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SEAL OF THE FEDERAL COURT OF AUSTRALIA

Form 59
Rule 29.02(1)

Affidavit

No. of 2024

Federal Court of Australia

District Registry: New South Wales

Division: General

FORTESCUE LIMITED (ACN 002 594 872) and others

Applicants

ELEMENT ZERO PTY LIMITED (ACN 664 342 081) and others

Respondents

Affidavit of: **Mr Wayne McFaull**

Address: [redacted] Wynnum Qld, 4178

Occupation: Manager of Energy Technology Scale-up

Date: 1 May 2024

Contents

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Document number	Details	Paragraph	Page
6	Annexure “WM-5”, being copy of article, “Element Zero Raises US $10M Seed Funding to Scale up Green Materials Platform”, *Gulf Oil and Gas*, 17 January 2024	81	19
7	Annexure “WM-6”, being copy of “Our Technology” page of Element Zero’s website	82	20

I WAYNE MCFAULL, [redacted] Wynnum Qld, 4178, Chartered Engineer, Manager of Energy Technology Scale-up, affirm:

1. I am employed by the Third Applicant. I am a specialised engineer in the mining and energy sector.

2. In this affidavit I refer to the Applicants collectively as **Fortescue**.

3. My present role is to oversee and project manage accelerated plant design and construction within mineral processing research and development projects being undertaken by Fortescue. I set out my qualifications and experience at **Part A**, below.

4. I am authorised to make this affidavit on Fortescue’s behalf.

5. The evidence I give in this affidavit is based on my personal knowledge, unless stated otherwise, or the business records of Fortescue to which I have had access in the course of my employment and which I have read and identified where relevant. Where my evidence is provided on information and belief, I identify the source of that information and I believe it to be true and correct. My opinions set out in this affidavit are wholly or substantially based on my specialised knowledge and experience gained from the training, study and experience set out in **Part A**, below.

6. In this declaration, I refer to documents in each case by a reference based on my initials, for example **Annexure “WM-1”**, **“WM-2”**, and so on. In each case, the particular document or item is produced and shown to me and marked as I have described at the time of making my declaration.

7. In this affidavit, I give the following evidence:

   (a) I describe my background and expertise (**Part A)**.

   (b) I provide a general description of mineral processing R&D projects and the typical phases involved in developing a Pilot Plant (**Part B**).

   (c) I outline the time, money and resources Fortescue has spent on its Process R&D Project for the purification of iron ore using direct electrochemical reduction (**Part C**).

   (d) I give my opinion regarding the likely features of the Element Zero’s Pilot Plant and I compare Fortescue’s and Element Zero’s plants (**Part D**).

(e) I give my opinion in relation to Element Zero's timeline for developing its Pilot Plant and associated resourcing (**Part E**).

(f) I give my opinion in relation to the usefulness of certain Fortescue confidential procedure and specification documents (**Part F**).

(g) I describe the resources that may be saved by avoiding trial-and-error (**Part G**).

(h) I give my opinion as to how the Fortescue "Identified Documents" could have been of use in relation to the Element Zero Project (**Part H**).

(i) Finally, I give my opinion in relation to the apparent resource deficit in relation to the Element Zero Project (**Part I**).

8. My affidavit adopts the following structure:

Contents

A. My Background and Expertise

9. My curriculum vitae is annexed and marked **Annexure WM-1**.

10. I am a Chartered Engineer with over 30 years of experience working in the mining and energy sector. My specialised experience is in project management, plant design, cost estimating, procurement and construction of industrial engineering projects.

11. The credential of Chartered Engineer is the highest available technical credential for an engineering professional in Australia. I am also a Fellow and Engineering Executive of Engineers Australia, the peak body for the engineering profession in Australia. In 2019 I

was Director of the Tanami Energy Project which was awarded the Northern Territory Chief Minister's Award for development of the Northern Territory and securing a cleaner energy future for the Tanami Region.

12. I graduated with a Bachelor of Engineering (Mechanical Engineering) from Curtin University in 1989.

13. From 2000 to 2003, I was a Project Manager at BP Refinery, Kwinana, Western Australia.

14. From 2003 to 2006, I was employed at Hatch Associates. From 2003 to 2004, I was the Engineering Manager of engineering and cost estimating teams which completed a feasibility study for the SUAL Alumina Refinery in Russia. From 2004 to 2006, I was a Refinery Design Manager, during which time I led a global engineering and technology team to deliver designs, studies, technology development and projects for Hatch's industrial clients (such as the redesign of the Windimurra Vanadium mine processing plant in Western Australia).

15. From 2012 to 2020, I was employed by Newmont Mining Corporation (**Newmont**). From 2012 to 2016, I was the Regional Engineering Manager Asia-Pacific at Newmont. In this role, I led Newmont's feasibility due diligence, engineering, project development and plant optimisation activities across Asia-Pacific and Africa. I was extensively involved in developing mines, process plants, and associated infrastructure. This included several projects to upgrade ore purity, ore concentration and leaching. Some of my duties included:

    (a) During this time I was involved in the leadership of about 9 projects between $100M and $650M. I also providing consultancy and technical support to project teams through the engineering and construction phases of numerous other projects across Asia-Pacific and Africa, including all aspects of design and project delivery;

    (b) leading innovation and plant optimisation;

    (c) managing study teams for mines and expansions, and providing recommendations to executives on the economic viability of projects Asia-Pacific and Africa; and

    (d) driving procurement strategies.

16. In 2016, my role moved to Newmont's Tanami Gold Mine, in the Northern Territory. From 2016 to 2020, I was the Tanami Power Project Director. In this role, I delivered increased power generation capacity at the mine. My USD $580 million engineering project portfolio included a 450 km gas pipeline, two power stations, and a 66 kV transmission line. From 2019 to 2020, I was also the Tanami Major Sustaining Capital Program Manager. Some additional engineering projects which I led at various stages (from feasibility to execution) included a new leaching system at Tanami Mine's ore processing facility, a waste heat

recovery chilling system for gas-fired power generators, a 1400 m refrigerated mine ventilation shaft, and an airport upgrade. My duties included:

(a) conducting project feasibility studies;

(b) identifying and assessing engineering innovations;

(c) preparing detailed project scopes and management plans, and leading projects from the concept stage through to operational handover;

(d) developing procurement and negotiation strategies, and leading tendering, contract development and negotiation processes; and

(e) building relationships with delivery partners and managing their performance through the engineering, construction and commissioning phases of projects.

17. From February 2020 to 2021, I was the Managing Director of Niche Innovations. In this role, I undertook concept development activities for energy projects including hydrogen and solar energy systems and energy efficient equipment. I developed projects to patent and funding application readiness.

18. Since February 2021, I have been employed by the Third Applicant, FMG Personnel Services Pty Ltd. From February 2021 to October 2021, I was the Delivery Manager, Power to Port at Fortescue, where I was responsible for end-to-end development of green hydrogen and ammonia projects, with a focus on Russian and Central Asian projects. My duties included securing renewable resources (such as acquiring and developing hydroelectric, solar and tidal projects), conducting feasibility studies and detail design, and overseeing procurement, construction and commissioning of engineering projects. Some key projects I was involved in at this time include the development of a 3.8 GW green hydrogen and ammonia production facility in Yakutia, Russia; a 3.4 GW green hydrogen and ammonia production facility in Evenkia, Russia; and a 20 GW green energy facility in Kazakhstan. These projects each included development of renewable resources such as hydroelectric power dams and wind farms, as well as infrastructure such as ammonia production facilities, ammonia storage, a port, a power transmission line, and groundwater desalination and hydrogen production facilities.

19. From October 2021 until March 2024, I have been the Head of Concepts and Technology: Eastern Australia and New Zealand at Fortescue. In this role, I have guided teams of technologists, study managers and project directors in the development of a portfolio of green hydrogen projects across eastern Australia and New Zealand. These projects included production facilities for hydrogen, ammonia, synthetic aviation fuel, liquid hydrogen, and methane (powered by a range of renewable energy sources). Some of the engineering projects I have overseen as part of this role have included a 550 MW green

hydrogen and ammonia production facility at Gibson Island, Queensland (from concept to front-end engineering design) and various other green hydrogen and ammonia export projects. My current role also involves leadership in technology development, cost reduction, and research and development activities to fast track equipment to commercial readiness for Fortescue's global projects (such as research and development of new electrolyser designs for industrial projects).

20. In March 2024 I transferred to Fortescue's R&D department as Manager, Energy Technology Scale-up.

21. Through my education and extensive experience as an engineer, explained above, I have obtained significant expertise in developing and managing engineering projects, including plant design and construction engineering, procurement and costing. This includes expertise with respect to mining engineering, including the development of leaching and ore refining facilities particularly with caustic solutions.

B. Mineral processing research and development projects

22. DCCL asked me to provide a high level overview of mineral processing research and development projects (**Process R&D Project**) based on my expertise and experience set out at **Part A**. The direct electrochemical reduction of iron ore is an example of mineral processing.

23. Based on my expertise and experience set out at **Part A**, a Process R&D Project typically involves:

    (a) researching and developing a new mineral processing technique (or one that is modified from what is already known); and

    (b) designing and building the plant required to implement that processing technique.

24. The ultimate objective for a Process R&D Project is the construction of a full scale production plant. Achieving this however involves iterative testing over time of both the process and the plant to implement that process. Based on my expertise and experience set out at **Part A**, Process R&D Projects typically involve the following development milestones:

    (a) the design of the industrial process concept (**Process Concept**). Even after the initial design of the Process Concept, the testing and refining/optimising of that concept is typically ongoing until the end of the Production Plant Design Phase;

    (b) proof of the Process Concept in a laboratory. This involves building a small laboratory benchtop size approximation of certain Process Units of a Pilot Plant (refer **Part D**, below), which is at laboratory bench top scale (**Test Rig**);

(c) once the Test Rig has been run successfully, the next milestone is proof of the Process Concept at pilot plant scale (**Pilot Plant**). The Pilot Plant is larger and more sophisticated than the Test Rig, but is still smaller and with more limited functionality than the final commercial scale production plant (**Production Plant**). Process R&D Projects may typically involve the construction of more than one Pilot Plant, with each Pilot Plant typically larger and more complex than the previous one; and

(d) once the Pilot Plants(s) has (have) been successful, the next milestone is the design and construction of a Production Plant.

25. As considered at **Part B.4** below, a Pilot Plant is not simply a smaller version of a Production Plant (although size and throughput capacity is a key difference). A Production Plant with a complete circuit design will have far greater functionality than a Pilot Plant. For example, a Production Plant might process 10,000 tonnes of ore per day, whereas a Pilot Plant might process 100kg of ore per day. The Production Plant would therefore generate tonnes of waste (instead of kilograms for the Pilot Plant) and would require a built in sophisticated system for the safe disposal of waste. The Pilot Plant would not require this waste processing system as the small amount of waste could be disposed of using a third party waste disposal contractor.

26. The progress of Process R&D Projects from inception to the delivery of the Pilot Plant may typically be broken down into the following phases:

(a) **Phase 1**: Program Set up and Testing; (see **Part B.1** below);

(b) **Phase 2:** Process Concept Testing (see **Part B.2** below);

(c) **Phase 3:** Lab Testing Set-up (see **Part B.3** below);

(d) **Phase 4:** Pilot Plant Development (see **Part B.4** below);

(e) **Phase 5:** Procurement (see **Part B.5** below);

(f) **Phase 6:** Construction (see **Part B.6** below); and

(g) **Phase 7:** Commissioning (see **Part B.7** below).

27. I provide a more detailed description of each phase below, by reference to examples. Process R&D Projects involve all of the above phases, however not all Process R&D Projects include all of the below examples and steps (and not all steps happen in exactly the same order). Due to their nature, Research and Development Projects involve trying multiple pathways and often retracing steps and going down different pathways to ultimately find the best route. Because of this, continuous testing and optimisation occur throughout all stages of these projects. The below examples are illustrative and not exhaustive.

B.1 Phase 1: Program Set up and Initial Testing (Process Concept)

28. The initial step of a Process R&D Project is the determination of the Process Concept.

29. Once the Process Concept is determined, the lab team, through testing, gather enough initial experimental evidence to indicate that the concept can work. Once this is achieved, a more comprehensive testing program is planned and recruitment is started to ensure enough resources are available to develop the following steps.

B.2 Phase 2: Core Technology (Process Concept) Testing

30. The engineering team continues to undertake research, continues to refine the Process Concept, and begins to design the equipment and experiments to be undertaken to test the Process Concept more thoroughly.

31. As an example, using direct electrochemical reduction to reduce iron, the team would decide upon the type of reduction to be pursued, the materials to be used for the electrodes, etc. The team may then fabricate and test multiple electrolysis cells with different properties, such as different electrode materials and different cell shapes and thicknesses (including different flow pathways within the cell). Testing of these electrolysis cells may then be undertaken at various voltages and currents. For this phase the equipment is usually an order of size larger than that of Phase 1. For example, Phase 1 may test 100grams/day and Phase 2 may test 1000grams/day.

32. Obtaining the data referred to above involves significant work: the chemical samples of the iron ore must be obtained and prepared, the samples may be sent for testing at a third party facility, and tests are repeated. These tests represent ongoing optimisation work and are repeated throughout the Pilot Plant development process.

B.3 Phase 3: Laboratory Set-up

33. This phase includes the recruitment of staff for a laboratory to continue research and build a proof of concept laboratory bench top size Test Rig. This involves multiple recruitment stages, including:

    (a) writing job descriptions;

    (b) advertising on job boards or appointing an agent to advertise the job;

    (c) collecting, reviewing and shortlisting applications;

    (d) interviewing multiple candidates for each role; and

    (e) drafting employment contracts, making offers, and arranging execution of employment contracts.

34. For new companies, a payroll system would also need to be set up if not already in place.

35. This phase also involves searching for, and identifying, a suitable laboratory location. A lease of the premises is then negotiated. Then, equipment and office setup are moved into the new building. When the premises are fitted out, all personnel must be inducted into the new space.

36. Finally, when a preferred process is decided upon, a Test Rig is set up and run in a laboratory. Multiple tests are conducted to ascertain the effect of variables upon the concept. For example, in an electrolyser concept, tests may include:

(a) slurry concentration;

(b) caustic concentration;

(c) temperature;

(d) solubility;

(e) residual waste;

(f) pressures; and

(g) flowrates.

B.4 Phase 4: Pilot Plant Development

37. A Pilot Plant is designed to allow engineers to test the industrial process that has been developed. The aim when designing a Pilot Plant is to allow accurate data collection about the process and the plant design to inform future decisions in relation to improving both.

38. The first step in designing a Pilot Plant is to hold consultations with the research and development chemists, chemical engineers and/or relevant decision-makers within the company to define the objectives for the Pilot Plant.

39. Once design objectives have been defined, a "Basis of Design" document is prepared. This is the core starting document for any new plant. It outlines what the design team is required to deliver. This includes a list of all major process units and the equipment required for each. For each item the following key design parameters may be included:

(a) production rates;

(b) plant size;

(c) concentration ranges;

(d) temperature ranges;

(e) pressures;

(f) chemicals required; and

(g) location and local weather conditions.

40. The next step in Pilot Plant development is the preparation of process flow diagrams (**PFD**) and piping and instrumentation diagrams (**P&ID**). Together, these documents form the operational 'bible' for the Pilot Plant. PFDs are flowcharts which show the relationship between all major equipment in a completed Pilot Plant, and the steps of a chemical process through the Pilot Plant. PFDs will also show the flowrate, temperature, pressure, and chemicals in the Pilot Plant. An example of a PFD is shown below.

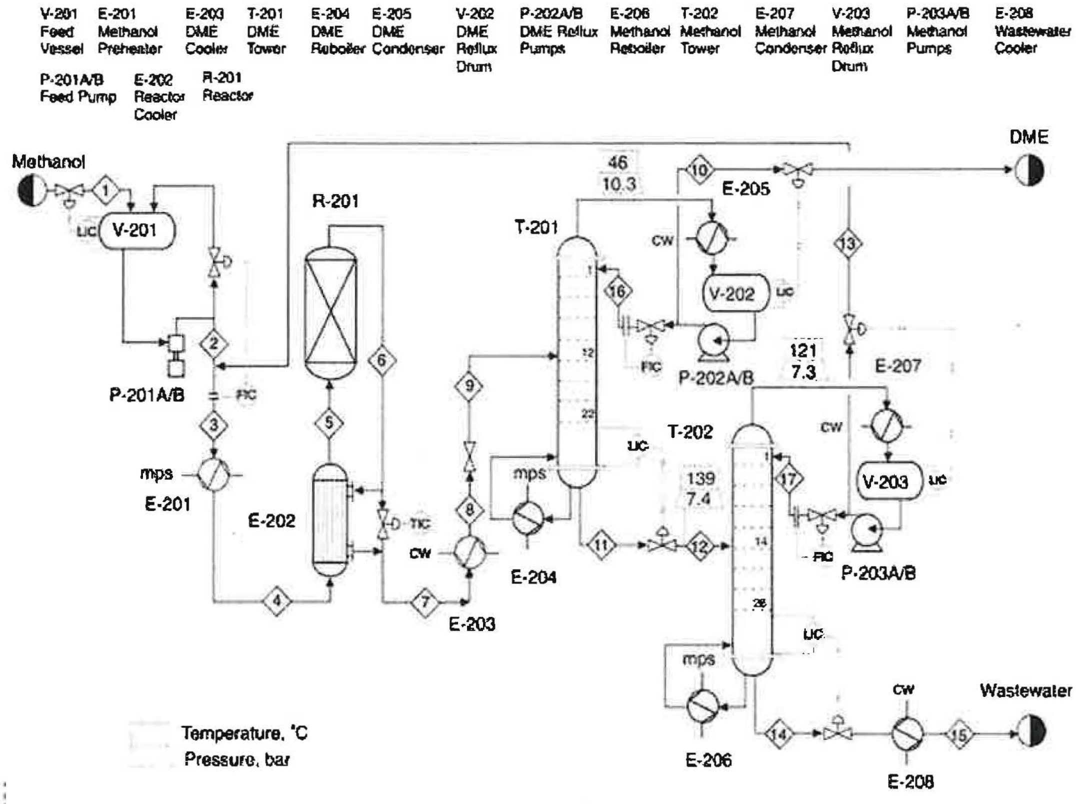
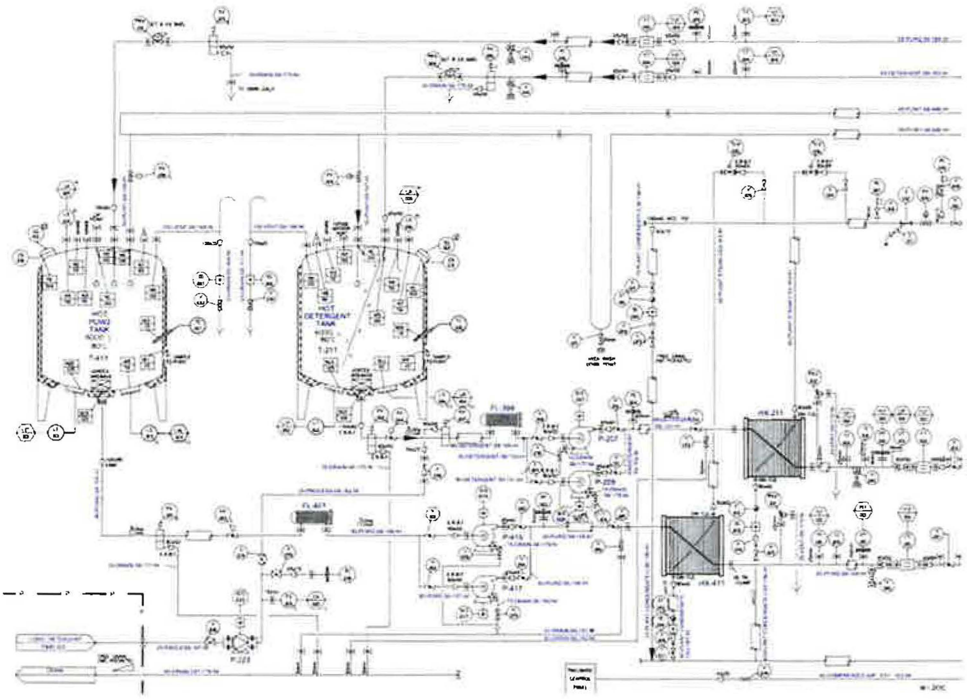


Figure 8.1.1 Unit 200: Dimethyl Ether Process Flow Diagram

Ref: [Draw a P&ID diagram for T-201 (Including condenser, | Chegg.com]

41. P&IDs are more detailed diagrams derived from PFDs. These show all equipment, valves, instruments and controls in a Pilot Plant, and the interconnection between them. Preparation of a P&ID is highly time consuming, and a complex P&ID can take thousands of hours of development time to complete. P&IDs usually go through many revisions. These documents remain live during the operation of the Pilot Plant and are continuously amended to reflect changes to the plant. An example of a P&ID is shown below.



Ref: Reading P&ID Symbols: A Step-by-Step Guide - GetReskilled

42. The next step is the preparation of layouts and models of the Pilot Plant. This can include plot plans and 3D models of the Pilot Plant. This can involve the use of a 3D computer-aided design (**CAD**) system and require collaboration between one or more CAD designers and Pilot Plant designers, or CAD-trained Pilot Plant designers. Developing a detailed 3D model showing most or all Pilot Plant components (such as tanks, pipes, pumps, valves, and wiring) is highly time consuming.

43. Equipment lists and datasheets are also prepared to accompany the P&IDs. Equipment lists show all equipment in the plant and include lists for the following bulk materials and equipment:

    (a) earthworks;

    (b) civil;

    (c) structural;

    (d) mechanical;

    (e) piping;

    (f) electrical; and

    (g) instrumentation.

44. Specifications are also prepared for the Pilot Plant. These contain all the data required for:

    (a) the design and purchase of each item of equipment; and

    (b) all other aspects of designing and constructing the plant.

45. Finally, electrical design is usually the last aspect of a Pilot Plant design to be completed. There are many aspects to electrical design, including:

(a) single line diagrams (which are essentially P&IDs for the electrical system);

(b) control loop diagrams;

(c) earthing grid plans;

(d) network analysis;

(e) cable lists;

(f) connection plans;

(g) transient analysis.

46. As I have stated at paragraph 32 above, during these 'Phase 3' Pilot Plant development steps, the testing and optimisation above remains ongoing. Data obtained from the test program are used to inform the design process. The data can also augment process simulations which may be developed on specialised software to validate and optimise the chemical process and Pilot Plant design.

47. Furthermore, in my experience, it is very common for the design of a Pilot Plant to change many times during the design process. The configuration of a Pilot Plant is, by its nature, flexible in order for various configurations and operating conditions to be tested and if necessary changed, and there is usually no fixed "final design". Furthermore, it is not uncommon, even for experienced Pilot Plant designers, to inadvertently make errors or omissions in designs. This may necessitate a change in design later in the design process or, often, when a design error is discovered during the construction process. This can lead to delays in completing the Pilot Plant, which can be especially significant if resolving the issue requires a cascade of design changes. This is a key risk of concurrently designing, purchasing and construction of any industrial process plant.

B.5 Phase 5: Procurement

48. This phase begins with the creation of tender packages to enable suppliers to submit tenders for the supply of the equipment to build the Pilot Plant. These bring together specifications, datasheets, control design, and documents regarding transport, amongst other things, for each item to be purchased for the plant.

49. The next step is the creation of supplier lists. This involves the selection of appropriate suppliers to be included in the upcoming tender process.

50. The tender process then begins by going out for pricing. For small equipment, only one supplier is required. However, tendering for large equipment generally follows a specified process whereby multiple tenderers compete fairly for the right to supply the equipment.

51. Tenders are then evaluated and the winner or the winners are selected. The winner/s of the tender is notified and set up in the company's payment system.

52. Finally, the items required for the plant are purchased from the winner/s of the tender, and a supply time must be built into any project plan. Long lead time items usually require 20 to 30 weeks for supply. Sometimes this lead time is even longer. In my experience, problems commonly arise at the equipment procurement stage that may delay construction of a plant. For example, delays may arise due to cost, stock and/or logistical issues associated with procuring equipment, which may necessitate changing vendors or obtaining second hand equipment instead.

B.6 Phase 6: Construction

53. The first step in the construction phase of the Pilot Plant is site preparation. This involves clearing the relevant area, painting and preparing the facility, and removing any safety hazards such as electrical items, amongst other preparatory tasks. The nature of the preparatory tasks required is specific to each site.

54. The next step in constructing a plant is civil and structural construction. This involves completing earthworks, preparing foundations and pouring concrete as necessary. Steel supports and overhead cranes are erected. As packages of materials arrive, the enclosures and buildings comprising the plant are constructed.

55. Mechanical construction then takes place. This involves fitting mechanical packages, such as the installation of pumps, tanks, pipework, valves, and connecting the plant to water and other supply lines.

56. Finally, electrical components and instrumentation are fitted. This can include the installation of switchgear, transformers, power supplies, cable ladder and cables, instrument controls, control panels for operations, and interlocks.

57. In my experience, construction may sometimes be delayed due to additional component or design requirements which only become apparent after taking delivery of equipment or upon reading equipment instruction manuals. The risk of this occurring increases the faster and less detailed the design stage is.

B.7 Phase 7: Commissioning

58. This generally proceeds in stages progressively energising and running the equipment in the plant to ensure each is individually safe before being operated as a whole. Each project is specific. In large projects commissioning teams are employed for months preparing plans for this activity. At Pilot Plant scale these plans are often developed by the engineering team involved in the project.

59. In the interests of time pre-commissioning activities are often completed before the full plant is completed. For example, as each pump motor is connected, it is checked to ensure the wiring is correct. Then it may be "bump" tested. In simple terms the motor is turned on for a fraction of a second to make sure it is turning in the right direction. All instrument loops will be tested as they are completed and control points will be progressively checked back to the control panel. A further example is wet commissioning, where the plant is first tested on water. Tanks filled, levels checked, pumps and control valves operated etc.

60. The final stage is operational commissioning, where the whole Pilot Plant is tested for normal operation by running the industrial process.

C. The Fortescue Project

61. In this **Part C** of my affidavit I provide evidence in relation to a Process R&D Project which I refer to as the **Fortescue Project**. The Process Concept for the Fortescue Project is the purification of iron ore using direct electrochemical reduction, and is described in the Affidavit of Dr Anand Indravadan Bhatt, which I have read.

62. I am aware from the books and records of Fortescue that:

    (a) the Fortescue Project was commenced on 11 February 2021;

    (b) the Fortescue Pilot Plant was commissioned and operational by 16 February 2023;

    (c) the Fortescue Project is ongoing, with the next milestone being the construction of a much larger Pilot Plant, and ultimately a Production Plant.

63. The evidence I provide in my affidavit is relevant to the progress of the Fortescue Project from its inception on 11 February 2021, through to the commissioning and operation of the first Pilot Plant on 16 February 2023 (**Relevant Period**).

64. Specifically, my evidence in relation to the Relevant Period covers both the:

    (a) initial research and design of electrochemical reduction process described in **Part C.3** of the Affidavit of Dr Anand Indravadan Bhatt (**Fortescue Process)** which I have read; and

    (b) the design and construction of the first Pilot Plant, which is capable of processing 100kgs of iron ore per day (**Fortescue Pilot Plant**).

65. There is no document in the Fortescue books and records that summarises the progress of the Fortescue Project to the Pilot Plant stage during the Relevant Period.

66. Accordingly, I have been asked to provide:

(a) an estimated break down of the progress of the Fortescue Project during the Relevant Period on a month-by month basis, and to prepare a 'Gantt chart' summarising the same (**Part C.1** below);

(b) a summary of the expenditure incurred on the Fortescue Project during the Relevant Period (**Part C.2** below) along with a graph of cumulative expenditure over time;

(c) a summary of the number of contractors and employees engaged on the Fortescue Project during the Relevant Period (**Part C.3** below); and

(d) a summary of the possible process units for a complete direct reduction (via electrolysis) plant and to identify those process units that were present in the Fortescue plant upon commission as at 16 February 2022 (**Part C.4** below).

67. The information in relation to the Fortescue Project in this **Part C** of my affidavit is based in part upon the following information that was provided to me on 23 April 2024 by Jenya Molchanyuk, the Principal Accountant for the Fortescue Science & Technology department:

(a) a breakdown of the total expenditure for the Fortescue Project during July 2021 to February 2023, which I then modified by calculating a conservative expenditure profile for the months of February to June 2021 (based on the growth that I would expect to see in a project of this nature over that period by reference to actual expenditure in July 2021) (this is contained in **Annexure WM-2**); and

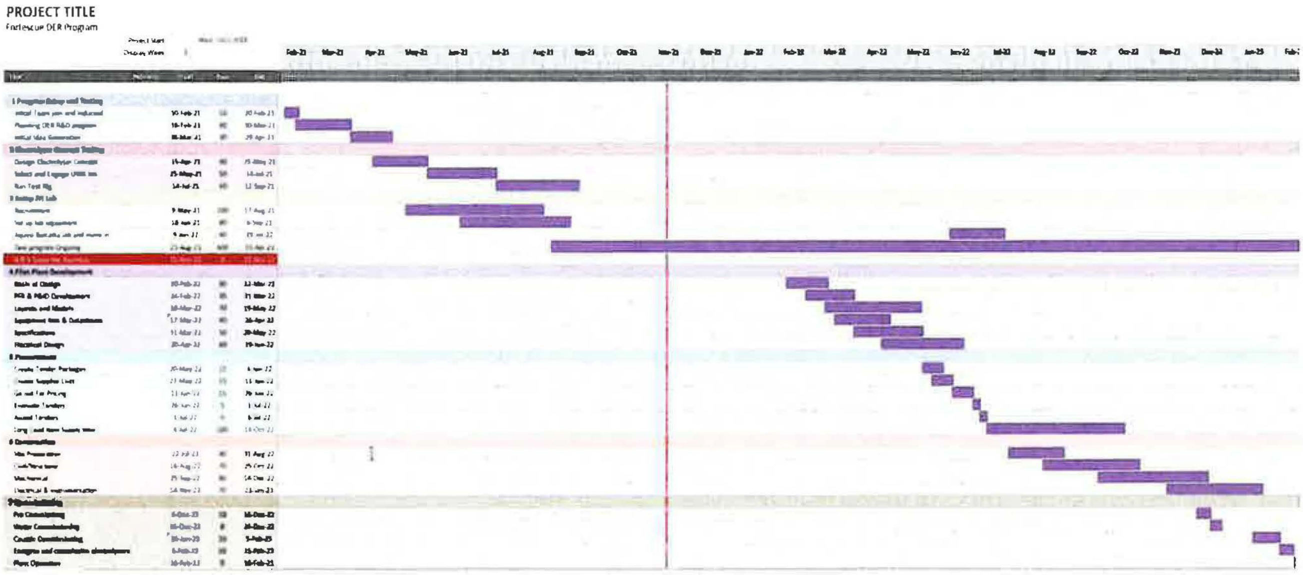
(b) a monthly breakdown of how many human resources, including full time employees and labour hire workers, were employed or engaged by Fortescue during the period of July 2021 to February 2023 (this is contained in **Annexure WM-3**).

C.1 The Fortescue Project – time taken

68. In response to the questions asked of me I created the below Gantt chart, which provides an estimated breakdown of the time taken in the Fortescue project for each of the below project phases (which I describe in more detail below). An enlarged copy of the Gantt chart is also annexed at **Annexure WM-4**.

69. For the avoidance of doubt the above Gantt Chart sets out my estimate of times based on my expertise and experience set out at **Part A** and the information outlined above, which includes the books and records of Fortescue in relation to the Fortescue Project. In particular I cross referenced my schedule with the financial information provided by Ms Molchanyuk to confirm the expected increase in expenditure for major equipment purchasing and laboratory set up. I then discussed the Gantt chart with **Anand Bhatt** and Nicolas Marrast in order to ensure the accuracy of the timeline. Having undertaken this process I am satisfied that the projected timeline is an accurate estimate of the progress of the Fortescue Project during the Relevant Period.

70. For the purposes of preparing the Gantt Chart, I have also identified sub-phases for each of the above phases (as can be seen in the first column of the Gantt Chart). I have estimated the start and end date for each sub-phase during the Relevant Period (as indicated in the first column and by the horizontal lines in the Gantt Chart).



71. Based on my expertise and experience set out at **Part A**, I consider that, given the personnel and financial resources allocated to the project (as considered below) two years is a reasonable timeframe in which to complete a project of the nature and magnitude of the Fortescue Project.

C.2 Fortescue Project – Expenditure

72. During the Relevant Period, a total of AUD [redacted] was spent on the Fortescue Project. Below is a 'Cumulative Spend' graph which I generated using the data identified in paragraph 67, above, to depict the amount spent on the Fortescue Project over the Relevant Period.

73. From the below Cumulative Spend graph it is apparent that expenditure on the Fortescue Project increased rapidly from February 2022 as the costs of designing and building the Pilot Plant began to be incurred.

[redacted]

C.3 Fortescue Project – People

74. In the below table, I set out the number of employees and contractors that were working on the Fortescue Project during each month of the Relevant Period, which I have sourced from **Annexure WM-3**.

Month	FTE
February 2021	3
March 2021	3
April 2021	4
May 2021	5
June 2021	6
July 2021	7
August 2021	10
September 2021	13
October 2021	15
November 2021	14
December 2021	11
January 2022	11
February 2022	12
March 2022	13
April 2022	12
May 2022	15
June 2022	15

July 2022	15
August 2022	15
September 2022	16
October 2022	21
November 2022	19
December 2022	18

C.4 Fortescue Project – Current Status of Pilot Plant

75. DCCL has asked me to explain what is meant by a "complete circuit" plant in the field of plant design and construction for mineral processing.

76. In the above field, the term "complete circuit" plant, is understood to mean a sophisticated plant that is able to run an entire industrial process in a safe and cost-effective manner. A Production Plant will usually be a complete circuit plant, whereas a Pilot Plant will usually not be a complete circuit plant.

77. DCCL has asked me to:

   (a) explain the functionality that I would expect of a "complete circuit" plant designed to implement a direct electrochemical reduction process, such as the Fortescue Process; and

   (b) indicate whether or not the Fortescue Plant possessed that functionality as at 16 February 2023.

78. In answering the question asked of me, I set out in the below table the various functionalities (which I refer to as **Process Units**) and corresponding equipment I would expect to see in a complete circuit Production Plant implementing the Fortescue Process.

	Process Unit	**Equipment**	**Present in the Fortescue Pilot Plant as at 16 February 2023?**
1	Comminution	Primary Crusher, Secondary crusher, High Pressure Grinding Rolls HPGR	No. [redacted]
		Ball mill, SAG Mill, Rod Mill	
		Fine grinding Mill, DER selected IsaMill	
2	Caustic Preparation	Tanks, pumps, Hazardous goods storage facility, Bunded area, Heaters	Yes. [redacted]
3	Evaporation	Tanks, pumps heat exchangers. Available as packages from vendors.	No [redacted]
4	Leaching	Tanks, pumps, heat exchanges in tank agitators. Conveyors.	No [redacted]

	Process Unit	Equipment	Present in the Fortescue Pilot Plant as at 16 February 2023?
5	Electrolysis	Electrolyser unit, pumps, overhead crane, electrode handling units, HV power switchgear and transformer rectifiers	Yes. The Fortescue Plant utilises direct electrolysis reduction to purify the iron ore feedstock.
6	Electrode management.	Electrode Cooling, washing, crane, impact or abrasive removal equipment.	No [redacted]
7	Product wash process.	Tanks, conveyors, belt filters, pressure filters, Magnetic Separators.	No. Product washing is not required for a plant that processes 100kg per day. The product can be washed easily by manual means.
9	Caustic cleaning and recovery	Packaged causticizer, Ultra fine filtration, Precipitation tanks, seed tanks, thickeners, cyclones, pumps, filters heat exchanges	No. This is a very sophisticated Process Unit. It is required when the Plant is operating at larger scale than 100kg per day. At this scale, the plant can be run by simply replacing the sodium hydroxide with each new batch. This is not economically viable at Production Plant scale
10	Tailings Disposal	Tanks, settlers, pumps, plate filters, belt filters, pressure filters, conveyors, distribution pipework, return caustic collection system, mud lakes, dry stacks, toe drain water monitoring return system	No. This is a very large and expensive Process Unit. It is required when the Plant is operating at larger scale than 100kg per day - at this scale, the plant can be run by paying third parties to dispose of the tailings.

79. In summary, as at 16 February 2023, the Fortescue Plant consisted of Process Units 2 and 5 only, being Caustic Preparation, and Electrolysis.

80. In addition to the above Process Units, a complete circuit Production Plant would also require supporting facilities, such as water storage, firefighting, and in plant safety systems, etc. which are required by law [redacted]

D. Element Zero Pilot Plant

81. Element Zero Pty Ltd (**Element Zero**) has made the following public statements in January 2024 in the article, "Element Zero Raises US $10M Seed Funding to Scale up Green Materials Platform", *Gulf Oil and Gas*, 17 January 2024, shown to me and annexed at **Annexure WM-5**, in relation to the design and development of its current Pilot Plant:

(a) The current Element Zero prototype is capable of producing 100 kg of zero-carbon iron per day (this would require feedstock of around 100 kgs, which is greater production than the Fortescue Plant);

(b) Element Zero *"achieved this milestone* [which I understand to mean the operation of Element Zero's 100kg per day Pilot Plant] *in 18 months, while proponents of other electrochemical technologies spent nearly a decade reaching a similar scale";*

(c) Element Zero is aiming for the next scale-up (i.e. to a one metric tonne per day Pilot Plant) to be completed and commissioned by end of 2024.

82. Furthermore, the "Our Technology" page of Element Zero's website, shown to me and annexed at **Annexure WM-6** states that:

(a) "Our patents cover the overall process and its unique chemistry as well as the complete circuit design for mineral processing incorporating a unique electrolyte";

(b) in their process, "Iron ore and other minerals dissolve in 15–30 minutes with full dissolution within 60 minutes"; and

(c) Element Zero has stated that their process is conducted at "Low operating temperature in the range of 250 – 300°C".

83. For the purpose of providing my evidence in this affidavit, I have been asked to assume that the above statements are accurate.

84. I have been provided with and have read and understood the affidavit of Dr Anand Indravadan Bhatt which describes Dr Bhatt's understanding of the electrochemical reduction process that is being operated by Element Zero (**Element Zero Process**) in the above Pilot Plant (**Element Zero Plant**). For the purpose of providing my evidence in this affidavit, I have been asked to assume that Dr Bhatt's understanding of the Element Zero Process is correct.

85. DCCL asked me to provide my opinion regarding the likely composition of the Element Zero Plant, based upon the above assumptions. I provide my opinion below.

86. For the reasons set out in the below table, I consider that the Element Zero Plant is likely to have process units 2, 4, 5 and 6, being Caustic Preparation, Leaching, Electrolysis and Electrode Management.

	Process Unit	Equipment	Present in the Element Zero Pilot Plant February 2024?
1	Comminution	Primary Crusher, Secondary crusher, High Pressure Grinding Rolls HPGR	No. This crushing and grinding is not required for a plant that processes 100kg per day. I am informed by DCCL that the Element Zero Plant is close to the ALS consultant site in Perth. I am aware that the ALS consultants have Grinding and milling capabilities. It would not be economically rational for Element Zero to develop its own grinding capability.
		Ball mill, SAG Mill, Rod Mill	
		Fine grinding Mill, DER selected IsaMill	
2	Caustic Preparation	Tanks, pumps, Hazardous goods storage facility, Bunded area, Heaters	Yes. Element Zero would require this Process Unit for the preparation and storage of its caustic material such as Sodium Hydroxide and Potassium Hydroxide.
3	Evaporation	Tanks, pumps heat exchangers. Available as packages from vendors.	No. Element Zero uses a non-aqueous electrolyte that requires a dry ore. They are likely receiving fine ground that has been pre-dried by a third party such as ALS. It would not be economic to buy an evaporator at this scale.
4	Leaching	Tanks, pumps, heat exchanges in tank agitators. Conveyors.	Yes. The Element Zero process has a leaching phase that prepares the iron ore for the electrolysis step.
5	Electrolysis	EZ electrolyser unit, pumps, overhead crane, electrode handling units, HV power switchgear and transformer rectifiers	Yes. The Element Zero Process utilises direct electrolysis reduction to purify the iron ore feedstock.
6	Electrode management.	Electrode Cooling, washing, crane, impact or abrasive removal equipment.	Yes. The Element Zero Process uses electroplating/electrowinning and equipment capable of moving 300 degree heavy metal plates safely to a wash area for manual washing and product removal.
7	Product wash process.	Tanks, conveyors, belt filters, pressure filters, Magnetic Separators.	No. Product washing is not required for a plant that processes 100kg per day. The product can be washed easily by manual means.
9	Caustic cleaning and recovery	Packaged causticizer, Ultra fine filtration, Precipitation tanks, seed tanks, thickeners, cyclones, pumps, filters heat exchanges	No. This is a very sophisticated Process Unit. It is required when the Plant is operating at larger scale than 100kg per day. At this scale, the plant can be run by simply replacing the sodium hydroxide with each new batch. This is not economically viable at Production Plant scale
10	Tailings Disposal	Tanks, settlers, pumps, plate filters, belt filters, pressure filters, conveyors, distribution pipework, return caustic collection system, mud lakes, dry stacks, toe drain water monitoring return system	No. This is a large and expensive Process Unit. It is required when the Plant is operating at larger scale than 100kg per day - at this scale, the plant can be run by paying third parties to dispose of the tailings.

87. DCCL then asked me to provide, based upon my analysis of the Fortescue Process and Plant and the Element Zero Process and Plant, to provide my view in relation to the similarities and differences of the two plants. I provide my opinion below.

88. Based upon my analysis of the Fortescue Process and Plant and the Element Zero Process and Plant set out in this affidavit, I consider that the level of complexity of the design of Fortescue Plant and the Element Zero Plant is likely to be quite similar (with the Element Zero Plant possibly having a slightly more complex design), for the following reasons:

(a) both Pilot Plants are at a similar scale at 100kg (Element Zero) and 100kg (Fortescue) respectively of iron ore feedstock per day scale;

(b) both Pilot Plants implement a direct electrolysis reduction reaction;

(c) the Fortescue electrolysis Process Unit is likely to be more complex as it utilises a membrane;

(d) the Element Zero Plant has additional Caustic preparation, Leaching and Electrode management requirements that the Fortescue Plant doesn't have; and

(e) the Element Zero Process operates at a higher temperature (250-300°C rather than the Fortescue Process at 100°C), which makes the design of the Element Zero Plant more challenging as it requires greater insulation, heating and safety measures.

E. Estimated Timing of Element Zero Project from publicly available information

89. DCCL asked me to provide my opinion as to whether I consider that Dr Kolodziejczyk and Dr Winther-Jensen could have invented the Element Zero Process and then designed and constructed the Element Zero Plant in the time available to them between their leaving Fortescue in November 2021 and the Element Zero Plant being operational in January 2024 (a 26-month period).

90. The timing available to Dr Kolodziejczyk and Dr Winther-Jensen was 26 months as set out in the below table.

91. Based on my analysis of the Fortescue Project, the similarity between the Fortescue Plant and the Element Zero Plant, and the reasons below, in my opinion it would not have been possible to deliver the Element Zero Plant by January 2024, unless the Basis of Design documents were commenced 12 months earlier in January 2023.

92. This would have allowed Dr Kolodziejczyk and Dr Winther-Jensen a period of 13 months to research and develop and test the Element Zero Process and develop it to the point where they were able to commence preparation of the Basis of Design documents in January 2023. Based upon my analysis of the Fortescue Project, in my opinion this would have been sufficient time, provided that Dr Kolodziejczyk and Dr Winther-Jensen had access to the same resources and cash flow as were available to the Fortescue Project team.

93. Given the above time constraints, in order to have an operational Pilot Plant by January 2024, Dr Kolodziejczyk and Dr Winther-Jensen and Element Zero would have had to progress the Element Zero Project on effectively the same timeline as the Fortescue process, which took around 25 months, as indicated in the Gantt chart at **Part C.1** above.

94. I have represented this timeframe in the below table. In the below table I have also inserted for reference (in the "Phase" column) the phase that the Fortescue Project had achieved by the equivalent month.

	Date	**Phase (Fortescue)**	**Comment & Assumptions**
Month 0	**2021** November		Dr Kolodziejczyk and Dr Winther-Jensen leave Fortescue.
Month 1	December	1	
Month 2	**2022** January	1 & 2	
Month 3	February	1 & 2	
Month 4	March	2 & 3	
Month 5	April	2 & 3	
Month 6	May	2 & 3	
Month 7	June	2 & 3	
Month 8	July	3	
Month 9	August	3	
Month 10	September	3	
Month 11	October	3	
Month 12	November	3	
Month 13	December	3	
Month 14	**2023** January	3 & 4	I consider that Basis of Design documents must have been commenced at this time in order for Element Zero to deliver the Element Zero Plant by January 2024.

	Date	Phase (Fortescue)	Comment & Assumptions
Month 15	February	3 & 4	
Month 16	March	3 & 4	
Month 17	April	3, 4 & 5	Lease commenced on EZ premises. This timing is consistent with construction commencing in June 2023.
Month 18	May	3, 4 & 5	
Month 19	June	3, 5 & 6	
Month 20	July	3, 5 & 6	
Month 21	August	3, 5 & 6	
Month 22	September	3, 5 & 6	
Month 23	October	3 & 6	
Month 24	November	3 & 6	
Month 25	December	3 & 7	
Month 26	**2024** January	3 & 7	Plant commissioned and operational.

95. In summary, I consider that given the time available to Dr Kolodziejczyk and Dr Winther-Jensen, to progress the Element Zero Project as quickly as they have, they must have progressed along a similar timeline to that followed by the Fortescue Project.

96. In my opinion, this would only have been possible if Dr Kolodziejczyk, Dr Winther-Jensen, and Element Zero had access to a similar level of resources as was available to the Fortescue Project.

97. DCCL asked me to assume that Dr Kolodziejczyk, Dr Winther-Jensen and Element Zero had access to funding of AUD 5 million during the period of 1 December 2021 to 1 August 2023 (**first 20 months**).

98. DCCL then asked me to provide my opinion as to whether or not this funding was sufficient to finance the Element Zero Project in the first 20 months, assuming that my estimated project timeline is correct. I provide my opinion below.

99. In providing my opinion, I have assumed that:

    (a) when building the Element Zero Plant, Element Zero has saved some expense by using second hand equipment where possible; and

    (b) Element Zero has followed established and required industry safety standards in relation to the design, construction, commissioning and operation of the Element Zero Plant.

100. In answering the question, I observe that the cumulative spend for the equivalent first 20 month period for the Fortescue Project (around February 2021 to October 2022) was approximately AUD [redacted] I refer to the Cumulative Spend Profile in **Part C.2**, above.

101. Accordingly I do not consider that funding of AUD 5 million was anywhere near sufficient to finance a Process R&D Project in the nature and complexity of the Fortescue Project and the Element Zero Project during the period of 1 December 2021 to 1 August 2023. In my opinion, even allowing for a reduction in capital expenditure costs for the Element Zero Plant from buying second hand equipment of say AUD 1 million (which I consider to be reasonable), there is still an unexplained resource deficit for the Element Zero Project of around AUD [redacted]

F. Fortescue Procedures and Specifications

102. In this section I set out my analysis of documents provided to me by DCCL from Fortescue's business records, which are documents held internally by and are confidential to Fortescue, and which are documents I am told by Dr Anand Indravadan Bhatt and believe that Dr Kolodziejczyk and Dr Winther-Jensen had access to during their employment at Fortescue.

103. I set out below a number of internal Fortescue procedures and specification documents, which are standard documents used by Fortescue staff for the purposes of designing, building and operating process infrastructure to the requisite safety, reliability and efficiency, to both internal and regulated standards. I am familiar with these documents through my work at Fortescue, and which I am informed have been prepared by Fortescue since its inception in 2003, and are constantly being updated and refined in response to regulatory changes and evolving best practice.

Document Number	**Title**
100-PR-PM-0013	FMG Procedure Safety In Design
100-SP-CI-0003	FMG Engineering Specification Concrete
100-SP-CI-0007	FMG Engineering Specification Earthworks
100-SP-EL-0001	FMG Engineering Specification Electrical Design Criteria
100-SP-EL-0002	FMG Engineering Specification Earthing & Bonding

Document Number	Title
100-SP-EL-0005	FMG Engineering Specification Low Voltage MCCs and Switchboards
100-SP-EL-0006	FMG Engineering Specification Distribution and Control Panels
100-SP-EL-0008	FMG Engineering Specification Electrical Installation
100-SP-EL-0009	FMG Engineering Specification for Preferred Electrical Equipment
100-SP-EL-0010	FMG Engineering Specification Testing and Commissioning of Electrical Installations
100-SP-EL-0013	FMG Engineering Specification Low Voltage Induction Motors
100-SP-EL-0014	FMG Engineering Specification High Voltage Induction Motors
100-SP-IN-0001	FMG Engineering Specification Preferred Instrumentation List
100-SP-IN-0002	FMG Engineering Specification Instrumentation and Control Design
100-SP-IN-0014	FMG Engineering Specification Instrumentation
100-SP-IN-0015	FMG Engineering Specification Field Communication and Marshalling Panels
100-SP-IN-0019	FMG Engineering Specification Instrument Installations
100-SP-ME-0002	FMG Engineering Specification Mechanical Equipment
100-SP-ME-0004	FMG Engineering Specification Installation of Mechanical Equipment
100-SP-ME-0042	FMG Engineering Specification Centrifugal Pumps
100-SP-PI-0001	FMG Engineering Specification Pipe Work and Valves
100-SP-ST-0001	FMG Engineering Specification Structural Steelwork Fabrication
100-SP-ST-0002	FMG Engineering Specification Structural Steelwork Erection
100-SP-ST-0003	FMG Engineering Specification Protective Coating Systems – Hot Dip Galvanising
500CB-00000-SP-PI-0002	Manual Valves Specification
500CB-00000-SP-PI-0007	Special Piping Items

104. DCCL has asked me to provide my opinion on whether (and if so, to what extent) these documents could have assisted Element Zero in building the Element Zero Pilot Plant, assuming that Dr Kolodziejczyk and Dr Winther-Jenssen had access to them prior to commencing the basis of design phase.

105. In my opinion, these documents could have saved Element Zero considerable time and expense to understand design and regulatory requirements for process infrastructure, particularly with respect to safety, and in the selection and procurement of appropriate equipment to be incorporated into a Pilot Plant.

106. Had Element Zero *not* had access to the documents at paragraph 103 above, then:

(a) Element Zero would have been able to purchase a set of specifications from third parties, such as engineering consultancies, however it would have cost around $350,000, or

(b) alternatively, Element Zero could have hired project engineers to prepare its own specification documents. To prepare the required set of specifications however would likely have taken multiple engineers many months of full time work, which would have led to a similar cost in wages.

G. Time and work saved by avoiding trial and error approach

107. In my experience, Process R&D Projects in the nature and complexity of the Fortescue Project and the Element Zero Project take a great deal of trial and error. Trial and error adds very substantially to the cost of bringing a Pilot Plant to commission. It is common for multiple designs to be initially developed, only to later be abandoned or for development to be put on hold.

108. This means a Process R&D Project is far more expensive and time consuming than an equivalent construction process where the design is already known. Put another way, once a Pilot Plant is constructed, the total cost of the parts and equipment contained in that Pilot Plant will only equal a small portion of the overall cost of the project to build that Pilot Plant. The great majority of the cost is in the research and development trial and error.

109. In Process R&D Projects, the engineering team will not have a complete picture of the final chemical process or plant configuration when embarking on a design process. There is no predetermined 'template' for what development steps that will be taken regarding a chemical process or for what plant design choices will be made. Rather, such research and development programs rely heavily on repeated trial and error, and many different process and plant designs are usually pursued.

110. Consequently, significant savings in development time and costs can be obtained if an engineering team know in advance what process and plant designs *not* to pursue. This knowledge can be obtained or inferred from a variety of sources, such as testing data (including from failed tests), documents identifying previously-abandoned chemical processes or designs, documents identifying or allowing an inference of unnecessary plant equipment.

H. Consideration of the "Identified Documents"

111. DCCL asked me to:

(a) carefully consider the "Identified Documents" located by Dr Anand Indravadan Bhatt and described in **Part H** of his Affidavit; and

(b) provide my view in relation to whether these Identified Documents would have been of use, either individually or collectively, in the development and progress of the Element Zero Project.

112. I confirm that I have carefully considered the Identified Documents. In my view, when considered individually, many of these documents (had they been available at the beginning of the Element Zero Project) would have been of substantial use in the development and progress of that project, including the construction of the Element Zero Plant.

113. By way of example, the following documents in relation to leaching testing would have saved months of testing work:

(a) 210827_Leaching project draft plan_NTH_ASH edits.docx

(b) 211004_Leaching experimental design_ASH.xlsx

(c) 211029_Iron ore leaching_Report_ASH.R1.docx

(d) Leaching results_Rob.xlsx

114. By way of further example, the following documents in relation to the Fortescue Pilot Plant Basis of Design contain a description of most aspects of the Fortescue Pilot Plant and could be built on as a good starting platform for the Element Zero Pilot Plant and used in the context of an engineering company tender:

(a) BumbleBee FFI0301-10000-00-EG-BOD-0001_A.docx

(b) Bumblebee PID markups 26_10_21.pdf

(c) Green_Steel_PFD_Example_Overview_BWJ_16-07-21_Comments.pdf

(d) FFI0302-8100-EG-TNN-0001 - Questions.docx

(e) Technical Evaluation.xlsx (**TEA Sheet**)

(f) Covering email dated 4 November 2021 attaching the TEA Sheet (**TEA Email**)

115. I also note that the following document contains some of the Procedure Specifications that I describe in **Part F**, above: 570CBC0001-02007-BD-EG-0001_1_US.pdf

116. Finally, I consider that the Identified Documents, when considered collectively, had they been available at the beginning of the Element Zero Project, would have provided significant savings in development time and costs of that project for the reasons I describe in **Part G** above.

I. Element Zero's Resource Deficit

117. As stated above at **Part E**:

(a) I do not consider that funding of AUD 5 million was anywhere near sufficient to finance the a Process R&D Project such as the Element Zero Project from 1 December 2021 to 1 August 2023; and

(b) In my opinion, there is still an unexplained resource deficit of around AUD [redacted] (**Resource Deficit**).

118. I have been asked by DCCL to provide my opinion as whether Dr Kolodziejczyk, Dr Winther-Jensen and Element Zero could have met this Resource Deficit using Fortescue's confidential and internal information as set out above. I provide my answer below.

119. As stated above in **Part G**, Process R&D Projects are far more expensive and time consuming than an equivalent construction process where the design is already known. Put another way, once a Pilot Plant is constructed, the total cost of the parts and equipment contained in that Pilot Plant will only equal a small portion of the overall cost of the project to build that Pilot Plant. The great majority of the cost is in the research and development trial and error.

120. Based on my assumptions as to the nature of the Element Zero Plant as set out earlier in my affidavit, I consider that the amount of AUD 5 million is sufficient to design and build the Element Zero Plant provided that Dr Kolodziejczyk, Dr Winther-Jensen and Element Zero started the Element Zero Project in December 2021 with a substantial amount of information regarding how the project should progress.

121. More specifically, in my opinion, if Dr Kolodziejczyk and Dr Winther-Jensen commenced the Element Zero Project in December 2021 already armed with such things as:

(a) research they had already undertaken in relation to the Element Zero Process;
(b) the Identified Documents (including test results);
(c) feasibility studies in relation to the commercial viability of the project;
(d) basis of design information in relation to the Fortescue Plant;
(e) vendor and supplier information; and
(f) Fortescue procedure and specification documents,

then the Element Zero Project would have been more akin to a straight construction project, rather than a Process R&D Project.

122. In my opinion, a construction project to build the Element Zero Plant could have been delivered over the first 20 months for AUD 5 million.

Affirmed by Wayne McFaull)
at Brisbane)
in Queensland)
on 1 May 2024)
Before me:)

Signature of Wayne McFaull

Signature of witness

Jordan Brett Lyon
An Australian Legal Practitioner
within the meaning of the
Legal Profession Act 2007 (QLD)

No. NSD of 2024

Federal Court of Australia

District Registry: New South Wales

Division: General

FORTESCUE LIMITED (ACN 002 594 872) and others

Applicants

ELEMENT ZERO PTY LIMITED (ACN 664 342 081) and others

Respondents

ANNEXURE WM-1

This is the annexure marked **WM-1** produced and shown to **WAYNE MCFAULL** at the time of affirming his affidavit on 1 May 2024.

Before me: ....

Wayne McFaull

FIEAust CPEng EngExec NER APEC Engineer IntPE (Aust)

Mobile: +61 408 751 [redacted] **Email:** wayne.mcfaull@fortescue.com

Key Skills & Competencies

Project & Portfolio Management: Skilled in conceptualising, planning portfolios and executing highly complex projects through all stages to operation with a track record of safely delivering to promised cost savings to challenging schedules.

Business Management: Leading strategy, operations and P&L to build high performance, increase margins and market share. Experienced managing through economic challenges, developing contingency plans and leading business growth.

Innovation: Leveraging diverse global experience to conceptualise and develop innovative engineering and business solutions. Delivering measurable improvements in efficiency, reliability, capital/operational costs, and sustainability.

Safety Leadership: Building safe cultures is important to me. The TRIFR = 0 result of my last project is a high bar to reach and one I will always work towards achieving on every project.

Leadership: Building lean, highly effective teams to achieve business goals, optimising resource utilisation through effective strategic planning. Inspiring a culture of diversity, collaboration, creativity, pragmatism and diligence.

Negotiation: A diligent and strategic negotiator with a reputation for being tough but fair. Leveraging market and economic conditions to identify commercial opportunities with a continual focus on rigorous risk management.

Sustainability: A focus on delivered sustainable outcomes alongside commercial goals, adept at identifying and optimising business opportunity through sustainable innovation.

Awards

NT Chief Ministers Award for Development of the NT & Securing a cleaner energy future for the Tanami Region (2019)

Patent for Invention of a new Conveyor Technology (2017). Multiple other patents in progress.

Education

BEng (Mech), Curtin University, Western Australia

Professional Experience

FORTESCUE | Feb 2021 to Present

Fortescue Energy is the energy business unit of Fortescue Ltd. The aim of the company is to become a major global player in green energy markets.

Head of Concepts and Technology: Eastern Australia & NZ| Oct 2021 to Present

To perform this role, I have guided talented teams of technologists, study managers and project directors in the development of a portfolio of Green Hydrogen projects across Queensland, NSW, Victoria, Tasmania and New Zealand. Energy sources focused on, wind, solar, Hydro, Green PPA's and storage systems with projects from 5MW to 20GW. Production facilities included Hydrogen, Ammonia, Synthetic Aviation Fuel (SAF), Liquid hydrogen and Methanation.

The other pillar to this role has been leadership in technology development, cost reduction and R&D activities to fast track equipment to commercial readiness for Fortescue global projects.

Activities include:

- Identify opportunities in the region.
- Develop new technologies to commercial readiness for large projects.
- Leading the development of world scale Green energy production projects in the region.
- Lead safety in design, completion and operation.
- FFI is a start-up company in an emerging industry without mature procedures and processes. Significant focus has been required to develop project framework and governance processes.
- Provide advice and support for MoU's, potential partnerships and Merger and Acquisition activities.
- Development and oversight of portfolio requirements including budgets, org charts schedules, contracting strategies, recruitment etc.
- Sit on steering committees for partnerships, technology developers and advanced projects.
- Represent FFI's equity interests in technology companies to accelerate the commercialisation of products key to FFI ambitions.
- Lead business case analysis for each project to ensure the most economic projects get prioritised.
- Guide contracting strategy for projects.
- Manage team recruitment throughout each project lifecycle.

Key Projects & Achievements:

<u>Gibson Island: A 550MW Green hydrogen and ammonia production facility</u>

Project includes the development of an FFI built and operated hydrogen facility and a joint venture to repurpose IPL's plant next door to produce green ammonia. This project will be powered by green power via multiple Power Purchase Agreements.

- The project was developed from concept to FEED in less than 12 months.
- An innovative power trading scheme has been developed to operate this project and achieve green compliance.
- Technology development was required to make the project viable and not impact the Grid.

Additional Projects (Various Stages, Concept to Prefeasibility):

- <u>Hunter Valley: A 2.4GW Green hydrogen and ammonia production facility as a joint venture</u>
- <u>Bell Bay Project: A 300MW ammonia export project.</u>
- <u>Gladstone: A 900MW ammonia export project.</u>
- <u>Super Hub Qld: A multistage 20GW power and production project in Central Queensland</u>
- <u>Aviation Projects: Multiple projects in the region in partnership with airline companies to produce SAF</u>
- <u>Various other unannounced projects covered by non-disclosure agreements</u>
- <u>Standardised large scale electrolyser modules for industrial scale projects with a focus on simplification and cost reduction.</u>
- <u>R&D Development of new electrolyser designs.</u>

Delivery Manager Power to Port | Feb 2021 to Oct 2021

This role was responsible for the end to end development of Green hydrogen and ammonia projects from "power to port". This wide remit included securing renewable resources, feasibility studies detail design, procurement, construction and commissioning. This role focused on Russia and Central Asian projects and I was developing to a variety of projects power sources including hydro dams, solar, wind and tidal projects. Multiple projects were under development at the commencement of war with Ukraine. FORTESCUE ENERGY withdrew from Russia.

Activities included:

- Assess and acquire energy resources including Hydro, Solar and tidal projects.
- Lead teams to design and develop energy resource, production, storage and export facilities.
- Development of agreements with Russian and Central Asian government bodies and potential partners for Merger and Acquisition activities.
- Develop and manage project budgets, teams, schedules, contracting strategies and all aspects of project delivery
- Managing a lean team of direct staff, allocating priorities and providing mentoring and guidance to build a highly capable and engaged team environment.
- Developing procurement and negotiation strategies to mitigate risk and deliver optimal quality, cost, time and commercial outcomes. Leading tendering, contract development and negotiation processes to award major contracts.

Key Projects and Achievements:

Yukutia: A 3.8GW Green hydrogen and ammonia production facility

This Arctic project included the development of two hydo dams, hydrogen production facilities, a 550km hydrogen pipeline, ammonia production facility, ammonia storage and a port near Japan.

Evenkia project: A 3.4GW Green hydrogen and ammonia production facility

Project included hydro power dam in Northern Siberia, a major power transmission line to the production facility at an existing port near to sea. Product was to be shipped to European ports and used for bunkering ships crossing the now opening Northern passage giving Russian ships faster access to Pacific ports including Japan.

Kazakhstan project: A 20GW Green energy facility

Project included wind farms, ground water desalination and hydrogen production for injection into major gas pipelines delivering to European markets.

Development of software optimising Arctic Hydro Dams for production of green Hydrogen

NICHE INNOVATIONS Managing Director: | February 2020 to 2021

Undertake concept development activities on specialist energy projects. Developed these to patent readiness and proceed through funding applications for next stage development. Explore alternative forms of investment funding.

Key Projects:

- Hydrogen Developments: Conceptual business case to create and economic hydrogen supply network for regional Australia
- Concentrated Solar Energy Solution: Conceptual design for economic concentrated solar at small scale (30MW).
- Domestic Hydrogen systems: <80kW sustainable off grid solutions.
- Development of high efficiency shaft haulage system patent.
- Development of multiple patents and concepts for energy efficient equipment.

NEWMONT MINING CORPORATION | 2012 to 2020

Newmont Mining is one of the world's largest gold producers with significant assets on four continents. I started as the APAC Engineering Manager, providing commercial and technical strategy and guidance to CAPEX and OPEX projects to deliver business goals. I then moved into the Tanami team, leading major CAPEX programs and projects.

Tanami Major Sustaining Capital Program Manager: NEWMONT AUSTRALIA | 2019 to 2020

Tanami Power Project Director: NEWMONT AUSTRALIA | 2016 to 2020

My role moved to the Tanami Mine after I was asked to deliver increased power generation capacity at lower costs. I expanded the project vision to reduce generation cost, fuel costs, fuel security and lower emissions. Concurrent with the completion of a major and highly successful energy project, I took on a role to manage the mines major sustaining program of works. Duties included:

- Leading feasibility studies to identify investment opportunities and assess new projects. Analysing options to prepare and present compelling business cases to secure funding.
- Identifying and assessing engineering innovations to deliver value-add solutions. Leading the research, analysis and assessment of opportunities to develop sustainable and scalable strategies.
- Preparing detailed project scopes and management plans and leading projects from the concept phase through to operational handover. Driving milestones, deliverables and goals through project execution.
- Developing procurement and negotiation strategies to mitigate risk and deliver optimal quality, cost, time and commercial outcomes. Leading tendering, contract development and negotiation processes to award major contracts.
- Leading complex permit and approval processes including NT Traditional Owner negotiations and EPA approvals.
- Building strong relationships with delivery partners and managing their performance through the engineering, construction and commissioning phase.

- Managing a lean team of direct staff, allocating priorities and providing mentoring and guidance to build a highly capable and engaged team environment.

Key Projects & Achievements:

Power Project Portfolio: A 450km Gas Pipeline, Two Power Stations, 66 KV Transmission Line | USD $580m. Safety TRIFR = 0

Diesel was delivered to power the plant using road trains on unsealed roads. This process was costly and high-risk with shutdowns during flooding. I was asked by the Mine Manager if I could increase power capacity and reduce the power costs.

- Took the initial challenge to reduce power costs, conducted extensive research and personally led feasibility studies to develop a compelling business case to change the mine from diesel to gas power generation.
- Developed procurement strategies which leveraged market and economic conditions to achieve optimum commercial outcomes. Led the negotiation and award of three contracts (USD $580m) in collaboration with the legal and supply chain departments.
- Managed the portfolio of projects and site team peaking at 850 with a lean internal team of five. This was achieved through rigorous project scoping, building excellent relationships with delivery partners, hands-on involvement through execution and robust interface management.
- Negotiated a gas supply agreement with a gas supplier (USD $160M). Negotiated supply and construction of a 450km 8" steel pipeline financed by the contractor (USD $240M). Negotiated supply and construction of two power stations and a 66kV transmission line, finance by a second contractor (~US$180M). Stations were designed for heat recovery and renewables in next stage expansion and the pipeline provides access to gas for remote indigenous communities and other customers.
- Delivered energy cost savings >USD $250m over ten years, reduced site emissions by 30% and the number of trucks to the site by 70%; reducing logistical and maintenance costs.
- Led the project from ideation to operation, it was completed with the highest safety record. TRIFR = 0 and set records in execution times.
- Acquired NT Traditional Owner and EPA approval for the project in record time (9 months with 84 separate land agreements signed).
- Drove innovative power station design capable of high efficiency using gas or diesel to provide fuel security for the site.
- Achieved significant savings and price certainty for the site by delinking energy supply from crude oil volatility.
- Member of the global energy management team to drive enterprise-level energy cost and emission reduction.

Additional Projects (Various Stages, Feasibility to Execution):

Waste Heat Recovery Chilling System for Gas-Fired Power Generators | $15M

Design and Construction of a 1400m*6m Diameter Refrigerated Mine Ventilation Shaft | $80M

New Leach Train at the Processing Facility | $55M

Airport Upgrade to Meet CASA Standards | $8M

Regional Engineering Manager APAC: NEWMONT MINING CORPORATION|2012 to 2016

Accountable for leading feasibility due diligence, engineering, project development and plant optimisation activities for the Asia Pacific region and Africa; to ensure sound investment strategies and optimised project outcomes. Duties included:

- Managing study teams for mines and expansions. Interrogating studies and businesses cases to assess investment opportunities, risks and provide recommendations to executives on the economic viability of projects in the region.
- Leading innovation and plant optimisation by seeking innovative solutions to improve plant performance, equipment life and uptime. Troubleshoot failures and conducting root cause analysis to implement long-term solutions.
- Providing consultancy and technical support to project teams across the region through the engineering and construction phase of projects, to implement robust engineering and drive safety into all aspects of design and project delivery.
- Driving major procurement strategies and negotiating major supply contracts for key site services.
- Recruiting, training and mentoring graduates and engineers. Inspiring young engineers to be curious, innovative and pragmatic. Diversity champion with Newmont's Women in Mining program.

Key Projects & Achievements:

- Took on a $1.5b portfolio of projects and reduced this significantly by interrogating businesses cases and finding a lack of economic viability. This included switching from construction of an SO2 production facility to installation of a IsaMill ultra fine grinding expansion as a cheaper more sustainable option for KCGM.
- Technical director and Deputy Project manager of a Feasibility study to develop a new mine, process plant and infrastructure at Ahafo North in Ghana. Reduced capital costs by ~US$300M and the approved study is now in the implementation stage.
- Engineering management of Tanami Haulage Shaft project ($US450M).
- Led significant energy efficiency improvements incorporated into operations and developed an energy KPI for Newmont project approval process.
- Produced the Pre-Feasibility study for a major KCGM mill expansion. Recommended option approved to take forward.
- Delivered KCGM Mill throughput improvements by reconfiguring the Mt Charlotte crushing circuit. Achieved higher throughput with no additional capital cost.
- Optimised KCGM apron feeder operation to reduce stockpile segregation increased mill production for zero capital.

Managing Director: HARDWARE DISTRIBUTORS | 2008 to 2012

Following a period of living and working in France, I sought to diversify my experience and led this business. I took over just before the start of the Global Financial Crisis. This presented unique challenges as a result of the 40% downturn in business, requiring the implimentation of contingency and diversification plans. Duties included:

- Completing a strategic review of the business, competitors and marketplace to develop and execute business plans to grow market share and deliver business profitability and sustainable growth.
- Operational and business management with accountability for P&L and daily cash-flow management, product development and rationalization, HR and team management, supply chain management, warehousing and logistics.
- Engaging with overseas subcontract manufacturers to build manufacturing capability and increase margins. Extensive overseas travel to complete due-diligence, manage quality and lead the implementation of manufactured products.
- Leading the development and commercialisation of new product lines. Conducting initial market research and due diligence to identify opportunities, modelling costs and developing price points to launch new directly manufactured products.
- Leading relationships with key clients to drive sales and identify diversification opportunities.

Key Achievements:

- Evolved the business from a distributer to a hybrid manufacturer/distributer. Significantly increased net profit by sourcing and introducing direct off-shore manufacturing, business efficiencies and discontinuing unviable lines.
- Significantly increased market penetration through the development of new products. Led product development and commercialisation of 200 new lines achieving great quality with a better price point and significantly higher margin.
- Built a sustainable and profitable business in highly adverse economic conditions. In 2012 the business was making 70% of all profits from the 200 newly introduced products.
- Developed and refined the local and international supply chain to improve quality and delivery. Sourced, assessed and selected high performing vendors and oversaw relationships to ensure service excellence.

Technical/Engineering Manager: GUINEA ALUMINA CO, Paris | 2006 to 2008

Accountable for leading the EPCM contractor and managing the engineering for a Greenfields Alumina project in Guinea including a mine, refinery, rail, power stations, port and village; with a value of USD $3B. I also played a key role as part of the Business partner acquisition management team to achieve the completion of a 33% (USD $1B) sale to BHP.

HATCH ASSOCIATES | 2003 to 2006

Refinery Design Manager | 2004 to 2006

I led a global engineering and technology team with global resource to successful deliver designs, studies, technology development and project delivery for Hatch's industrial clients.

Projects included the redesign and conversion of the Windimurra Vanadium mine processing plant from a batch process to a continuous production facility.

Engineering Manager | 2003 to 2004

Managed the engineering and cost estimating teams to complete a feasibility study for the SUAL Alumina Refinery located in a remote location in Russia. The study delivered within budget and on time.

Project Manager: BP Refinery, Kwinana | 2000 to 2003

Managed the delivery of refinery sustaining capital projects from concept to operation.

Other Roles:

Project Manager of brownfields rebuild of Gramercy Alumina Refinery. USA.
Study Manager of Friguia Alumina Refinery redesign. Budapest and London.

Excellent References Available Upon Request

No. NSD of 2024

Federal Court of Australia

District Registry: New South Wales

Division: General

FORTESCUE LIMITED (ACN 002 594 872) and others

Applicants

ELEMENT ZERO PTY LIMITED (ACN 664 342 081) and others

Respondents

ANNEXURE WM-2

This is the annexure marked **WM-2** produced and shown to **WAYNE MCFAULL** at the time of affirming his affidavit on 1 May 2024.

Before me: ……………………….

[redacted]

No. NSD of 2024

Federal Court of Australia

District Registry: New South Wales

Division: General

FORTESCUE LIMITED (ACN 002 594 872) and others

Applicants

ELEMENT ZERO PTY LIMITED (ACN 664 342 081) and others

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ANNEXURE WM-3

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Before me: ....

[redacted]

No. NSD of 2024

Federal Court of Australia

District Registry: New South Wales

Division: General

FORTESCUE LIMITED (ACN 002 594 872) and others

Applicants

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ANNEXURE WM-4

This is the annexure marked **WM-4** produced and shown to **WAYNE MCFAULL** at the time of affirming his affidavit on 1 May 2024.

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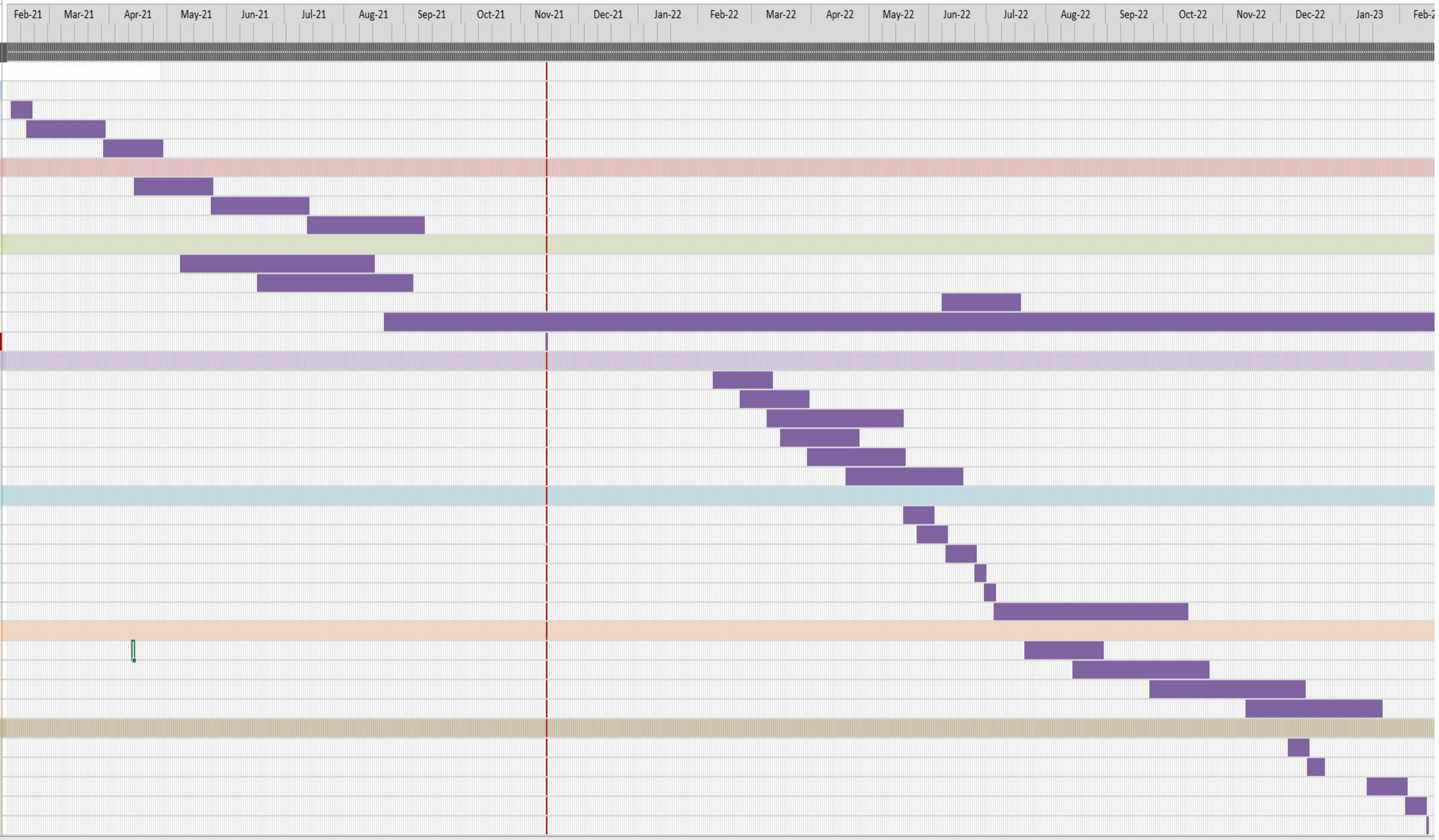
PROJECT TITLE

Fortescue DER Program

Project Start: Wed, 10/2/2021

Display Week: 1

TASK	PROGRESS	START	Days	END
1 Program Setup and Testing				
Initial Team join and inducted		10-Feb-21	10	20-Feb-21
Planning DER R&D program		18-Feb-21	40	30-Mar-21
Initial Idea Generation		30-Mar-21	30	29-Apr-21
2 Electrolyser Concept Testing				
Design Electrolyser Concept		15-Apr-21	40	25-May-21
Select and Engage UWA lab		25-May-21	50	14-Jul-21
Run Test Rig		14-Jul-21	60	12-Sep-21
3 Setup FFI Lab				
Recruitment		9-May-21	100	17-Aug-21
Set up lab equipment		18-Jun-21	80	6-Sep-21
Aquire Balcatta lab and move in		9-Jun-22	40	19-Jul-22
Test program Ongoing		23-Aug-21	600	15-Apr-23
B & B leave the Business		15-Nov-21	0	15-Nov-21
4 Pilot Plant Development				
Basis of Design		10-Feb-22	30	12-Mar-22
PFR & P&ID Development		24-Feb-22	35	31-Mar-22
Layouts and Models		10-Mar-22	70	19-May-22
Equipment lists & Datasheets		17-Mar-22	40	26-Apr-22
Specifications		31-Mar-22	50	20-May-22
Electrical Design		20-Apr-22	60	19-Jun-22
5 Procurement				
Create Tender Packages		20-May-22	15	4-Jun-22
Create Supplier Lists		27-May-22	15	11-Jun-22
Go out For Pricing		11-Jun-22	15	26-Jun-22
Evaluate Tenders		26-Jun-22	5	1-Jul-22
Award Tenders		1-Jul-22	5	6-Jul-22
Long Lead Item Supply time		6-Jul-22	100	14-Oct-22
6 Construction				
Site Preperation		22-Jul-22	40	31-Aug-22
Civil/Structural		16-Aug-22	70	25-Oct-22
Mechanical		25-Sep-22	80	14-Dec-22
Electrical & Instrumentation		14-Nov-22	70	23-Jan-23
7 Commissioning				
Pre Commissiong		6-Dec-22	10	16-Dec-22
Water Commissioning		16-Dec-22	8	24-Dec-22
Caustic Commissioning		16-Jan-23	20	5-Feb-23
Energise and commission electrolysers		5-Feb-23	10	15-Feb-23
Plant Operation		16-Feb-23	0	16-Feb-23



No. NSD of 2024

Federal Court of Australia
District Registry: New South Wales
Division: General

FORTESCUE LIMITED (ACN 002 594 872) and others

Applicants

ELEMENT ZERO PTY LIMITED (ACN 664 342 081) and others

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ANNEXURE WM-5

This is the annexure marked **WM-5** produced and shown to **WAYNE MCFAULL** at the time of affirming his affidavit on 1 May 2024.

Before me: ....

Element Zero Raises US$10M Seed Funding to Scale up Green Materials Platform

Source: www.gulfoilandgas.com 1/17/2024, Location: Not categorized

Element Zero, a green materials platform company, announced today that it has raised US$10 million in seed funding led by Playground Global. The company has developed a novel approach to cost-effectively convert metal ores, such as iron, nickel, and other future-facing materials, to pure metals with zero carbon emissions. The low energy consumption and the ability to operate using intermittent renewable energy underpins the company's capability to reduce carbon emissions on a global scale. Element Zero will use the funding to grow R&D, engineering, and project development teams and scale the development of a pilot iron plant. Peter Barrett, Co-Founder and General Partner at Playground Global, has joined the company's board of directors.

"Element Zero will help transform Western Australia from the world's mine into the world's foundry, dramatically reducing carbon emissions in the process," said Playground Global's Peter Barrett. "Australia is poised to become a leader in resilient and sustainable global prosperity – its natural wealth in minerals and renewable energy blended with innovation in electrochemistry and new materials will cement its leadership in the energy transformation. Element Zero is a major catalyst in this shift and the Pilbara region in the north of Western Australia stands as the premier location globally to showcase the company's potential."

Initial Focus on Converting Iron Ore to Iron with Novel Processing Platform

Element Zero has created a low-temperature mineral processing platform that utilizes renewable energy to convert iron ore to iron. This non-aqueous electrochemical process allows Element Zero to process the full spectrum of iron ores; this includes the core 95% of Australian and Brazilian global trade in iron ore. Currently, lower grade iron ore cannot be processed using hydrogen-fed direct iron reduction or other lower carbon processing technologies. The technology has been tested successfully on iron ore, nickel, and other future facing metals. The lower temperature also allows Element Zero to run this process on intermittent renewables like wind, solar, and hydropower.

The current Element Zero prototype is capable of producing 100 kg of zero-carbon iron per day while offering superior product purity – a testimony of the team's capabilities and the simplicity and scalability of the process itself. Most notably, Element Zero:

- Achieved this milestone in 18 months, while proponents of other electrochemical technologies spent nearly a decade reaching a similar scale.

- Completed a detailed engineering design for one metric ton per day and is in the midst of a procurement and manufacturing process while a 100 kg per day prototype is being tested and optimized using iron ore feed from major iron ore producers.

- Aims for the next scale-up to be completed and commissioned by end of 2024.

Addressing Urgent Need for Global Decarbonization

The production of iron, steel, and other metals is an energy and carbon-intensive process, with steel production accounting for over 30% of carbon emissions from materials and more than 8% of global carbon emissions alone. With demand for these materials expected to double by 2050, there is a clear and urgent need to decarbonize. However, current approaches in this sector are energy-intensive and can only use very high-grade iron ore in their process; they cannot use renewable energy sources to power their plants due to the high temperature required. Element Zero's platform will also serve as a cost-effective approach for decarbonizing heavy metals. As the price of high-grade iron ore continues to rise, Element Zero will be able to process low-grade iron ore, which is widely accessible.

“Our processing platform will, for the first time, allow cost-effective and scalable production of carbon-free metals crucial to the iron and steel and critical metals industries,” said Michael Masterman, Founder and CEO of Element Zero. “We are excited to have Playground Global join our journey to tackle the decarbonization of hard-to-abate sectors. Support from Playground Global goes way beyond financial investment, and we are already in deep discussions about developing green iron and green silicon value chains in the U.S. We are also working with major iron ore miners and iron and steel companies globally.”

Based in Perth and the north of Western Australia, adjacent to the largest iron ore ports in the world responsible for exporting nearly 55% of the world's seaborne iron ore supply, Element Zero plans to develop five million tonnes per year of iron ore feed, producing around 2.7 million tonnes of high purity iron.

A World-Class Team of Energy, Materials, and Financial Experts

The Element Zero team comprises experienced leaders in the energy and materials industries with electrochemistry, engineering, metallurgy, project deployment, and fundraising expertise: https://elementzero.green/

- Co-founder and Chief Executive Officer Michael Masterman previously served as Executive Chairman of Squadron Energy, Australia's largest renewable energy company. Prior to that, he was the Chief Financial Officer and Chief Investment Officer of Fortescue Future Industries, driving the company's evolution from startup to global expansion and scale. He is a founding shareholder in several multi-billion dollar startups.

- Fellow co-founder and Chief Technology Officer Bart Kolodziejczyk served as Director of Hydrogen and Clean Technologies at Boston Consulting Group and Chief Scientist at Fortescue Metals Group.

Financials and Investment News in Australia >>

88 Energy Limited Announces Investor Presentation

Australia >> 4/17/2024 - 88 Energy Limited (ASX & AIM: 88E) ("88 Energy" or the "Company") is pleased to confirm that the April 2024 investor presentation is available on the ...

Flex LNG - Mandatory notification of trade by PDMR

Bermuda >> 4/17/2024 - Flex LNG Ltd. (the "Company") has received trade notifications from the following persons discharging managerial responsibilities ("PDMR"):

...

Altius Renewable Royalties Reports Q1 2024 Expected Proportionate Royalty Revenue(1) of $2.5M

Canada >> 4/17/2024 - Altius Renewable Royalties Corp. (TSX: ARR) (OTCQX: ATRWF) ("ARR", the "Company", or the "Corporation"), expects to report Q1 2024 proportionate royal...

Origin Enterprises plc Announces Transaction in Own Shares

Ireland >> 4/17/2024 - Origin Enterprises plc (the "Company") announces that on 16 April 2024 it purchased a total of 25,000 of its ordinary shares of EUR 0.01 each (the "or...

Petro Matad Limited Announces Notice of AGM Logistics

Mongolia >> 4/17/2024 - Petro Matad Limited (AIM: MATD), the AIM-quoted Mongolian oil company provides additional information regarding the Annual General Meeting ("AGM") of ...

SBM Offshore Announces Weekly Share Repurchase Program Transaction Details

Netherlands/Holland >> 4/17/2024 - SBM Offshore reports the transaction details related to its EUR65 million (c. US$70 million) share repurchase program for the period April 11, 2024 th...

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- Aker ASA: Minutes of Annual General Meeting 2024
- Kennametal to Host Earnings Conference Call & Webcast on Q3 Fiscal 2024 Results

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No. NSD of 2024

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FORTESCUE LIMITED (ACN 002 594 872) and others

Applicants

ELEMENT ZERO PTY LIMITED (ACN 664 342 081) and others

Respondents

ANNEXURE WM-6

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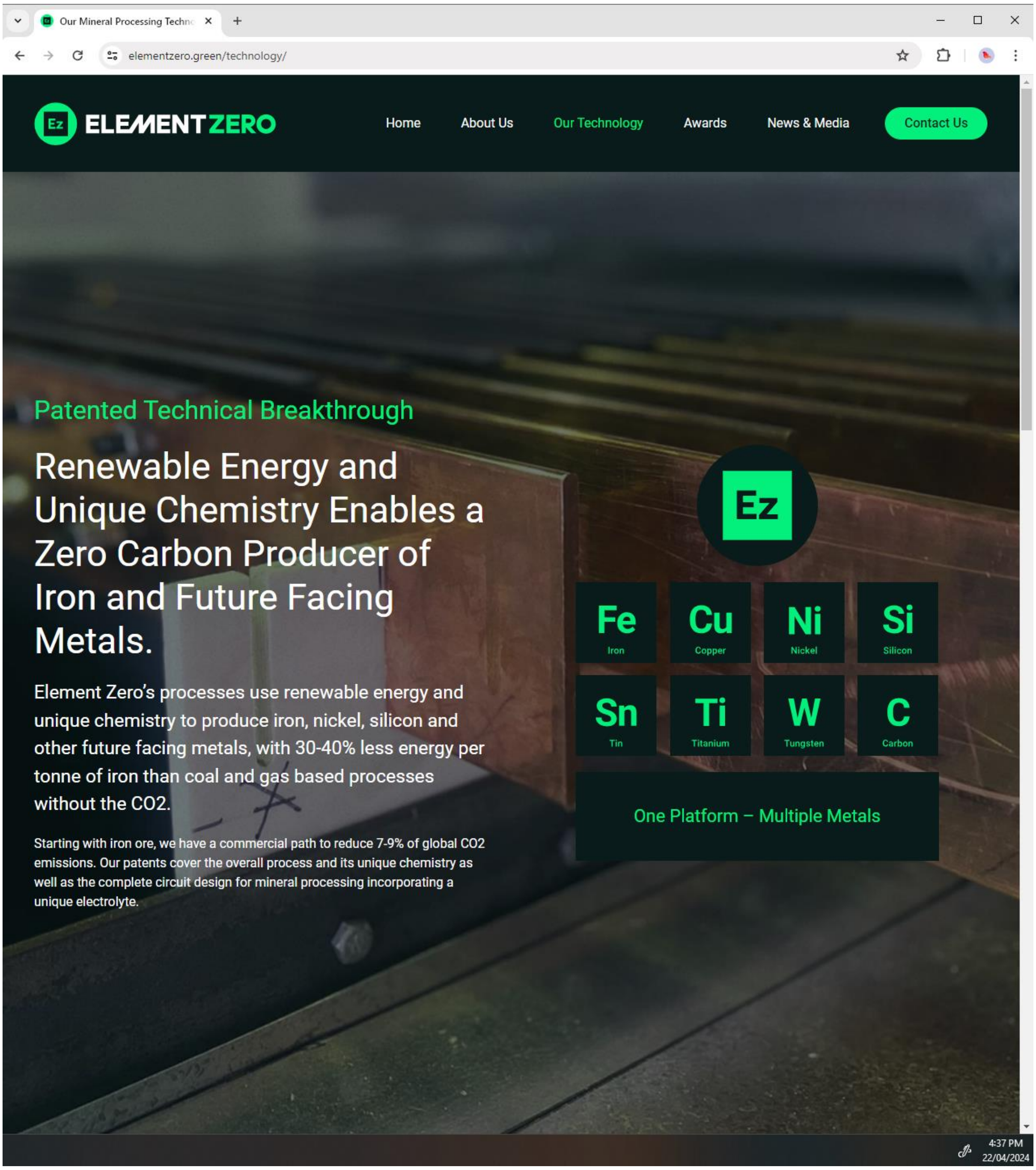
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Patented Technical Breakthrough
Renewable Energy and Unique Chemistry Enables a Zero Carbon Producer of Iron and Future Facing Metals.
Element Zero's processes use renewable energy and unique chemistry to produce iron, nickel, silicon and other future facing metals, with 30-40% less energy per tonne of iron than coal and gas based processes without the CO2.
Starting with iron ore, we have a commercial path to reduce 7-9% of global CO2 emissions. Our patents cover the overall process and its unique chemistry as well as the complete circuit design for mineral processing incorporating a unique electrolyte.
Ez
Fe Iron
Cu Copper
Ni Nickel
Si Silicon
Sn Tin
Ti Titanium
W Tungsten
C Carbon
One Platform – Multiple Metals
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22/04/2024

Our Mineral Processing Techn

elementzero.green/technology/

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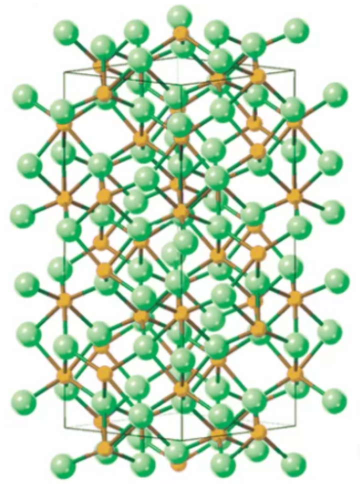

Electroreduction Converts Iron Ore To High Purity Iron.

Element Zero has developed a novel approach to cost-effectively and efficiently convert metal ores such as iron ore, nickel ore and other future facing metals, to pure metal form with zero carbon emissions.

- Iron ore and other minerals dissolve in 15 –30 minutes with full dissolution within 60 minutes.
- Electroreduction converts iron ore to high purity iron ~98%.
- Superior efficiency with 30 – 40% less energy consumption compared to traditional processing pathways.
- Intermittent energy (wind and solar) can be used in the process resulting in green iron.
- The technology can process low grade (30% Fe) to high grade (72% Fe) iron ore.
- Low operating temperature in the range of 250 – 300°C enables rapid ramp up and ramp down of the processing capacity.
- No membrane is needed.

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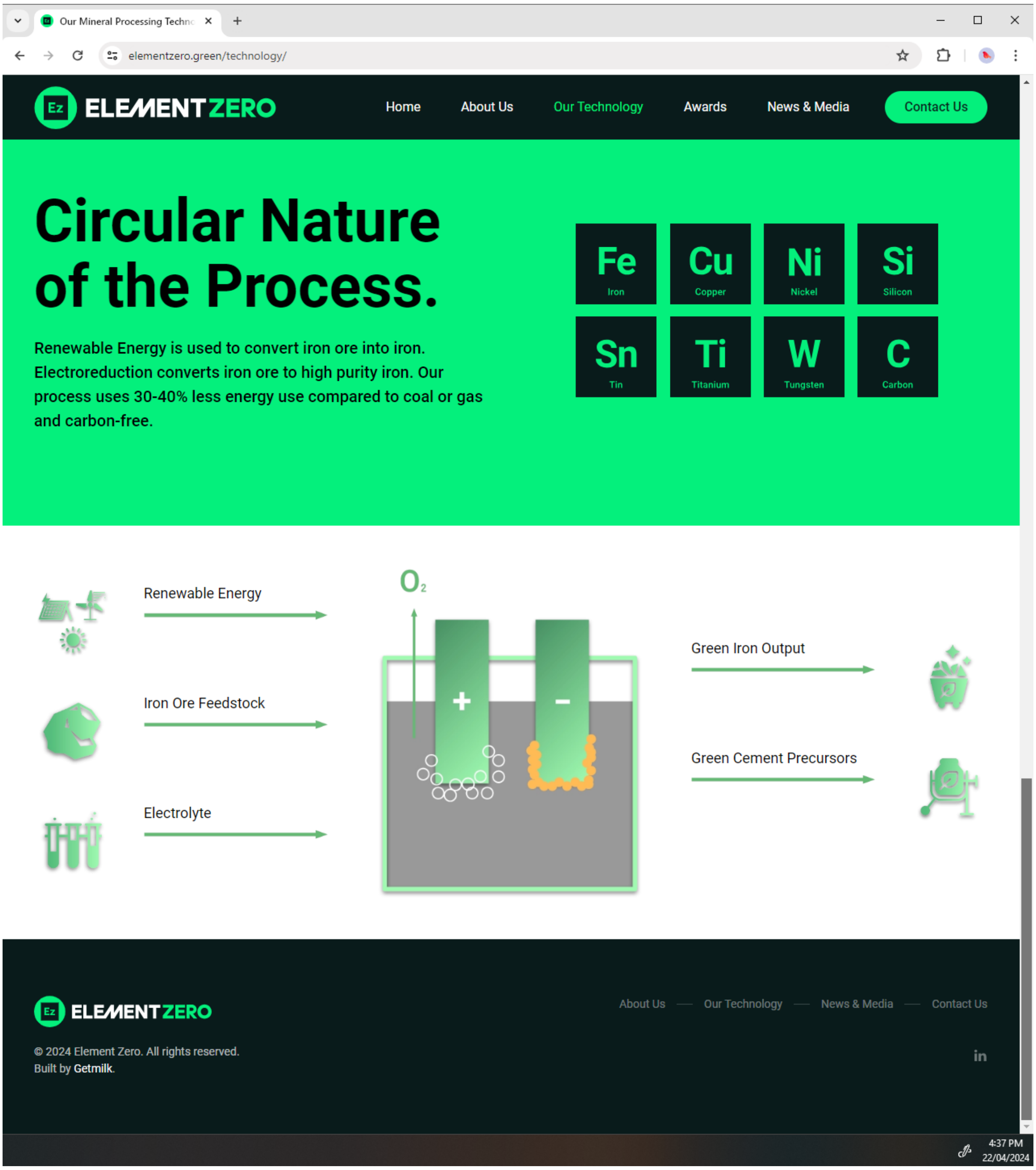
22/04/2024


Our Mineral Processing Techno
elementzero.green/technology/
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Circular Nature of the Process.
Renewable Energy is used to convert iron ore into iron. Electroreduction converts iron ore to high purity iron. Our process uses 30-40% less energy use compared to coal or gas and carbon-free.
Fe Iron
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Ni Nickel
Si Silicon
Sn Tin
Ti Titanium
W Tungsten
C Carbon
Renewable Energy
Iron Ore Feedstock
Electrolyte
O2
+
–
Green Iron Output
Green Cement Precursors
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