

## BLIND FREDDY ELECTRIC BIKES

### RISK MANAGEMENT PROCESS

| Document control | Primary purpose |             | To manage the risk associated with the sale, trialling, servicing and repair of electric bikes, tricycles and special needs mobility aids |  |
|------------------|-----------------|-------------|---|--|
| Version number   | V1.0            | 12-Nov-2019 | Initial version   | To identify and define management process  |
|                  | V1.1            | 11-Mar-2020 | Updated version   | To refine the management of the risks based on operational knowledge                           |
|                  | V1.2            | 19-Apr-2020 | Updated version   | To improve the recording and management of risks based on operational knowledge and experience |
|                  | V1.3            | 01-May-2020 | Edited version  | To continually improve risk management   |

#### 1. INTRODUCTION

This risk management plan defines how Blind Freddy Electric Bikes handles the risks associated with the sale, trialling, servicing and repair of electric bikes, tricycles and special needs assisted mobility aids including the management of Lithium-ion (Li-ion) batteries in the business supply chain and for customers.

#### 2. ORGANISATION

The Virtual GIS Group Pty Ltd is the legal entity which has the trading name Blind Freddy Electric Bikes under which this business operates. Andrea Herklots and Richard Herklots jointly share the Directorship of this legal entity.

##### Staff

Blind Freddy Electric Bikes is a small business which has been privately owned by Andrea and Richard Herklots since 12 November 2019. The business is owner-operated by Andrea and Richard Herklots and employs one full time staff member, Jack Herklots. No other permanent or part-time employees are employed. Contract staff are employed on a casual basis to provide specific functions. Jim Collins has been continually employed on a casual basis since 2016, his relationship with the business pre-dating the business purchase. His hours fluctuate each week, but his skills provide continuity of knowledge in bike mechanics, workshop organisation and inventory management.

##### Experience

Richard and Andrea Herklots are planning to purchase the business in November 2019. Richard has a Bachelor of Electrical Engineering Degree (UNSW) and Andrea has a Bachelor of Science (Hons) in Combined Science (Computer Studies and Geography) from the University of Brighton, UK and a Master of Science in Remote Sensing (University College London, UK).

Andrea has managed her own business since September 1996 and has a strong background in consultancy, customer service and technical project management. Her business has continually operated for over 20 years and she brings to the Blind Freddy Electric Bikes business her strong business acumen and knowledge of operational management and customer service.

Richard has worked in a technical role as a project engineer across a wide range of industries throughout his 30+ year career. His background in electrical engineering and process improvement is ideally suited to the electric bike industry, particularly in the area of customisation of solutions for customers with special needs and specific design requirements. He has a wide network of contacts in the field of manufacturing and fabrication.

##### Function

Richard is the technical lead for the business, coordinating the workshop activities, technical process improvements and research and development. Andrea is the operational manager primarily providing customer support for sales, marketing and customer complaints. The previous owner was involved in the transition of the business and he was retained as a technical advisor for the first six months of the business. He is available on a casual basis as required to provide technical consultancy. The operational manager manages all risks associated with the business but all members of the business including owners, permanent and casual employees are involved in the daily discussion and reporting of risks.

### **3. RISK MANAGEMENT PROCESS**

Blind Freddy Electric Bikes adopts the standard risk management process of identification, analysis, ranking, treating and monitoring risks.

We take our responsibility to protect our customers, our employees and our supply chain seriously and consider the risk management process to be part of an overarching approach to workplace health and safety.

This risk management process includes the approach to manage risks listed in the summary risk register and for more complex risks which are covered by the detailed risk register for risks such as Li-ion battery management. Risk registers form one of the documented plans for the organisation and is supported by procedural checklists for managing participants when onsite at our showroom, for importing of equipment, for managing incidents and after sales including the management of complaints.

The process plan is accompanied by a summary and a detailed risk register to record any identified risks from all risk areas together with the mitigation process to manage those risks.

Blind Freddy Electric Bikes keeps complete and current insurances to support range of activities involving risk within our business.

Additional information on the management incidents arising from risks materialising can be found in Blind Freddy Electric Bikes' Incident Management Process.

#### **3.1. IDENTIFY THE RISK**

Our risk registers capture any risks identified as part of the Blind Freddy Electric Bikes operation into summary risks or detailed risks.

Summary risk register identifies risks into the following categories:

- (a) Equipment
- (b) Customers
- (c) Resources
- (d) Supply chain

Summary risks are continually being updated and this list may not be definitive. The process is considered appropriate for the size of the organisation and the owners have as strong vested interest in the continual identification, management and mitigation of all risks.

Detailed risk register currently only describes one risk associated with lithium ion batteries: Electricity sourced from batteries is potentially hazardous. Equipment that uses electrical energy should be compliant with standards and installed according to applicable electrical codes to mitigate safety risks. Li-ion batteries are classified as a dangerous good (Class 9). Batteries must be packaged and transported in accordance with the Australian Dangerous Goods Code (ADG).

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Li-ion batteries use a cathode based on metal oxides of cobalt, nickel, iron, aluminium or manganese. The anode component is carbon. The electrolyte medium is a lithium salt in a solvent such as organic, solid ceramic, ionic fluid, composites or other types of solvent.

Blind Freddy Electric Bikes imports electric bikes, trikes and batteries direct from manufacturers in China. Suppliers transport goods from their factories in China via sea-freight. The business strictly limits the number of suppliers from whom they purchase, to be able to manage the supply chain and the quality of goods. Only genuine Samsung, Panasonic or LG Li-ion battery cells are purchased, and all suppliers must supply a safety certificate and certificate of origin with each delivery.

Blind Freddy Electric Bikes also purchases electric bikes from wholesalers within Australia. Batteries are generally purchased as part of a complete ebike or scooter and are delivered as a complete unit. Where spare parts or replacement batteries are purchased as separate items for customers, these batteries are shipped directly to Blind Freddy Electric Bikes according to the federal legislation on transporting goods containing Li-ion batteries.

Blind Freddy Electric Bikes is a small business operating from one combined retail showroom and workshop and with a spare parts/storage unit and another storage location for imported bikes only. Li-ion batteries are contained within electric bikes, trikes and scooters on the showroom floor, in customer's bikes which have been brought in for workshop servicing and repairs. Unsold electric bikes contain Li-ion batteries.

The business also provides wholesale customers with goods within Australia. Most customers are located within Australia and are supplied with goods via post, courier or direct delivery.

Risks are identified but not currently rated. Rating can be conducted by adopting the risk rating system described in Section 4.

### **3.2. MITIGATE**

The summary risk register lists the mitigation measures identified for the management of those risks. Furthermore, specific details for the management of li-ion batteries is described in the detailed risk register. These items have a failure rate that is less than one in a million. Failure rate of a quality Li-ion cell is better than 1 in 10 million (source: Battery University, 2019).

Mitigation is a core function of the business. This is done through a controlled product acquisition and management process:

1. Only purchasing batteries which comply with International Standards UN38.3
2. Purchasing batteries from suppliers renowned for manufacturing high quality batteries and name brand batteries
3. Batteries are only sold with approved battery chargers which comply with AS/NZS60335.2.29
4. Following manufacturer's guidelines for the safe storage of batteries
5. Checking battery voltages when they are received to determine if the voltage is the correct level for storage
6. Rotate all batteries through a structured and time-based program of full discharge and re charge every 3 months to maintain optimum battery life.

Manufacturer's guidelines are supplied and followed for safe handling and storage. Customers are provided with copies of the manufacturer's guidelines upon purchase. Customers are also given verbal instructions on how to store and use batteries safely. Customers are also provided with written guidelines on how to store batteries to optimise battery life. Long-term storage by customers should follow these principles:

- Discharge energy from battery if possible and safe
- Store out of reach of children
- Report any defects or changes to the battery casing to the company

### **3.3. ANALYSE, EVALUATE AND TREAT THE RISK**

Many of the risks identified in the summary register are continually analysed, evaluated and treated on a daily basis. For longer term risk strategies such as the management of li-ion batteries, the approach is more detailed. For instance, the metal in Li-ion batteries itself is very reactive and are therefore potentially volatile. A failing Li-ion

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battery begins to hiss, bulge and leak electrolyte. The way in which this is analysed, evaluated and treated is as follows:

### **3.3.1. Risk of fire**

Sparks can be generated if terminals connect. Battery casing is used to prevent the exposure of terminals on electric mobility devices.

#### ***Risk preparation for risk of fire:***

1. Keep fire extinguisher, fire blanket and tub for water immersion onsite.
2. Retain clear egress to outside via rear door.

#### ***Risk mitigation strategies for risk of fire:***

1. Store batteries according to manufacturer's instructions in a cool, dry, ventilated space
2. Only use certified batteries for correct use
3. Store batteries at partial charge where possible (heat and full charge increases risk)

#### ***Risk treatment if exposed to fire:***

1. Call 000 and seek urgent medical advice
2. If safe to do so,
  - a. Move battery away from other flammable materials and place on a non-combustible surface
  - b. If possible, use a fire blanket to smother, remove the battery and place it outdoors to burn out
  - c. If not possible to move safely, use an appropriate fire extinguisher or water to put out the fire.
    - i. Extinguisher – you can use a foam, CO2, ABE dry chemical or water extinguisher.
    - ii. Water can also be used as Li-ion batteries contain very little lithium metal which reacts with water. Water also cools the adjacent area and prevents the fire from spreading.
  - d. Place burned-out battery packs in a safe, outdoor location and monitor to ensure cell propagation has consumed all cells.

### **3.3.2 Risk of thermal burns from contact with hot surfaces**

Volatility can cause the battery to rapidly lose energy which could generate enough heat to burn skin. The outside casing of failing batteries could produce a thermal burn if it comes into contact with skin.

#### ***Risk preparation for risk of thermal burns:***

1. Keep burn ointment in first aid cabinet

#### ***Risk mitigation strategies for risk of thermal burns:***

1. Store batteries according to manufacturer's instructions in a cool, dry, ventilated space
2. Wear hand protection when handling batteries
3. Have burn ointment on hand in case of emergency

#### ***Risk treatment if exposed to corrosive electrolyte:***

1. Call 000 and seek urgent medical advice
2. Apply burn ointment if recommended by emergency services personnel

### **3.3.3 Risk of chemical burns from contact with corrosive substances**

The electrolyte contained in batteries can be corrosive if it comes into contact with skin, eyes, clothes, concrete, plastic, metal, wood or the environment. Battery shells are designed to safely contain the electrolyte. Only if casing fails would corrosive substances become exposed.

#### ***Risk preparation for risk of corrosion:***

2. Keep rubber gloves, eye protection and protective clothing onsite
3. Keep eye wash in easily accessible location.

#### ***Risk mitigation strategies for risk of corrosion:***

4. Store batteries according to manufacturer's instructions in a cool, dry, ventilated space
  5. Use old clothes or a rubber apron when handling batteries
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6. Wear rubber gloves
7. Wear eye protection
8. Have eye wash on hand in case of emergency

***Risk treatment if exposed to corrosive electrolyte:***

3. Call 000 and seek urgent medical advice
4. Wash eyes with eye wash
5. Wash skin with clear, running water

### **3.3.4 Risk of electric shock**

Most batteries have very low voltage and so there is no risk of electric shock, but it is important not to be complacent about batteries, especially those that contain higher voltages. Batteries supplied or installed on electric bikes are 48 volts or less.

***Risk preparation:***

1. Stock tape in workshop for covering terminals

***Risk mitigation strategies:***

1. Store batteries according to manufacturer's instructions in a cool, dry, ventilated space
2. Do not receive batteries from unknown source into retail outlet or storage units
3. Discharge batteries fully before disposing of them
4. Cover terminals with tape before disposal
5. Where possible, recycle batteries in accordance with recycler's instructions

***Risk treatment If exposed to electric shock:***

1. Call 000 and seek immediate medical advice

### **3.3.5 Risk of swallowing**

Batteries used for electric bikes or other mobility devices are too large to be swallowed, so there is no risk of swallowing.

*Risk preparation for swallowing:* Not applicable.

*Risk mitigation for swallowing:* Not applicable.

*Risk treatment If batteries swallowed:* Not applicable.

### **3.3.6 Risk of injuries/lacerations from moving parts**

Batteries on electric bikes are contained within sealed units. Batteries are less than 10kg in weight. There are no moving parts within the batteries.

Risk of injury would be limited to impact from a battery falling items onto a person.

***Risk preparation for lacerations:***

1. Store first-aid cabinet containing products suitable for treating minor injuries

***Risk mitigation for lacerations:***

1. Avoid disassembly of batteries from mobility devices with customers present unless safe to do so.
2. Move devices away from retail outlet into workshop before adjusting position of batteries.
3. Train all staff including casual workers on safe process to remove and replace batteries.

***Risk treatment for lacerations:***

1. Conduct high-level triage on severity of injury
2. If minor
  - a. Call 000 and seek immediate medical advice
3. If moderate
  - a. Advise injured party to seek assistance from local medical centre
4. If high
  - a. Call 000 and seek immediate medical advice

### **3.3.7 Risk of loss of critical function**

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No evidence has been found for risks listed in the summary register causing loss of critical function. No evidence can be found of instances where battery failure has caused loss of critical function.

### **3.4. MONITOR AND REVIEW THE RISK**

Risks will be monitored and reviewed on quarterly basis or upon occurrence. Where a risk arises, the likelihood of reoccurrence will be assessed.

Any risks are documented in either the summary risk register or the detailed risk register (also listed in the summary), a copy of the formats are provided below (Table 1, Table 2).

### 3.5. FORMATS FOR IDENTIFYING RANGE OF RISKS IN A SMALL COMPANY ENVIRONMENT

It is acknowledged that the way risks should be managed in the workplace must reflect the size and level of risk appropriate to the business. Blind Freddy Electric Bikes is a relatively low-risk environment operationally and has designed a two-tiered approach to risk management which is able to be maintained based on the quantity, severity of risks and the resourcing available. The two tiers are summary and detailed and examples of the format for documenting these levels are provided below in Table 1 and Table 2.

#### Example Summary risk register for Blind Freddy Electric Bikes – Battery Management

Table 1: Summary of broad risks for Blind Freddy Electric Bikes

| Risk ID | Risk Description                                 | Risk owner | Potential Impact  | Mitigation     |                |                     | Likelihood to occur |     |      | Mitigation Detail   | Total risk exposure |
|---------|--|------------|---|----------------|----------------|---------------------|---------------------|-----|------|---|---------------------|
|         |  |            |   | Fund with \$\$ | Adjust process | Manage at execution | Low                 | Med | High |   |                     |
| E-01    | Damage caused by malfunction of li-ion batteries | REH        | 20% reduction in stock<br>Delays in filling sales demands<br>Loss of reputation |                | X              |                     | X                   |     |      | <ul style="list-style-type: none"> <li>Detailed register content below</li> </ul> | \$200,000           |

## Example Detailed risk register for Blind Freddy Electric Bikes – Battery Management

Table 2: Sample detailed risk register for Blind Freddy Electric Bikes

| Risk ID                 | Date submitted | Status  | Risk event | Risk probability               | Risk impact | Risk score | Cost of risk | Timeframe |
|-------------------------|----------------|---|------------|--------------------------------|-------------|------------|--------------|-----------|
|                         |                |   |            |                                |             |            |              |           |
|                         | Risk owner     | Agreed response                                       |            | Quantification comments        |             |            |              |           |
|                         |                | Avoidance<br>Transference<br>Mitigation<br>Acceptable |            | Cost basis:<br>Schedule basis: |             |            |              |           |
| <b>Description:</b>     |                |   |            |                                |             |            |              |           |
| <b>Assessment:</b>      |                |   |            |                                |             |            |              |           |
| <b>Response plan:</b>   |                |   |            |                                |             |            |              |           |
| <b>Lessons learned:</b> |                |   |            |                                |             |            |              |           |

### 4. PROCESS IMPROVEMENT

Risk management at Blind Freddy Electric Bikes is a continual process and is discussed openly in the workplace. Where modifications to the approach to risk management is required, our management team will extend/change or refine the process deployed operationally to continually protect our customers, our employees and our supply chain.

The policies and procedures are relevant and proportionate to the size and scale of our business and to the scope and complexity of the supports being offered to NDIS participants, allied health team members and to the general public.

### 5. INSURANCES

Blind Freddy Electric Bikes holds current public liability insurance. Our cover is \$20,000,000 for general liability and \$10,000,000 for management liability. We maintain currency of all our insurance policies which also cover vehicle, workplace and import/freight insurances. We have sought professional advice as to the recommended levels of cover for our insurances and believe we have appropriate types and amounts of cover commensurate with the business we operate.



## 6. REFERENCES

[Disability Services Act 2006 \(Qld\)](#)

[Coroners Act 2003 \(Qld\)](#)

[National Disability Insurance Scheme Act 2013](#)

[Working with Children \(Risk Management and Screening\) Regulation 2011](#)

[Work Health and Safety Act 2011](#)

[Workplace Health and Safety Regulations 2011](#)