accounts for the Year Ended 31 December 2021

Goodwill acquired in 2020 arose on the acquisition and hive up of Waste2Tricity Limited. It was considered attributable to the Company's DMG technology, which is intended to be licensed on a project-by-project basis to generate income to the Company over the lifetime of each project.

The recoverable amount of goodwill at the balance sheet date was assessed via independent third-party valuation. For 2021, the Valuer assessed goodwill above its carrying value resulting in no impairment (2020: £14.2m). The valuer took note of the ICAEW Corporate Finance Faculty Best Practice Guideline April 2008 and applied a discounted cashflow approach, supported by the International Private Equity and Venture Capital Guidelines of December 2018.

The key assumptions made by the valuer were:

the expected roll out of the technology over 5 years following the delivery of the Protos project based on probability adjusted scenarios;

that the roll out will not be significantly impacted by competing technologies;

that the Company and roll out developer have the capability to scale up where necessary to deliver the assumed roll out pipeline;

the expected operating life of projects from which the Company will earn licence revenues;

the expected licence fees arising per project based upon agreements with Peel NRE;

the expected cost of services to support annual licence fee income estimated by the Company based upon current draft project agreements;

applying a discount rate to cashflow of 10% assessed by review of market survey reports of discount rates for projects within similar and competing sectors which was considered to provide a reasonable estimate of a weighted average cost of capital for a company benefiting from the assumed roll out.

Changes to the above assumptions would impact the valuation assessment.

The Directors believe that key sensitivities in the valuation are as follows:

(i) The probability adjusted roll out scenario assumed by the valuer. The valuer attributes probabilities to different roll out scenarios based upon a review of information provided by the Company and Peel NRE. This takes account of expected timelines and the average number of systems expected to be deployed at each site. The rollout assumptions made by the valuer averages out at 17.85 systems (2020: 16 systems). Based upon the valuer's assumptions, an incremental system would increase or decrease the valuation by c £2.3m.

(ii) The discount rate applied to the cashflows. An increase in the discount rate of 1% would impact the Valuer's valuation assessment by £4.4m (2020: £4.1m).

(iii) Inflation – an increase in the inflation assumption above that assumed in the valuer's model would result in adjustment to the licence fees and result in an increase the valuer's valuation.

The Directors have not accounted for the possibility of any onerous obligations arising within the service contracts from which licence fees will be earnt as there is no reason to expect that these will arise at this stage in the business life cycle.

Exclusivity rights arose on the acquisition and hive up of Waste2Tricity Limited. They are subject to an Option Agreement between the Company and Peel NRE. No impairment is considered to have arisen.

11. Tangible fixed assets

	Right of use asset Land and buildings £	Property, plant and equipment £	Fixtures and fittings £	Total £
Cost				
At 1 January 2020	-	6,868	-	6,868
Additions	49,250	5,852	-	55,102
At 31 December 2020	49,250	12,720	-	61,970
Accumulated depreciation				
At 1 January 2020	-	6,639	-	6,639
Charge for the year	2,052	259	-	2,311
At 31 December 2020	2,052	6,898	-	8,950
Carrying amount				
At 31 December 2020	47,198	5,822	-	53,020
Cost				
At 1 January 2021	49,250	12,720	-	61,970
Additions	-	7,693	1,203	8,896
At 31 December 2021	49,250	20,413	1,203	70,866
Accumulated depreciation				
At 1 January 2021	2,052	6,898	-	8,950
Charge for the year	24,625	3,807	392	28,824
At 31 December 2021	26,677	10,705	392	37,774
Carrying amount				
At 31 December 2021	22,573	9,708	811	33,092

12. Investments

	2021 £ Subsidiaries	**2021 £ Associates**	**2021 £ Other**	2020 £ Subsidiaries	2020 £ Associates	2020 £ Other
Cost or carrying value at 1 January	**48,947,156**	**49**	**-**	48,947,155	-	-
Additions	**-**	**99,990**	**-**	57,497,611	49	-
Goodwill recognised	**-**	**-**	**-**	(57,152,699)	-	-
Distributions	**-**	**-**	**-**	(344,911)	-	-
Share of associate's net result	**-**	**40,550**	**-**	-	-	-
Transfers	**-**	**(49)**	**49**	-	-	-
Disposals	**(1)**	**-**	**-**	-	-	-
Cost or carrying value 31 December	**48,947,155**	**140,540**	**49**	48,947,156	49	-
Provision at 1 January	**(48,947,154)**	**-**	**-**	(48,947,154)	-	-
Additions	**-**	**-**	**(49)**	-	-	-
Disposals	**-**	**-**	**-**	-	-	-
Accumulated impairment	**(48,947,154)**	**-**	**(49)**	(48,947,154)	-	-
Carrying value	**1**	**140,540**	**-**	2	49	-

(i) Subsidiaries

Investments relate to costs of investments in subsidiary undertakings, namely in Powerhouse Energy, Inc, Pyromex AG and Powerhouse Energy UK Limited. Powerhouse Energy, Inc is incorporated in California in the United States of America and the Company holds 100 per cent of the common stock and voting rights of the subsidiary. Pyromex AG is based in Zug, Switzerland and the Company holds 100 per cent of the shares and voting rights of the subsidiary. Powerhouse Energy UK Limited is a wholly owned UK based dormant company.

The registered address of Powerhouse Energy Inc is 145 N Sierra Madre Blvd Pasadena, CA 91107, USA.
The registered address of Pyromex AG is Chollerstrasse 3, CH-6300, Zug, Switzerland.

The registered address of Powerhouse Energy UK Limited is 15 Victoria Mews, Mill Field Road, Cottingley Business Park, Bingley BD16 1PY.

Waste2Tricity Limited, which was acquired in 2020, was incorporated in the UK and on 1 January 2021 the Company owned 100 per cent of its common stock and voting rights. It was dissolved on 1 June 2021.

(ii) Acquisition of interest in Engsolve Limited

On 12 August 2021, the Company acquired 48.39% of the share capital of Engsolve Limited for cash consideration of £99,990. Engsolve Limited is incorporated and operates in the UK. Summary financial information of Engsolve Limited at acquisition and balance sheet dates is provided below:

	12 Aug 2021 £	31 Dec 2021 £
Summarised balance sheet		
Fixed assets	6,965	7,848
Cash and cash equivalents	221,037	317,423
Other current assets	117,268	99,845
Current liabilities	(142,939)	(138,981)
Net assets	202,331	286,135
Company share	48.39%	48.39%
Share of net assets	97,902	138,452

Summarised income statement – post acquisition	
Revenue	402,122
Profit from continuing operations	83,804
Profit from discontinued operations	-
Other comprehensive income	-
Total comprehensive income	83,804
Company share of pre-tax profit	50,062
Company share of tax	(9,512)
Dividends received	-

The Company incurred advisory costs associated with the acquisition which have been expensed in the year.

(iii) Other investments

During 2021, the Company's investment in Waste2Tricity International (Thailand) Limited was transferred into a new Thailand based entity, Altec Energy Limited ("Altec"). The Company has not taken part in fund raises investment made by Altec subsequent to its formation such that the Company's interest has reduced to 33.8% as at 31 December 2021 and to 30.4% since year end. Due to the passive nature of the Company's involvement, the interest is held in other investments.

13. Loans receivable

	2021 £	2020 £
Loans advanced	**1,150,000**	-
Accrued interest	**15,286**	-
	1,165,286	-

On 12 May 2021, the Company agreed to provide a loan facility for up to £3.8m to Protos Plastics to Hydrogen No 1 Limited, the Peel NRE special purpose vehicle and owner of the development of the Protos plant. The loan is provided to support the plant construction and secure long lead time items and project design services. The loan facility was made available for an initial 6-month period, accruing interest daily at the Bank of England base rate plus 2%. The availability period for the facility has subsequently been extended to 31 August 2022.

14. Contract costs

	2021 £	2020 £
Contract costs	**-**	14,550
	-	14,550

Contract costs assets relate to costs arising on engineering contracts where the company has not yet completed performance obligations which are typically met by the submission of reports, the transfer of data or on longer contracts via the completion of milestones in accordance with the relevant contract.

Notes to the Accounts for the Year Ended 31 December 2021

15. Trade and other receivables

	2021 £	2020 £
Trade receivables	**447,967**	-
Other receivables	**177,513**	158,126
Prepayments and accrued income	**338,168**	42,184
	963,648	200,310

16. Corporation tax

	2021 £	2020 £
Corporation tax recoverable	**155,227**	138,497
	155,227	138,497

17. Cash and cash equivalents

	2021 £	2020 £
Cash balances	**9,637,460**	3,464,475
	9,637,460	3,464,475

18. Trade and other payables: amounts falling due within one year

	2021 £	2020 £
Trade payables	**144,105**	121,152
Lease liability	**23,455**	23,881
Other creditors and accruals	**238,955**	334,609
Other taxes	**156,642**	29,552
Pensions payable	**624**	-
	563,781	509,194

19. Trade and other payables: amounts falling due after one year

	2021 £	2020 £
Lease liability	**-**	23,455
	-	23,455

20. Financial assets and financial liabilities

Financial assets	2021 £	2020 £
Financial assets at amortised cost:		
- Trade receivables	**447,967**	-
- Other financial assets at amortised cost	**1,165,286**	-
- Cash and cash equivalents	**9,637,460**	3,464,475
	11,250,713	3,464,475

Financial liabilities	2021 £	2020 £
Liabilities at amortised cost		
- Trade payables	**144,105**	121,152
- Other creditors	**238,955**	334,609
- Payroll taxes	**156,642**	29,552
- Pensions payable	**624**	-
- Lease liabilities	**23,455**	47,336
	563,781	532,649

21. Leases

The Company has leased offices at the location of its research facility with the lease reflected in the accounts as a right of use asset and a lease liability. Payments are fixed and at the balance sheet date the lease has a further 11 months left to run. Information about leases for which the Company is a lessee is presented below:

21.1 Amounts recognised in the balance sheet

Right of use assets relate to leased properties that do not meet the definition of investment property and are presented within tangible fixed assets per Note 11.

	2021 £	2020 £
Right of use assets		
Balance at 1 January	**47,198**	-
Additions to right of use assets	**-**	49,250
Depreciation charge for the year	**(24,625)**	(2,052)
Balance at 31 December	**22,573**	47,198

	2021 £	2020 £
Future minimum rentals payable are as follows:		
Amounts payable:		
Within one year	**24,310**	26,520
Later than one year and not later than five years	**-**	24,310
Total gross payments	**24,310**	50,830
Impact of finance expenses	**(855)**	(3,494)
Carrying value of liability	**23,455**	47,336

21.2 Amounts recognised in income statement

	2021 £	2020 £
Depreciation charge	**24,625**	2,052
Interest on lease liabilities	**2,638**	296
Expenses relating to short term leases	**-**	14,250
	27,263	16,598

21.3 Amounts recognised in statement of cashflows

	2021 £	2020 £
Interest on lease liabilities	**2,638**	296
Repayment of lease principal	**23,882**	1,913
Expenses relating to short term leases	**-**	14,250
Total cash outflow for leases	**26,520**	16,459

Notes to the Accounts for the Year Ended 31 December 2021

22. Share capital

(i) Number of shares

	0.5 p Ordinary shares	0.5 p Deferred shares	4.5 p Deferred shares	4.0 p Deferred shares
Shares at 1 January 2020	1,961,788,425	388,496,747	17,373,523	9,737,353
Issue of shares	1,753,312,268	-	-	-
Shares at 31 December 2020	**3,715,100,693**	**388,496,747**	**17,373,523**	**9,737,353**
Issue of shares	242,313,442	-	-	-
Shares at 31 December 2021	**3,957,414,135**	**388,496,747**	**17,373,523**	**9,737,353**

(ii) Value in £

	0.5 p Ordinary shares	0.5 p Deferred shares	4.5 p Deferred shares	4.0 p Deferred shares	Share Capital
	£	£	£	£	£
At 1 January 2020	9,808,942	1,942,483	781,808	389,494	12,922,727
Issue of shares	8,766,561	-	-	-	8,766,561
At 31 December 2020	**18,575,503**	**1,942,483**	**781,808**	**389,494**	**21,689,288**
Issue of shares	1,211,568	-	-	-	1,211,568
At 31 December 2021	**19,787,071**	**1,942,483**	**781,808**	**389,494**	**22,900,856**

All ordinary shares of the Company rank pari-passu in all respects.

The deferred shares do not carry any voting rights or any entitlement to attend general meetings of the Company. They carry only a right to participate in any return of capital once an amount of £100 has been paid in respect of each ordinary share.

On 29 January 2020, the Company issued 52,228,139 ordinary shares of 0.5p each in the Company ("Ordinary Shares") to various service providers for the settlement of fees. Of these new Ordinary Shares, 47,732,518 were issued at 0.5p and 4,495,621 were issued at 0.717p in accordance with terms agreed.

On 29 January 2020, the Company issued 5,500,000 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £27,500.

On 28 February 2020, the Company issued 25,440,350 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £127,202.

On 19 March 2020, the Company issued 3,750,000 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £18,750.

On 7 April 2020, the Company issued 7,800,000 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £39,000.

Notes to the Accounts for the Year Ended 31 December 2021

On 16 April 2020, the Company issued 2,500,000 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £12,500.

On 22 April 2020, the Company issued 5,500,000 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £27,500.

On 27 May 2020, the Company issued 4,100,000 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £20,500.

On 9 June 2020, the Company issued 2,003,502 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £10,017.

On 23 June 2020, the Company issued 1,750,000 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £8,750.

On 10 July 2020, the Company issued 5,300,000 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £26,500.

On 26 June 2020, the Directors of the Company issued a circular to shareholders detailing the proposed acquisition of the whole of the share capital of Waste2Tricity Limited on a share for share basis. The acquisition was approved by shareholders at a General Meeting held on 14 July 2020 and the Company issued 1,437,440,277 ordinary shares of 0.5p on 15 July 2020 to complete the transaction.

On 15 September 2020, the Company issued 200,000,000 ordinary shares of 0.5p each in the Company at a price of 2.5p each, totalling £5,000,000 before issue costs.

On 21 January 2021, the Company issued 181,818,182 ordinary shares of 0.5p each ("Ordinary shares") in the Company at a price of 5.5p each amounting to £10,000,000 before issue costs. The Company also granted 9,090,910 warrants to subscribe for Ordinary Shares at the issue price of 5.5p to its broker.

On 26 January 2021, the Company issued 4,895,260 ordinary shares of 0.5p each in the Company further to the exercise of warrants for proceeds amounting to £122,382.

On 9 February 2021, the Company issued 6,000,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £36,000.

On 24 February 2021, the Company issued 1,600,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £12,000.

On 4 March 2021, the Company issued 6,000,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £45,000.

On 17 March 2021, the Company issued 500,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £3,000.

On 19 April 2021, the Company issued 6,000,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £36,000.

On 22 July 2021, the Company issued 8,000,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £48,000.

On 19 August 2021, the Company issued 13,500,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £81,000.

On 7 October 2021, the Company issued 7,000,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £42,000.

On 9 December 2021, the Company issued 7,000,000 ordinary shares of 0.5p each in the Company further to the exercise of options for proceeds amounting to £42,000.

Notes to the Accounts for the Year Ended 31 December 2021

23. Other reserves

	Merger relief reserve £	Share premium account £
As at 1 January 2020	-	48,778,651
Issue of shares	50,310,410	4,048,720
Share issue costs	-	(232,437)
Reserve transfer – goodwill impairment	(14,192,699)	-
At 31 December 2020	**36,117,711**	**52,592,934**
Issue of shares	-	9,519,495
Share issue costs	-	(822,719)
At 31 December 2021	**36,117,711**	**61,291,710**

24. Accumulated deficit

	2021 £	2020 £
As at 1 January	**(63,544,097)**	(61,714,360)
Loss for the year	**(1,870,496)**	(15,837,741)
Share based payments	**190,287**	(184,695)
Reserve transfer – goodwill impairment	**-**	14,192,699
At 31 December	**(65,224,306)**	(63,544,097)

25. Share based payments

The expense recognized for share-based payments during the year is shown in the following table:

	2021 £	2020 £
Share based payment charge recognised in Income Statement		
Expense arising from equity-settled share-based payment transactions:		
- Share options for Directors and employees	**34,829**	8,399
- Shares issued for third party services	**-**	32,235
Total share-based payment charge in Income Statement	**34,829**	40,634
Share based payment charge recognised in Share Premium Account		
Warrants for third party services	**419,138**	84,532
Total share-based payment charge in Share Premium Account	**419,138**	84,532
Total share-based payment charges recognised	**453,967**	125,166
Other share-based payment movement		
Exercise of share options by Directors and employees	**(186,982)**	-
Exercise of warrants for third party services	**(76,698)**	(38,963)
Shares issued for third party services	**-**	(270,898)
Total share-based payment	**190,287**	(184,695)

There were no liabilities recognised in relation to share based payment transactions.

25.1 Share options for Directors and employees

The Company has put in place various options schemes for Directors and employees as follows:

On 8 December 2014, the Company granted 11,000,000 options over ordinary shares to the Board. The options may be exercised between the grant date and the tenth anniversary of the grant date and will lapse if not exercised during that period.

On 7 March 2016, the Company granted 15,000,000 options over ordinary shares to the Board. The options may be exercised between the grant date and the fifth anniversary of the grant date and will lapse if not exercised during that period.

On 6 March 2018, the Company granted 32,100,000 options over ordinary shares to employees, including a Board member, under the Powerhouse Energy Group PLC 2018 EMI Option Scheme. The options vest to the employees over a period of 24 months and are exercisable between the relevant vesting dates and the tenth anniversary of the grant date and will lapse if not exercised during that period. These options had all been exercised or forfeited by 31 December 2019.

On 6 March 2018, the Company granted 60,000,000 options over ordinary shares to Board members under the Powerhouse Energy Group PLC 2018 non-employee Share Option Plan. The options vest to the Board members over a period of 24 months and are exercisable between the relevant vesting dates and the tenth anniversary of the grant date and will lapse if not exercised during that period.

On 23 April 2021, the Company granted 1,773,239 share options in ordinary shares of 0.5p each in the Company to two Directors of the Company in lieu of part or all of their fees to which they are entitled. The options have an exercise price of 6.3p each and lapse 3 years from the date of grant.

The movement of share options in the year are as follows:

	2021 Number	**2021 WAEP (pence)**	2020 Number	2020 WAEP (pence)
Outstanding at 1 January	**75,000,000**	**0.77**	75,000,000	0.77
Granted during the year	**1,773,239**	**6.3**	-	-
Forfeited during the year	**(5,110,547)**	**2.55**	-	-
Exercised during the year	**(55,600,000)**	**0.62**	-	-
Outstanding at 31 December	**16,062,692**	**1.33**	75,000,000	0.77
Exercisable at 31 December	**16,062,692**	**1.33**	75,000,000	0.77

The weighted average remaining contractual life for the share options outstanding as at 31 December 2021 was 5.3 years (2020: 6.1 years)

1,773,239 share options were granted during the year (2020: Nil).

The range of exercise prices for options outstanding at the year-end was 0.6p to 6.3p (2020: 0.6p to 2.5p).

The number of options outstanding at 31 December 2021 and the movements in the year are as follows:

Date of grant	**Granted**	**Share price on grant**	**Exercised**	**Forfeited**	**At 31 Dec 2021**	**Exercise price**	**Exercise period**
8 Dec 2014	6,000,000	1.875p	-	(3,000,000)	3,000,000	2.5p	9 Dec 2014 until 8 Dec 2024
7 Mar 2016	9,000,000	0.55p	(7,600,000)	(1,400,000)	-	0.75p	8 Mar 2016 until 7 Mar 2021
6 Mar 2018	60,000,000	0.57p	(48,000,000)	-	12,000,000	0.6p	7 Mar 2018 until 6 Mar 2028
22 Apr 2021	1,773,239	5.58p	-	(710,547)	1,062,692	6.3p	23 Apr 2021 until 22 Apr 2024
Total	76,773,239		(55,600,000)	(5,110,547)	16,062,692		

Of the 1,062,692 options granted on 22 April 2021 which were outstanding on 31 December 2021, 481,337 have been forfeited since the year end.

The estimated fair value of the options issued was calculated by applying the Black-Scholes option pricing model. The assumptions used in the calculation were as follows:

	8 December 2014	**6 March 2018**	**22 April 2021**
Options in issue 31 December 2021	3,000,000	12,000,000	1,062,692
Exercise price	2.5p	0.6p	6.3p
Expected volatility	127.56%	70.00%**	214.8%**
Contractual life	10 years	10 years	3 years
Risk free rate	2%	1.49%	0.15%
Estimated fair value of each option	1.79p	0.32p*	3.87p*

* the calculation applies a 25% discount for small companies
** expected volatility based on historic volatility at the point of grant.

Notes to the Accounts for the Year Ended 31 December 2021

25.2 Warrants for third party services

The Company has issued warrants in respect of services provided by consultants as part of their service arrangements. It has also issued warrants to participating shareholders in respect of certain fund raises. No share-based payment charge is recognised for warrants issued to participating shareholders as they are outside of the scope of IFRS 2.

Details of warrants which have been issued during the year are as follows:

On 15 September 2020, the Company granted 5,395,260 warrants to the Company's broker as part of its service arrangement in relation to the fund raise arising on that date. The options may be exercised between the grant date and the third anniversary of the grant date and will lapse of not exercised during that period. At the date of grant the share price was 3.3p and the warrants have an exercise price of 2.5p per share.

On 21 January 2021, the Company granted 9,090,910 warrants to the Company's broker as part of its service arrangement in relation to the fund raise arising on that date. The options may be exercised between the grant date and the third anniversary of the grant date and will lapse of not exercised during that period. At the date of grant the share price was 8.6p and the warrants have an exercise price of 5.5p per share.

Warrants in respect of services provided:

The movement of warrants issued for share-based payments in the year are as follows:

	2021 Number	**2021 WAEP (pence)**	2020 Number	2020 WAEP (pence)
Outstanding at 1 January	**5,395,260**	**2.5**	17,740,350	0.5
Granted during the year	**9,090,910**	**5.5**	5,395,260	2.5
Forfeited during the year	**-**	**-**	-	-
Exercised during the year	**(4,895,260)**	**2.5**	(17,740,350)	0.5
Outstanding at 31 December	**9,590,910**	**5.3**	5,395,260	2.5
Exercisable at 31 December	**9,590,910**	**5.3**	5,395,260	2.5

The weighted average remaining contractual life for the share warrants outstanding as at 31 December 2021 was 2.1 years (2020: 2.7 years)

The weighted average fair value of share warrants granted in the year was 4.6p (2020: 1.57p).

The range of exercise prices for warrants outstanding at the year-end was 2.5p to 5.5p (2020: 2.5p).

The number of warrants, which have been included for share-based payment purposes, outstanding at 31 December 2021 and the movements in the year are as follows:

Date of grant	**Granted**	**Share price on grant**	**Exercised**	**Forfeited**	**At 31 Dec 2021**	**Exercise price**	**Exercise period**
15 Sep 2020	5,395,260	3.3p	(4,895,260)	-	500,000	2.5p	16 Sep 2020 until 15 Sep 2023
21 Jan 2021	9,090,910	8.6p	-	-	9,090,910	5.5p	22 Jan 2021 until 21 Jan 2024
Total	**14,486,170**		**(4,895,260)**	**-**	**9,590,910**		

The Company is required to assess the fair value of instruments issued in respect of services received, with such value charged to the Income Statement. The estimated fair value of the warrants issued during the year was calculated by applying the Black-Scholes option pricing model. The assumptions used in the calculation were as follows:

Warrants issued for services	15 Sep 2020	21 Jan 2021
In issue 31 December 2021	500,000	9,090,910
Exercise price	2.5p	5.5p
Expected volatility*	92.10%	161.6%
Contractual life	3 years	3 years
Risk free rate	0.07%	(0.07%)
Estimated fair value of each option	1.57p	4.6p

* expected volatility based on historic volatility at the point of grant.

Warrants issued to participating shareholders

Warrants issued to participating shareholders are outside the scope of IFRS 2 and no share-based payment charges have been recognised on them. On initial recognition the warrants' cost was deducted from equity as it represents the cost of shares issued to investors. As the agreements had a fixed-for-fixed requirement, they are also recognised as equity at the same time. As such, there is £nil net impact on equity and has not been included in the statement of changes in equity.

The number of warrants issued to participating shareholders, which have not been included for share-based payment purposes, outstanding at 31 December 2021 and the movements in the year are as follows:

Date of grant	Granted	Share price on grant	Exercised	Forfeited	At 31 Dec 2021	Exercise price	Exercise period
15 Sep 2020	371,510,069	3.3p	-	-	371,510,069	2.75p	16 Sep 2020 until 15 Sep 2022
Total	**371,510,069**		**-**	**-**	**371,510,069**		

The estimated fair value of the warrants issued was calculated by applying the Black-Scholes option pricing model. The assumptions used in the calculation were as follows:

Warrants issued to participating shareholders	15 Sep 2020
In issue 31 December 2021	371,510,069
Exercise price	2.75p
Expected volatility*	106.20%
Contractual life	2 years
Risk free rate	0.04%
Estimated fair value of each option	1.46p

* expected volatility based on historic volatility at the point of grant.

All warrants

The number of all warrants outstanding at 31 December 2021 and the movements in the year are as follows:

Date of grant	Granted	Share price on grant	Exercised	Forfeited	At 31 Dec 2021	Exercise price	Exercise period
15 Sep 2020	5,395,260	3.3p	(4,895,260)	-	500,000	2.5p	16 Sep 2020 until 15 Sep 2023
15 Sep 2020	371,510,069	3.3p	-	-	371,510,069	2.75p	16 Sep 2020 until 15 Sep 2022
21 Jan 2021	9,090,910	8.6p	-	-	9,090,910	5.5p	22 Jan 2021 until 21 Jan 2024
Total	**385,996,239**		**(4,895,260)**	**-**	**381,100,979**		

25.3 Share issue third party services

In 2020, the Company issued shares to settle services to some of its service providers. The fair value of the share-based payments charge was based on invoiced amounts or amounts agreed to be paid under a formal agreement of the Company.

26. Material risks

The Company is subject to various risks relating to political, economic, legal, social, industry, business and financial conditions. Risk assessment and evaluation is an essential part of the Company's planning and an important aspect of the Company's internal control system. The Company's approach to these risks is detailed in the Strategic Report.

Notes to the Accounts for the Year Ended 31 December 2021

27. Directors' remuneration and share interests

The Directors who held office at 31 December 2021 had the following interests, including any interests of a connected party in the ordinary shares of the Company:

	Number of ordinary shares of 0.5p each	Percentage of voting rights
Keith Riley	12,128,986	<0.5
James John Pryn Greenstreet	1,840,000	<0.1

The remuneration of the Directors of the Company paid or payable for the year or since date of appointment, if later, to 31 December 2021 is:

	2021 £ Salary/Fee	**2021 £ Pension**	**2021 £ Share based payments**	**2021 £ Other**	**2021 £ Total**	2020 £ Total
Tim Yeo	**92,444**	**-**	**-**	**35,500**	**127,944**	27,004
David Ryan	**97,996**	**-**	**-**	**-**	**97,996**	196,856
William Cameron Davies	**7,500**	**-**	**-**	**-**	**7,500**	54,421
Nigel Brent Fitzpatrick	**-**	**-**	**-**	**-**	**-**	26,868
James John Pryn Greenstreet	**30,000**	**-**	**-**	**-**	**30,000**	31,061
Allan Vlah	**15,000**	**-**	**22,500**	**-**	**37,500**	13,306
Kirsten Gogan	**23,468**	**-**	**-**	**-**	**23,468**	7,500
Keith Riley	**8,167**	**-**	**-**	**-**	**8,167**	-
Mark Berry	**-**	**-**	**17,500**	**-**	**17,500**	1,129
Total	**274,575**	**-**	**40,000**	**35,500**	**350,075**	358,145

Total remuneration includes share-based payments arising from the issue of options amounting to £40,000 (2020: £8,399). There have been no awards of shares to Directors under long term incentive plans during the year.

The Directors' social security costs for the year amounted to £29,965 (2020: £34,282) resulting in a total remuneration expense of £380,040 (2020: £392,427).

Prior to their resignations from the Board, Tim Yeo, William Cameron Davies, James John Pryn Greenstreet, Allan Vlah, Kirsten Gogan and Mark Berry had service contracts that could be terminated by the provision of three months' notice. David Ryan had a service contract that could be terminated by the provision of six months' notice.

James John Pryn Greenstreet and Keith Riley have service contracts which can be terminated by providing three months' written notice.

Rivermill Partners Limited, a company wholly owned by Tim Yeo and his associates, provided executive corporate management services during the year the value of which is included in the above remuneration. These services are contracted for on an annual basis as required.

Share options held by the Directors who served during the year are as follows:

	Options at 1/1/21	Forfeited	Exercised	Options at 31/12/21	Exercise price	Earliest and latest date of exercise
Options granted 8 Dec 2014						
Nigel Brent Fitzpatrick	3,000,000	(3,000,000)	-	-	2.5p	9/12/14 – 8/12/24
James John Pryn Greenstreet	3,000,000	-	-	3,000,000	2.5p	9/12/14 – 8/12/24

	Options at 1/1/21	Forfeited	Exercised	Options at 31/12/21	Exercise price	Earliest and latest date of exercise
Options granted 7 March 2016						
Nigel Brent Fitzpatrick	5,000,000	-	(5,000,000)	-	0.75p	8/3/16 – 7/3/21
James John Pryn Greenstreet	4,000,000	(1,400,000)	(2,600,000)	-	0.75p	8/3/16 – 7/3/21

	Options at 1/1/21	Forfeited	Exercised	Options at 31/12/21	Exercise price	Earliest and latest date of exercise
Options granted 6 March 2018						
William Cameron Davies	15,000,000	-	(15,000,000)	-	0.6p	1/10/18 – 6/3/28
Nigel Brent Fitzpatrick	12,000,000	-	(12,000,000)	-	0.6p	7/3/18 – 6/3/28
James John Pryn Greenstreet	12,000,000	-	-	12,000,000	0.6p	7/3/18 – 6/3/28
David Ryan	21,000,000	-	(21,000,000)	-	0.6p	7/3/18 – 6/3/28

	Options granted 22/4/21	Forfeited or not vested	Exercised	Options at 31/12/21	Exercise price	Earliest and latest date of exercise
Options granted 22 April 2021						
Mark Berry	998,098	(516,761)	-	481,377	6.3p	23/4/21 – 22/4/24
Allan Vlah	775,141	(193,786)	-	581,355	6.3p	23/4/21 – 22/4/24

Highest Paid Director
Tim Yeo was the highest paid Director in the year. There were no shares received or receivable by him in respect of qualifying services under long term incentive schemes.

28. Related parties

Rivermill Partners Limited, a corporate management services company, wholly owned by Tim Yeo and his associates, was a related party for the period during which Tim Yeo was a Director of the Company. During that period, Rivermill provided executive corporate management services amounting to £48,000 and the Company agreed a future termination settlement of £5,500 (2020: £7,800).

Engsolve Limited, an engineering solutions company, was a related party until 30 June 2021 due to a Director's family member being part of its key management personnel, and from 12 August 2021 when the Company acquired 48.39% of its share capital. Engsolve provided engineering services to the Company during the year amounting to £621,968 (2020: £249,555). Amounts outstanding at year end for services provided and included in these accounts amounted to £41,058 (2020: £43,841).

29. Events after the reporting period

On 28 February 2022, the Company announced that it had agreed to extend the availability period for the £3.8m Loan Facility it had made available to Protos Plastics to Hydrogen No 1 Limited, the Peel NRE special purpose vehicle and owner of the development of the Protos plant, the first proposed commercial application of the Company's DMG technology. The loan facility, provided to support the Protos plant development and construction and initially made available during 2021 for a 6-month period, had been previously extended until 28 February 2022. Loans made under the facility amount to £1.89m (£1.15m at 31 December 2021) and accrue interest daily set at the Bank of England base rate plus 2%.

On 24 May 2022, the Company announced its plan to create a UK based Global Technology and Innovation Centre (GTIC) which is expected to open in 2023. The Company has contracted £1.3m for the supply, installation and commissioning of equipment for the facility amounting to £1.3m.

30. Ultimate controlling party

There is no controlling party of the Company.