Guide to Safe Riding on Motorcycles, Bicycles, PABs, PMDs and PMAs



Workplace Safety and Health

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1. Introduction

Delivery operations have traditionally relied on motor vehicles, e.g. vans, trucks, motorcycles. However, with the rise of e-commerce and online food delivery, demand for delivery services has grown rapidly. This demand is increasingly met by bicycles, power-assisted bicycles (PABs), personal mobility devices (PMDs) and personal mobility aids (PMAs) in recent years because they offer flexible and cost-effective alternatives for businesses.



Figure 1: Delivery rider using bicycle and motorcycle.

However, irresponsible use of these mobility devices can injure pedestrians, other road users and the riders themselves. With more bicycles, PABs, PMDs and PMAs (see Figure 2) used for work, companies need to take steps to ensure the safe use of these mobility devices for all their riders.

Personal Mobility Aids (PMA)

Devices which are designed to carry an individual who has difficulty walking







Figure 2: Manual wheelchair (non-motorised), motorised wheelchair and mobility scooter.

1.1 Who should read this guide

In this guide, bicycles, PABs, PMDs and PMAs are collectively termed active mobility devices (see Figures 1, 2 and 3). Users who ride motorcycles¹ or active mobility devices are referred to as riders.

Companies and riders who will find this guide useful include those who:

- Offer delivery services using motorcycles and/or mobility devices.
- Engage delivery services through contractual agreements.
- Provide active mobility devices for staff to travel within the workplace, e.g. security officers using PMDs for patrols.





Figure 3: Electric scooter and power-assisted bicycle.

Did you know?

Foreigners working as delivery riders are issued a work pass valid only for delivery work. When you engage them for delivery services, make sure that they are holding valid work passes.

1.2 Acts relevant to safe riding

Workplace Safety and Health Act

The Workplace Safety and Health Act aims to nurture good safety habits in all individuals to create a strong safety culture. Reasonably practicable measures should be taken to ensure the safety and health of riders and other people who may be affected by their delivery work.

Road Traffic Act

Road Traffic Act and its subsidiary legislations regulate vehicles on public roads. Hence, the regulations apply largely to motorcycles, bicycles and PABs when ridden on roads. Motorists travel at higher speeds which make cyclists and PAB riders vulnerable on the road, hence companies should remind riders to always remain vigilant and adhere to traffic rules.

Active Mobility Act

Active Mobility Act regulates the use of bicycles, PABs, PMDs and PMAs on public paths, whether for work or leisure. One of its objectives is to ensure the safety of pedestrians who share public spaces, e.g. footpaths and shared paths (see Figure 4) with mobility device users.

It is accompanied by a Code of Conduct, which details considerate behaviours expected of riders in order to promote gracious path-sharing. Companies should ensure that riders are familiar with the regulations under this Act.



Dedicated cycling path with bicycle logo



Shared path with advisory sign



Footpath

Figure 4: Types of public paths.

To view each Act in full, go to Singapore Statutes at https://sso.agc.gov.sg



Pedestrian-only paths refer to areas with the "No Riding" signage, such as pedestrian overhead bridges. Riders should dismount and push their devices (bicycles, PABs and PMDs) in such areas. PMAs are allowed to be used on pedestrian-only paths as they support persons with walking difficulties in their journey.

Figure 5: Pedestrian-only path.

Table 1 summarises the Land Transport Authority's (LTA) requirements, areas where mobility devices are allowed to be ridden, and respective speed limits for each mode of transport. Where mobility device and pathway speed limits differ, riders should travel at the lower limit. Although bicycles and PABs are allowed on roads, they are not allowed on expressways or in tunnels.

Transport	Device criteria ¹	Road	Cycling, shared path ² (25km/h)	Footpath ³ (10km/h)	Pedestrian- only path
Personal mobility device	 Max unladen weight 20kg Max device speed 25km/h (if motorised) Max width 700mm UL2272 certified⁴ (if motorised) 	X	~	X	X
Personal mobility aid	 Max device speed 10km/h (if motorised) 	X	1	-	~
Bicycle	 Max unladen weight 20kg Max width 700mm 	**	~	~	X

Transport	Device criteria ¹	Road	Cycling, shared path ² (25km/h)	Footpath ³ (10km/h)	Pedestrian- only path
Power-assisted bicycle	 Max unladen weight 20kg Max speed 25km/h (if motorised) 	**	~	X	X
Motorcycle	Approved and registered with LTA	**	X	X	X

Table 1: Summary of rules that apply to the different transport modes.

- ¹ With the exception of motorcycles, device criteria are applicable for devices used off-road only, i.e. cycling paths, shared paths and footpaths.
- ² E.g. park connectors and cycling paths.
- ³ E.g. pavements and sidewalks.
- ⁴ For more information on the UL2272 standard, please visit www.lta.gov.sg.

**Compulsory for rider to wear helmet

New measures to ensure the safe use of active mobility devices

LTA has introduced new measures on the safe use of active mobility devices. These include:

(i) Users under the age of 16 will not be able to ride e-scooters on public paths without adult supervision. For e-bikes, both the rider and pillion rider must be aged 16 and above.

(ii) E-scooter and e-bike users will have to pass a theory test before riding on public paths.

(iii) It is an offence to hold a mobile communication device and operate any of its functions while riding a device on public paths.

(iv) All registered and self-declared UL2272-certified e-scooters will be required to undergo an inspection to ensure compliance with device requirements set by LTA. Failure to send the device for inspection is an offence.

Did you know?

If you own a PAB or an e-scooter that is used on public paths, you will need to register your device with LTA. A registered PAB will need to be affixed with a number plate (see Figure 6), while a registered e-scooter needs to be affixed with registration and identification marks (see Figure 7).

To register your device, go to www.onemotoring.com.sg



Figure 6: Power-assisted bicycle fitted with number plate.



Figure 7: Registered e-scooter with identification and registration marks affixed.

UL-certified PMDs

Based on literature reviews and consultations with the Singapore Civil Defence Force, PMD fires can be caused by an electrical anomaly to the electrical circuitry or batteries. This can result from various factors, but not limited to, physical damage to the device, overcharging of rechargeable batteries, use of an unsuitable charger/battery, or manufacturing defects.

Amongst the standards that LTA has studied, UL2272 is the only comprehensive standard that covers these factors for the common types of PMDs used in Singapore such as e-scooters. Getting a device certified for UL2272 requires the passing of a series of electrical, mechanical and environmental tests. To improve public safety and minimise the risk of fire incidents, all motorised PMDs used on public paths must be certified to the UL2272 standard.

Safety tips for riders

- For the safety of PMD riders and those around them, all PMD owners should use UL2272 certified devices only;
- Do not leave charging devices/batteries unattended for an extended period of time or overnight;
- When charging such batteries, place them on hard flat surfaces to allow optimal dissipation of heat;
- Do not place the battery being charged and the PAB/PMD near combustible materials or along an escape path;
- Examine for any damage or deformation such as bloated, corroded batteries or powdery batteries;
- Do not tamper, modify or attempt to repair a PMD/PAB on your own. It is an offence to illegally modify a device, this may cause the device to be non-compliant; and
- Do not charge the PMD/PAB immediately after use.

1.3 WSH obligations of companies

Companies facilitating delivery services are obliged to play their part to ensure the safety of riders and their employees.

Under the Workplace Safety and Health (WSH) Act, delivery companies are required to protect the safety and health of their employees or workers working under their directions, as well as persons who may be affected by their work. Such delivery companies will include those who engaged self-employed riders to deliver food. These companies must:

- Conduct risk assessments to identify all hazards in relation to delivery work and implement effective risk control measures (see Chapter 2 on Risk Management);
- Ensure safety and health provisions are made to protect riders and employees for all hazards they may face while at work (see Chapter 4 on Hazards and Their Countermeasures), e.g. ensuring adequate safety checks are done and safety measures taken for mobility devices used for the delivery work;
- Ensure riders and employees are equipped with the necessary skills and instructions to safely operate the transport and carry out the delivery work (see Chapter 3 on Good Practices); and
- Develop and implement measures to deal with all emergencies.

Companies that hire contractors to perform delivery work without directing how the work would be carried out, also has duties under the WSH Act. These companies must take all adequate measures to ensure the safety and health of their contractors when at work. Such measures include, but are not limited to:

- Ensuring riders have taken all adequate safety and health measures to carry out the delivery
 work which includes conducting of risk assessments and implementing effective risk
 controls;
- Ensuring contractors are not exposed to all hazards arising out of the work arrangement;
- Making sure all adequate safety measures are taken for mobility devices used for the delivery work;
- Ensuring contractors are equipped with the necessary skills and instructions to safely operate the transport device and/or vehicle and carry out the delivery work; and
- Making sure measures are in place to deal with all emergencies.

The effective management of delivery operations can greatly reduce the risk of work-related incidences, e.g. on the road. Both employers and principals are reminded of their WSH obligations and to discharge them diligently, so that riders and their employees can work safely and more productively.

2. Risk Management

Risks can be managed in three steps and it should be done for all routine and non-routine work. Record these steps in a risk assessment (RA) form (see Annex) and review it when any of the following occurs:

- Existing RA was carried out three years ago.
- A new work procedure or equipment has been introduced.
- An accident or near miss occurred, or an occupational disease was diagnosed.

STEP 1: Identify hazards present in the job. Companies should list as many hazards as foreseeable for the RA to be comprehensive.

STEP 2: Evaluate risks levels of hazards identified in Step 1 by giving numerical ratings.

Table 2: Estimate severity of outcomes due to hazards.

Table 3: Estimate likelihood of outcomes occurring.

Table 4: Multiply severity and likelihood ratings to get the Risk Prioritisation Number (RPN). Table 5: Use RPN to assess risk levels and take appropriate action.

Severity	Rating	Potential outcomes due to hazards
Catastrophic	5	Death, fatal diseases or multiple major injuries.
Major	4	Life-threatening injuries or ill-health, e.g. major fracture, amputation, occupational cancer, and acute poisoning.
Moderate	3	Injury or ill-health requiring medical treatment or leading to disability, e.g. deep cuts, burns, sprains, minor fractures, dermatitis, deafness, and upper limb disorders.
Minor	2	Injury or ill-health requiring first-aid, e.g. minor cuts and bruises, and ill-health with temporary discomfort.
Negligible	1	Not likely to cause injury or ill-health.

Table 2: Assessment of potential outcomes caused by hazard.

Likelihood	Rating	Description of likelihood
Almost certain	5	Continual or repeating occurrence.
Frequent	4	Common occurrence.
Occasional	3	Possible or known to occur.
Remote	2	Not likely to occur under normal circumstances.
Rare	1	Not expected to occur but still possible.

Table 3: Assessment of Likelihood of the outcome occurring.

Likelihood Severity	Rare (1)	Remote (2)	Occasional (3)	Frequent (4)	Almost certain (5)
Catastrophic (5)	5	10	15	20	25
Major (4)	4	8	12	16	20
Moderate (3)	3	6	9	12	15
Minor (2)	2	4	6	8	10
Negligible (1)	1	2	3	4	5

Table 4: Risk Matrix of Risk Prioritisation Numbers (RPN).

RPN	Risk level	Recommended actions
1-3	Low: acceptable risk	 No additional risk control measures may be needed. Frequent review and monitoring of hazards are required to ensure that the risk level assigned is accurate and does not increase over time.
4-12	Medium: tolerable risk	 Carry out careful evaluation of hazards to ensure that the risk level is reduced to as low as reasonably practicable within a defined time period. Interim risk control measures, such as administrative controls or Personal Protective Equipment (PPE), may be implemented while longer term measures are being established. Management attention is required.
15-25	High: unacceptable risk	 High risk level must be reduced to at least medium risk before starting work. If feasible, eliminate hazard before starting work. Do not rely on interim risk control measures and PPE. Management review is required before starting work.

Table 5: Recommended actions for corresponding risk levels.

STEP 3: Implement risk controls to lower the RPN as much as possible. There are three applicable types of control measures described below. It is important to implement more than one type of control measures as described for every hazard, so that if one measure fails, there will be others to mitigate the risk.

- Engineering Controls are physical means of limiting hazards. These include structural changes to the work environment, equipment, or process. For example, speed limiters installed on PMDs prevent riders from going faster than 25km/h.
- Administrative Controls reduce or eliminate exposure to a hazard by adherence to procedures or instructions. Traffic rules and safe work procedures are examples of administrative control.
- *Personal Protective Equipment (PPE)* must not be the only risk control implemented to address a hazard. They must also be worn properly and fit users well, e.g. helmets, face masks and gloves. PPE requires regular cleaning, maintenance and storage.

Adapted from the *Code of Practice on Workplace Safety and Health (WSH) Risk Management*. For more information, please refer to the *Code of Practice on WSH Risk Management* on the WSH Council's website.

3. Good Practices

Companies are strongly encouraged to put in place good practices. These are applicable regardless of how the business is operated, with the intention of creating a safer working culture in the organisation to protect all at work.

Training and competency

Training equips riders with necessary skills to safely operate the transport. Some training that riders can benefit from are:

- Orientation training for riders to familiarise themselves when they are new to the mode of transport assigned to them.
- Motorcyclists can attend defensive riding courses at driving centres, regardless of their past trainings or experience.
- PMD users and cyclists can take the Safe Riding Programme developed by the LTA. It
 educates riders on safe riding behaviours, proper use of infrastructure, and rules and
 code of conduct for riding through practical training circuit. For more information, go to
 www.lta.gov.sg.

Reminder!

Only drivers with Singapore driving licences are allowed on the road. Before companies can hire foreign motorcycle licence holders, they have to ensure that the foreign licences are converted to Singapore driving licences. This can be done after holders pass the Basic Theory Test. This process is in place so that foreign riders can be familiar with Singapore's traffic rules and regulations.

Safe Work Procedure

Safe Work Procedures (SWP) are actions planned in a specific sequence so that work can be carried out safely. Companies should set up SWPs and ensure that they are readily available for riders. SWPs need to be regularly reviewed when there are operational changes or new equipment.

SWPs include emergency procedures, e.g. an accident. Companies can familiarise riders with emergency procedures through regular in-house drills or training.

Communication

Set up communication platforms for information to be exchanged effectively. Common communication platforms that companies use include routine department meetings, noticeboards or instant messaging services. When communicating, it is important to ensure that the message is not misunderstood due to language barrier or cultural differences.

Work attire

Companies are encouraged to issue uniforms that can help riders have safer rides. Below are guidelines for uniforms companies can issue to their riders. If riders are not wearing uniforms, they are also encouraged to follow these guidelines:

- Provide brightly-coloured uniforms or encourage riders to wear bright colours. Bright colours attract attention so that other motorists or pedestrians can notice riders easily.
- Provide uniforms that are loose-fitting and breathable, e.g. cotton, to keep riders cool. Conversely, avoid heavy and thick materials, e.g. denim.
- Wear proper footwear, i.e. covered shoes, and tie shoelaces securely (if any) to prevent them from getting caught in the pedalling gear.

Insurance

LTA requires all businesses to ensure that their riders are using active mobility devices for work covered by third party liability insurance.

Personal protective equipment

While PPE is designed to protect riders, it is often inadequate to prevent injuries and ill-health. Companies should always implement other safety measures in addition to issuing PPE.

- Ensure that motorcyclists wear helmets. Similarly, cyclists (bicycles and PABs) need to wear helmets too when cycling on public roads.
- Provide uniforms with long sleeves and padded elbows to provide some cushioning should riders fall.
- Wear motorcycle gloves to reduce engine vibration from transmitting to riders' hands (see section 4.5: *Hazards related to health issues*).
- Apply reflective materials onto bags, carriers, and work attire (see Figure 8) so that riders can be more visible when visibility is poor, i.e. at night.



Carrier with reflective material



Carrier with reflective material



Attire with reflective material

Figure 8: Brightly coloured carriers and uniform with integrated reflective material.

4. Hazards and Their Countermeasures

Hazards riders face while at work can be loosely grouped into the five areas below. Companies should implement safety measures to help riders address these hazards, and ensure that riders themselves are well aware of the hazards too.

4.1 Hazards present en route

Riders work in close proximity with other motor vehicles and they usually bear the full impact of accidents, leading to serious injuries (or death). Uneven road surfaces and inattentive pedestrians can also be hazards to riders. The following are suggestions to avoid such situations.

Plan delivery route

Proper planning of delivery routes can help riders avoid hazards in different ways. Consider the following:

- Divide districts into small zones (see Figure 9) and assign riders to each zone. This reduces the distance riders need to cover. Riders will also grow familiar with their assigned zones and rely less on their mobile phones to find directions.
- Identify dangers, e.g. construction sites, potholes or cracks on road surface, during planning and keep your riders informed about them.
- Gather feedback regularly from riders to find out about changes to routes they take and alert other assigned riders of any new hazards found.
- While bicycles and PABs are allowed on roads, it is best to avoid major roads with fastmoving vehicles or many lanes.



Figure 9: Example of dividing districts into smaller sections.

Take precautions on roads

Bicycles and PABs are allowed on roads and must stay close to the left of the lane (PMDs are not allowed on roads). White front lights and rear red lights must be installed. Note that traffic rules apply to riders while they are on the road.

- Ensure that riders can be easily spotted with bright-coloured clothing or reflective strips (see section 3: *Good Practices Work Attire and PPE*).
- Educate riders about blind spots of different motor vehicles (see Figure 10*) and emphasise the importance of keeping a safe distance.
- Educate riders about long vehicles off-tracking when negotiating turns because front and back wheels follow a different path (see Figure 11*). Riders must stop and allow long vehicles to finish the turn before they continue their journey.



Figure 10*: Blind spots of heavy vehicle (left) and car (right) demarcated in red.



Figure 11*: Prime mover and trailer off-tracking. Green arrow shows difference in paths between two sets of wheels.

*Both figures highlight potential blind spots and off-tracking of heavy vehicles. Blind spots and off-tracking may vary depending on the type and make of the heavy vehicle.

Take precautions around pedestrians

When riding on pathways, riders need to keep a lookout for and give way to pedestrians. They should pass slower path users with care. Moving mobility devices can cause serious injuries when accidents happen.

- They should also dismount and push their bicycles when navigating through a crowd.
- Use bells to alert pedestrians, especially when they are not paying attention to their surroundings, e.g. using mobile phones. Bells should be used early to avoid startling them.

Mobile delivery apps

There are several measures that companies can take using mobile delivery apps to improve the safety of riders:

- Installing a speed sensor to prevent delivery riders from viewing or accepting new orders within the app while riding;
- Issuing a warning/alert to riders if they are travelling too fast, i.e. more than 25km/h. Delivery companies should also be alerted to their riders speeding;
- Issuing push notifications to riders only when they are stationary and not while they are riding. This will allow riders to be more aware of their surroundings when riding instead of being focused on their mobile phones, which could impede their ability to react to other users sharing their path.

4.2 Hazards in the environment

Riders are exposed to the weather because they are outdoors most of the time. Heat injuries can occur when it gets too hot, and skidding is a concern when it rains. Working at night is also risky due to reduced visibility, making it harder for other motorists to notice riders.

Manage heat injuries

Heat and humidity can be dangerous, especially for riders with pre-existing medical conditions, e.g. heart conditions; on medication, e.g. for high blood pressure; or who are simply not used to Singapore's climate, e.g. foreigners. Consider the following to manage heat injuries:

- Ensure that riders are physically fit for work. Riders advanced in age are encouraged to get a doctor's advice before starting work;
- Teach riders to recognise heat stress symptoms so they can react early upon noticing symptoms;
- Remind riders to constantly stay hydrated regardless of their thirst level; and
- Provide adequate breaks during shifts.

For more information, refer to the WSH Guidelines on Heat Stress on the WSH Council's website.

Manage poor visibility

Companies that offer 24-hour services need riders to work at night when visibility is compromised. Mandatory white front lights and red rear lights on mobility devices (see Figure 12) help other road users to be aware of riders. Additional safety measures to consider:

- Provide high-visibility uniforms or carriers that are brightly coloured and integrated with reflective materials (see section 3: *Good Practices Work Attire and PPE)*; and
- Apply reflective strips on main chassis of mobility devices.



Figure 12: Examples of lights fitted on mobility devices.

Measures for rainy weather

Singapore experiences frequent wet weather all year round. When it rains, the ground gets wet and friction is reduced. Visibility is also compromised when there is heavy rain. Hence, riders cannot continue working without endangering themselves, and companies should work on managing customer expectations instead.

- Provide a means of communication for riders to notify company and/or customers.
- During heavy downpours, stop deliveries or allow riders to decline job assignments.
- During light drizzles, it may be possible to continue with deliveries. Notify customers to expect delays to give riders more time to make deliveries safely.

Manage poor air quality

Riders are constantly exposed to traffic fumes and occasional hazy conditions. Those with breathing difficulties, e.g. asthma, can be susceptible. The National Environment Agency (NEA) issues advisories during a haze, and companies are encouraged to pay heed to the advisories.

- Take note of your riders' health profile, especially if they have breathing-related health conditions. Where possible, reassign vulnerable riders to indoor work.
- Stop or reschedule deliveries, or allow riders to decline assignments, depending on the severity of the haze. Follow NEA's advisories and manage customers' expectations accordingly.
- Provide face masks with N95-class filters (commonly known as N95 masks) and make sure that they fit well, e.g. different mask sizes, adjustable elastic straps.



N95 with ventilator



N95 mask without ventilator

Figure 13: Types of face masks.

Note: N95 masks are not designed to guard against viruses. Surgical masks are more appropriate in this case.

4.3 Hazards created by riders

Riders can be hazardous when their behaviour puts other road users and themselves in danger. Being stressed to meet tight delivery deadlines can at times lead to poor judgement or reckless behaviour, e.g. speeding and riding against flow of traffic. Riders' situational awareness may also be reduced when they are distracted while riding. Common sources of stress and distractions include:

Stress factors:

- Maintaining constant situational awareness of their surroundings.
- Meeting schedules for deliveries.
- Trying to complete more deliveries to earn more.

Distractions:

- Making phone calls or texting.
- Listening to music.
- Checking directions with their phone.

Take precautions on roads

When riding on public roads, riders must wear a helmet. Riders should also:

- Avoid weaving in and out of traffic.
- Keep a safe distance from vehicles.
- Avoid vehicles' blind spots (see section 4.1 Hazards present en route).
- Not ride against the flow of traffic.
- Stay on the left side of road (cyclists only).
- Signal early with hands before turning, stopping or slowing down (cyclists only). See Figure 14 for hand signals recommended for cyclists.
- Obey all traffic rules, such as stopping when the traffic light is red.
- Stop, look, cross.







Slowing down

Stopping

Figure 14: Hand signals for cyclists and PMD riders.

Reminder!

It is an offence to hold a mobile communication device and operate any of its functions while riding a device on public paths. More details can be found on LTA's website.

Manage rider behaviour

The time sensitive nature of delivery work tends to draw out risky behaviour from riders. Suggestions below can help curb risky behaviour or encourage safe behaviour.

- Where applicable, avoid payment models that tie payment to number of trips riders make, i.e. pay per trip. A base salary combined with per-trip incentives is less likely to encourage recklessness.
- Maintain safety records for each rider and provide added incentives for riders with good safety records.
- Use heat-retaining food packaging and carriers (see Figure 15) so riders are less likely to speed or take shortcuts in order to deliver the food hot.



Figure 15: Heat-retaining lining in a carrier.

- Monitor time taken for deliveries. Riders who frequently complete deliveries much faster than estimated may be speeding or taking dangerous shortcuts.
- Set reasonable expectations for delivery times so riders do not need to rush.
- Provide public with a feedback channel, e.g. when they see a rider speeding.
 - One practical way is to provide avenues for reporting unsafe riding by members of the public, such as having a hotline number prominently displayed on the delivery bags or carriers. See Annex 8.4 for an example on how a label can be displayed on a food delivery bag;
 - Collect and follow up on reports received; and
 - Maintain records of feedback and follow up actions for at least six months after the report.
- Mount a camera on a helmet or on the transport device. Being aware of active recording can be an effective deterrent for reckless behaviour. The recording can also be used for training and learning purposes.

Safe riding behaviour on footpaths and cycling/shared paths

Practise these behaviours when riding on paths:

- Ride slowly, or dismount and push your device when the path is crowded or narrow.
- Do not buzz or ring your bell incessantly to clear the way.
- Pass slower active mobility users with care.
- Always give way to pedestrians.
- Thank pedestrians who give way to you.
- Keep to the speed limit.
- Ride on the left side of the path, where possible.
- Stop and look out for traffic before crossing the road.

Reminder!

If you are involved in an accident with another party, it is an offence if you do not stop to offer help, exchange particulars, i.e. name and contact details, and call the police. You may wish to settle compensation privately with the injured or engage Singapore Mediation Centre to mediate any disputes.

Did you know?

LTA offers a fully subsidised 90-minute programme called the Safe Riding Programme (SRP) that teaches cyclists and PMD users how to ride on public paths safely and responsibly. Participation is free! To find out more or sign up, visit https://www.lta.gov.sg/content/ltagov/en/getting_around/active_mobility/rules_and_public_education_and_programmes.html

4.4 Hazards in the equipment

As with any tool or machine, operating motorcycles and mobility devices come with hazards and risks. Both companies and riders play important roles in addressing these hazards to keep riders and persons around them safe.

Safe use of mobility devices

Mobility devices are small, highly mobile, and share space with other users. Hence white front-facing lights and red rear-facing lights must be installed to make it easier for other users to be aware of riders' presence. Aside from lights, there are other measures to make the use of mobility devices safer:

- Install speed limiters on electric-powered mobility devices and PABs to prevent riders from travelling at excessive speeds.
- Apply reflective strips on mobility device chassis or carriers to increase visibility from left and right sides.
- Limit weight allowance of storage attachments or carriers, as they affect mobility devices' centre of gravity and make balancing difficult (see Figure 16).
- Follow instruction manuals on battery charging to avoid over-charging and risk degrading the battery or causing the battery to heat up.
- Purchase original batteries from suppliers or appointed merchants to replace old batteries (see Figure 17). Consult suppliers on how to dispose old batteries safely and responsibly because batteries contain harmful chemicals.
- Avoid tampering with or altering equipment as it can compromise integrity of the equipment material.



Figure 16: Tail box on motorcycle.



Figure 17: Always purchase original batteries from suppliers or appointed merchants.

Carry out routine maintenance

Regular maintenance is necessary to keep the vehicle in good working condition. This reduces chances of malfunction which could lead to injury or accidents. However, given the intensity of commercial use compared to leisure commuting, it is recommended that maintenance be carried out more frequently.

- To maintain roadworthiness, LTA requires motorcycles older than three years to undergo annual inspections.
- Consult suppliers on their recommended maintenance frequency when motorcycles and mobility devices are used for work. Companies are encouraged to be more conservative and send their transport for routine maintenance more frequently.
- Make maintenance records easily accessible to facilitate equipment checks.

Regular inspections and timely repairs

Mechanical and electrical components, e.g. brakes, gears, lights, in motorcycles and mobility devices get worn down gradually with use. Occasionally, some may even come with defects despite being brand new. Repairs are necessary to replace worn down components or fix defective components.

- Allow only trained and competent personnel to carry out repairs, especially when handling electrical or mechanical components, e.g. motorcycle engine, batteries.
- Simple malfunctions, e.g. detracted bicycle chain or crooked saddle, can be remedied by riders after they have been properly trained to do so.
- Perform daily checks (see Annex for sample) to spot malfunctions or defects before going on a despatch assignment.

4.5 Hazards related to health issues

Riders face health hazards that are common to an industry that relies heavily on physical labour. Companies that address these risks not only keep their riders healthy, but also raise productivity because healthy riders perform better at work.

Fatigue

Working long or irregular hours can lead to physical and/or mental fatigue, especially for riders working night shifts. When fatigued, riders lose focus and awareness, and are prone to misjudgements and accidents. Consider these suggestions to mitigate effects of fatigue:

- Limit working hours, per day and per week.
- Schedule adequate breaks for each shift, and rest days for each week.
- Avoid assigning a day shift immediately after a night shift.
- Adjust amount of work according to each rider's physical capacity.
- Avoid assigning consecutive night shifts to same rider.
- Distribute number of night shifts evenly among riders.
- Encourage riders to take breaks when they are feeling fatigued.

Reminder!

Companies should be aware if riders are doing other work on the side, e.g. via CPF records. Riders should know their physical limits and not take on too many assignments. Both parties have a part to play to prevent fatigue.

For more information, refer to the *WSH Guidelines on Fatigue Management* on the WSH Council's website.

Respiratory

As mentioned in section 4.2: *Hazards in the Environment – Manage poor air quality*, riders are exposed to traffic fumes regularly, and possibly haze too. Please refer to the section for recommendations.

Ergonomic risk factors

Ergonomic risk factors riders face can develop into chronic health problems. Vibration from motorcycle engines can cause nerve damage. Motorcyclists are known to experience numbness or loss of sensation in their fingers or hands. Riders may also develop back pains from:

- Staying in a static hunched posture (especially for motorcyclists and cyclists) for prolonged periods of time; and
- Frequently handling heavy loads.

Consider the following to reduce ergonomic risks:

- Choose a bicycle or PAB of appropriate size. Adjust the saddle height and reach of handles to suit the rider's height (see Figure 18 and 19).
- Educate riders on stretching exercises they can do while taking breaks.
- Limit weight of the load that riders need to handle.
- Where possible, install storage on mobility devices so riders do not need to carry the load on themselves (see Figure 16).
- Bags issued to riders should have adjustable shoulder straps with adequate padding to keep riders' shoulders comfortable.



Figure 18: Correct posture for riding a bicycle.

• Provide motorcycle gloves that reduce vibration transmission. Prolonged exposure to vibration from motor engines can damage nerves in hands, which leads to numbness and loss of sensation.



Figure 19: Proper positioning of bicycle saddle.

For more information, please refer to the WSH Guidelines on Improving Ergonomics in the Workplace on the WSH Council's website.

5. Useful References

Workplace Safety and Health Council

- Code of Practice on Workplace Safety and Health (WSH) Risk Management
- Workplace Safety and Health Act
- Workplace Safety and Health (General Provisions) Regulations
- Workplace Safety and Health (Incident Reporting) Regulations
- Workplace Safety and Health (Risk Management) Regulations
- WSH Guidelines on Fatigue Management
- WSH Guidelines on Heat Stress
- WSH Guidelines on Improving Ergonomics in the Workplace

Land Transport Authority

- Active Mobility Act
- Road Traffic Act
- Safe Riding Programme
- Walk Cycle Ride SG

6. Working Group

The Working Group appointed by the Hospitality and Entertainment Industry Committee to assist in the development of this Guide comprises the following members:

(Chairman:	Mr Freddie Ngiam	Sentosa Development Corporation
	Secretariat:	Ms Josephine Loo	Workplace Safety and Health Council
	Members:	Ms Sri Hadisti	Foodpanda Singapore Pte Ltd
		Ms Jean See	Food, Drinks and Allied Workers Union
		Ms Brenda Ang	
		Ms Lynn Hong	Hanbaobao Pte. Ltd.
		Ms Fiona Low	
		Ms Ho Pui Leng	Land Transport Authority
		Ms Lim Jin Ne	
		Ms Low Hui Xian	
		Mr Anser Lee	Ministry of Manpower
		Mr Suraimi Bin Hashim	National Trades Union Congress
		Mr Yogendran Shanmugam	Singapore Post Limited
		Mr Mohammed Afiq Bin Anuar	
		Ms Noorhidayah Abdullah	Traffic Police
		Mr Leigh Wong	UberEATS
		Mr Perry Hung	Workplace Safety and Health Council
1			/

7. Acknowledgements

The Workplace Safety and Health Council and the Ministry of Manpower would like to thank Deliveroo Singapore Pte Ltd, Land Transport Authority, Singapore Post Limited and UberEATS for their valuable assistance with the images used in this Guide.

8. Annexes

Use these sample checklists or modify them to suit your work activities. It may be a good idea to pair riders and get them to do safety checks for each other. This will motivate them to be more alert so that they can keep each other safe. If any problem is spotted during this daily check, resolve it before going on despatch.

8.1 Sample daily motorcycle checklist

	Quick check before setting off		
Ri Sa	der's name: ifety check done by:	Date: Time:	
Ec	quipment:		
· · · ·	Are you familiar riding this motorcycle? Did the motorcycle undergo inspection? Brakes working? Lights working? Horn working? Side mirrors adjusted? Tire pressure adequate? Tire treads worn out? Mounted storage stable and secure?		Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N
Pe	ersonal safety:		
•	Are you feeling unwell or tired? Are you familiar with the route to take? Did you bring water along? Do you know what to do when an accident happens?		Y/N Y/N Y/N Y/N
\			

8.2 Sample daily mobility device checklist

Quick check before setting off	
Rider's name: Safety check done by:	Date: Time:
Equipment:	
 Are you familiar riding this mobility device? Did the mobility device undergo inspection? Brakes working? Lights working? Bells working? Tire pressure adequate (if applicable)? Tire treads worn out (if applicable)? Mounted storage stable and secure? 	Y / N Y / N Y / N Y / N Y / N Y / N / N.A. Y / N / N.A. Y / N
Personal safety:	
 Are you feeling unwell or tired? Are you familiar with the route to take? Did you bring water along? Do you know what to do when an accident happens? 	Y / N Y / N Y / N Y / N

	Ris	ik Asse	sment	: 20151	I2RA-0006					
Department : Ope	rations—delivery	<u> </u>	A Lead	er	: Roy Li					
Work activity : Orde	er pick-up and delivery on a PAB		A Mem	ber 1	: Hong Qi Shun					
Assessment date : 16 O	ict 2015	<u> </u>	A Mem	ber 2	: Han King Siu	Appro	ver sig	nature :		
Last review date : 17 N	ov 2014	<u> </u>	A Mem	ber 3	: Low Gok Bing	Appro	ver nai	me :	Ang Zhao Lu	_
Next review date : 15 O	ct 2016		A Mem	ber 4	: Lin Cheng	Appro	val dat		20 Nov 2015	
	Hazard Identification				Risk Co	ontrol				
Hazard	Possible injury or ill-health		L RP		Control measure implemented			RPN	Implemer	it by
Hit by motor vehicle (day).	Multiple major injuries — head	5	t 20	0	iders to wear bright attire.	5	m	15	Roy Li	30 Oct
	injury, fracture, organ damage.			£ 0	ule: Avoid weaving in and out f traffic.	5	m	15	Roy Li	16 Oct
				шо	ducate riders to avoid vehicle lind spots.	Ŋ	2	10	Gok Bing	01 Nov
Reduced visibility and hit by motor vehicle (night).	Multiple major injuries — head injury, fracture, organ damage.	2	25	6 2	iders to wear attire with eflective material.	ъ	m	15	Roy Li	30 Oct
				80	ule: Avoid roads during eak hours.	ъ	m	15	Roy Li	16 Oct
				шд	ducate riders to avoid vehicle lind spots.	ъ	2	10	Gok Bing	01 Nov
Colliding into pedestrian.	Fall and sprained ankle or wrist.	5	9	4 0	lan route to avoid high edestrian traffic.	2	-	5	Lin Cheng	16 Oct
					Ise bell to warn pedestrians early.	2	-	2	King Siu	30 Oct
					vismount and push PAB to avigate through crowd.	2	-	2	King Siu	16 Oct
Hazy conditions.	Nose and lung irritation, cough and sore throat.	2	10	0 8 0	iders to wear N95 masks when utdoors.	2	2	4	Qi Shun	05 Nov
					elivery to cease when PSI > 250.	2	-	2	Qi Shun	16 Oct
Hot weather.	Heat stress (heat cramp, heat exhaustion).	e e	10	S E	ducate riders to recognise heat tress.	ε	2	9	Gok Bing	15 Nov
				A S	dded mandatory break during hift.	m	2	9	Lin Cheng	16 Oct
				œ	iders reminded daily to hydrate.	е	2	9	Lin Cheng	16 Oct
Comments / Remarks:										

8.3 Sample Risk Assessment

8.4 Example of how a label can be prominently displayed on a food delivery bag





Companies that do not use delivery bags can explore other methods of identification.

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