



اوتوريتي كبحسأان كسلامتن
كصيتن دان عالم سكيتن
Safety, Health and Environment
National Authority

INDUSTRY GUIDANCE NOTE

TOPIC: GUIDANCE ON SAFE USE OF GRASS CUTTING MACHINES			Reference Number: IGN 01/2021
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1. SUMMARY

This Industry Guidance Note (IGN) provides relevant information on the safe use of the grass cutting machine and informs the user on what equipment is recommended and what is not recommended to be used.

There are two main concerns when using back-pack type grass cutting machine (also known as brush cutting machine or brush-cutters). Firstly, due to relatively cheap and readily available machines and blades in the market, people tend to place financial considerations as priority rather than the standard, quality and safety aspects. Secondly, there is the tendency to undermine grass cutting as a routine activity and overlook the danger and risks associated with it. Therefore, this IGN aims:

- (i) To provide a clarification on the types of blades or cutting attachments that are recommended to be used and those that are not encouraged to be used;
- (ii) To ensure the safe execution of grass cutting activities with respect to the laws, the procedures which operators should adhere to, as well as other safety precautions and standards.

The Workplace Safety and Health Order, 2009 (WSHO, 2009) imposes duties on occupiers, employers, self-employed persons, principals and persons at work to ensure that the workplace and any machinery or equipment used in the activities shall be safe and without risks to every person within the workplace.

The IGN calls for metal blades of the type known as "**knife blades**" and "**smasher blades**" to be **DISCOURAGED and ARE NOT RECOMMENDED FOR USE** in Brunei Darussalam.



The "knife" blades

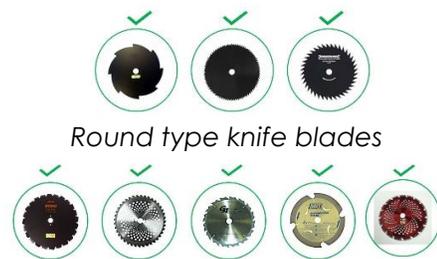


The "smasher" blades

The **RECOMMENDED** types of blades or cutting attachments that can be used for grass cutting include nylon cords, round blades and chisel blades.



Nylon cords



Round type knife blades

Chisel blades

The IGN also recommends that all grass cutting machines or brush-cutters shall comply with the safety requirements and protective measures as per ISO 11806-1, including the handle, barrier and distance to cutting attachment, cutting attachment strength and cutting attachment guard. At the same time, users shall observe other safety considerations which include conducting a risk management process, preparing and complying to a standard operating procedure (SOP), undertaking appropriate training, wearing personal protective equipment (PPE), putting in place adequate site supervision, and having a fit-for-purpose emergency response and incident reporting system.

2. INTRODUCTION

Grass cutting is a very common activity in Brunei Darussalam. It is carried out for various purposes and applications, including estate maintenance, agriculture, farming, assets and infrastructure maintenance (such as roads, pipelines, electrical lines, etc.) and upkeep of private house gardens and compounds. As it is a routine activity, people tend to become complacent and fail to appreciate the dangers it can cause both to the operators executing the job and others, as well as potential damage to assets such as glass windows of buildings and vehicles in the vicinity.

There are a few types of grass cutting equipment and the most common ones used here are the back-pack type grass cutting machines (also known as brush cutting machines or brush-cutters). Safety issues relating to grass cutting activities have already existed for a long time, but had not been given serious attention until recently, as more information became available, widely disseminated and easily accessible, e.g. reporting and recording of incidents, medical records, etc. In general, all activities involving the cutting and clearing of vegetation involve some hazardous tasks, but the focus of this guidance will be on the use of the back-pack grass cutting machines or brush-cutters.

The Safety, Health and Environment National Authority (SHENA) had introduced a caution to all principals, employers, occupiers and individuals using back-pack grass cutting machines in or as part of their work activities, advising users to opt for machines with nylon cords as the cutting attachment as well as reminding the public that appropriate personal protective equipment (PPE) should be used at all times by those operating such machines.

3. PURPOSE

There are two main areas of concern with respect to grass cutting activities. Firstly, due to relatively cheap and readily available machines and blades in the market, people tend to place financial considerations as priority rather than the standard, quality and safety aspects of such machines, especially on the choice of blades or cutting attachments. Secondly, the operators tend to overlook the danger and risks of these activities i.e. how to keep themselves and other people protected from hazards that arise from the activity.

The purpose of this guidance note is therefore two-fold:

- (iii) To provide a clarification on the types of blades or cutting attachments that are recommended to be used and those that are not encouraged to be used, and the reasons;
- (iv) To ensure the safe execution of grass cutting activities with respect to the laws, the procedures which operators should adhere to, as well as other safety precautions and standards to comply with.

At the same time, there are also learnings from best practices and applicable standards from the neighbouring ASEAN countries, in terms of safety for grass cutting activities. Singapore's Workplace Safety and Health Council (WSHC) had published their own *Workplace Safety and Health Guidelines – Landscape and Horticulture Management*¹, while Malaysia's Department of Safety and Health (DOSH) had issued *Garis Panduan Keselamatan Pengendalian Mesin Rumput 2018*². Therefore, it is appropriate and timely that SHENA publishes this Industry Guidance Note for Brunei Darussalam.

4. SCOPE

This guidance note covers only back-pack type grass cutting machine (also known as brush cutting machine or brush-cutters) and includes the types of blades or cutting attachments that should be used as well as those that are not recommended to be used, applicable laws, regulations and safety requirements in carrying out grass cutting activity in Brunei Darussalam.

Other types of machines for cutting grass and bushes, such as lawn mowers (manual rotary type, electrical or petrol-driven engine), trimmers, chainsaws and industrial mowers (tractor lawn mowers, riding mowers, etc.) are excluded from this scope.

5. APPLICABLE LAWS AND REGULATIONS

SHENA would like to remind all principals, employers, occupiers, self-employed persons and persons at work to comply with applicable laws and regulations as follows:

- (i) Workplace Safety and Health Order, 2009 (WSHO, 2009)

To ensure that the workplace and any machinery or equipment used in the activities are safe and without risks to every person within the workplace, as stipulated under:

- Section 11 – Duties of occupier of workplace
- Section 12 – Duties of employers

¹ WSH Guidelines – Landscape and Horticulture Management
[https://www.wshc.sg/files/wshc/upload/infostop/attachments/2018/IS20181102000000431/WSH Guidelines on Landscape and Horticulture Management.pdf](https://www.wshc.sg/files/wshc/upload/infostop/attachments/2018/IS20181102000000431/WSH%20Guidelines%20on%20Landscape%20and%20Horticulture%20Management.pdf)

² Guidelines on Grass Cutter Safety Handling 2018
<https://www.dosh.gov.my/index.php/legislation/guidelines/general/3134-01-guidelines-on-grass-cutter-safety-handling-2018/file>

- Section 13 – Duties of self-employed persons
 - Section 14 – Duties of principals
 - Section 15 – Duties of persons at work.
- (ii) Workplace Safety and Health (Risk Management) Regulations, 2014
- Principals, Employers and Self-Employed Persons are required to conduct a risk assessment in relation to the safety and health risks posed to any person who may be affected by his undertaking in the workplace.
- (iii) Workplace Safety and Health (Construction) Regulations, 2014
- The employer or principal is required to provide adequate safety and health training to any person who carries out manual work or supervisory work in a worksite
- (iv) Workplace Safety and Health (Incident Reporting) Regulations, 2014
- The employer or occupier is required to report any accident in a workplace that leads to death, reportable injury or any dangerous occurrence.

6. ADVISORY AGAINST THE USE OF SPECIFIC METAL BLADES

Grass cutting machines or brush-cutters using metal blades of the type known as “**knife blades**” and “**smasher blades**” which are shown in Figure 1 are **DISCOURAGED and NOT RECOMMENDED FOR USE** in Brunei Darussalam.

Knife blades, which are shown in figure 1, may be in the shape of rectangular, diamond or star (three or four cutting edges). These blades are categorized as high risk for causing potential harm to both the operators and other persons in the vicinity as the blades can break when they hit a hard object while rotating at high speed.

Information from the Ministry of Health (MOH) reveals there had been an alarming number of (reported) significant injuries related to grass cutting and similar incidents over the recent years. The statistics also showed that between October 2019 and April 2020, there was an average of one incident reported every month involving injury sustained during grass cutting activity, with severity ranging from injuries requiring out-patient hospital treatment to fatality.

Statistics from other countries do not show encouraging safety records either. For example, in Japan, where grass cutting activities are only active during the summer months, the country reported 140 harmful incidents between September 2009 and June 2017³.

³ “Beware of accidents when using a grass cutter!”, National Consumer Affairs Center of Japan
http://www.kokusen.go.jp/e-hello/news/data/n-20170720_1.html



Figure 1 – Type of metal blades⁴ not recommended (the “knife blades”)

Another set of blades which are also very dangerous are smasher blades, as shown in Figure 2. These blades are generally pivoting flail type blades, linked metal blades and a range of different types of chain. Although they do not have sharp edges, by rotating at high speed, the pivoting blade or chain cut through the vegetation by smashing. Since they are made of multiple parts, the jointed links can break to become lethal flying bullets.



Figure 2 – Types of blades⁵ known as “smasher blades” not recommended

⁴ The pictures shown are for illustration purpose only

⁵ The pictures shown are for illustration purpose only

In 2010, an incident in the United Kingdom was recorded whereby a worker was fatally injured when he was struck by a chain flail that came loose from a brush cutter. Following this incident, the UK also issued a safety alert to warn industry, workers and the public of the risk of this type of device and ask that they no longer be used⁶. In 2012, the European Commission issued an order to ban the use of smasher blades in all European Union Countries.⁷

7. RECOMMENDED TYPES OF BLADES OR CUTTING ATTACHMENTS

The following types of blades or cutting attachments are recommended for use in Brunei Darussalam provided that they are manufactured in compliance with recognised international standards, and are only used when fitted to manufacturer-specified compatible machines with approved blade protector guards:

- (i) **Nylon cords** as shown in Figure 3 are generally used for cutting relatively short and soft grass, and especially useful in awkward situation of cutting grass against existing hard structures such as poles, walls, fencing, etc.



Figure 3 – Recommended grass cutting machines or brush-cutters with nylon cords⁸

⁶ “Use of chain flail/non standard cutting attachments on brush cutters”, Health Safety Executive UK Safety Alert, 12 November 2013,

<https://www.hse.gov.uk/safetybulletins/brush-cutters.htm>

⁷ “Commission Decision of 19 January 2012 requiring Member States to prohibit the placing on the market of flail-type cutting attachments for portable hand-held brush cutters”, European Commission, <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:018:0005:0006:EN:PDF>

⁸ The pictures shown are for illustration purpose only

- (ii) **Round type knife blades** as shown in Figure 4 may be categorised under “knife blades” because they have sharpened edges for cutting and they are made in the same way as other knife blades, i.e. stamped or lasered from thin steel sheets.

However, due the round shape and much shorter “knife-teeth”, they are less susceptible to a “kick back” when hitting a hard object and therefore are less likely to break. These blades are used to cut a variety of vegetation from tough grass to small shrubs.

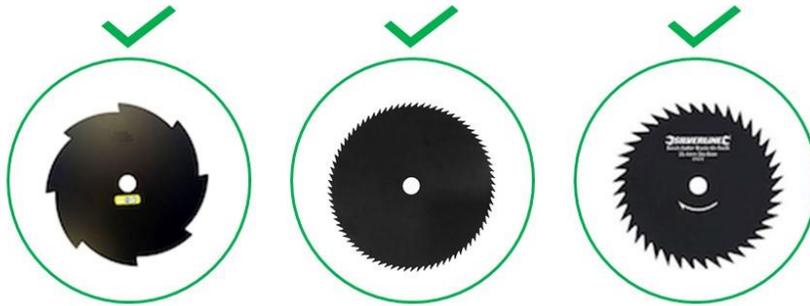


Figure 4 – Recommended round type knife blades⁹

- (iii) **Chisel blades** as shown in Figure 5 are circular blades which have sharpened teeth around the perimeter of the blade and cut by chiseling through or shaving their way through vegetation. They are best used for cutting woody weeds, shrubs and twigs.



Figure 5 – Recommended chisel type of blades¹⁰

Operators are therefore urged to use appropriate blades for their intended purpose, i.e. for cutting different types of shrubs/grass and vegetation.

Besides the recommended blades, there may be other types of blades or cutting attachments available in the market that the operator can use provided especially in the case of blades, such blades are genuinely certified by the manufacturers and approved to be used with compatible machines. In addition, for all grass cutting activities, risk and hazard identification assessments must be carried out, adequate controls must be in place to eliminate or minimise the level of risk to as low as

⁹ The pictures shown are for illustration purpose only

¹⁰ The pictures shown are for illustration purpose only

reasonably practicable (ALARP), and a plan is available to mitigate any eventual unwanted consequence.

SHENA has the power to conduct an inspection to verify these requirements are followed under section 41 of WHSO, 2009.

8. SAFETY REQUIREMENTS FOR GRASS CUTTING MACHINE OR BRUSH-CUTTER

All grass cutting machines or brush-cutters shall comply with the safety requirements and protective measures as detailed below:

- (i) The Grass Cutting Machine or brush-cutter
A grass cutting machine or brush-cutter comprises 4 main parts or components – the power unit, the drive shaft tube, the cutting attachment and the guard. The typical components of the machine are shown in Figure 6. The grass cutting machine or brush-cutter must be manufactured and designed according to the principles of ISO 12100. No unauthorised modifications shall be made to the machine and only original manufacturer-approved parts shall be used as replacements.

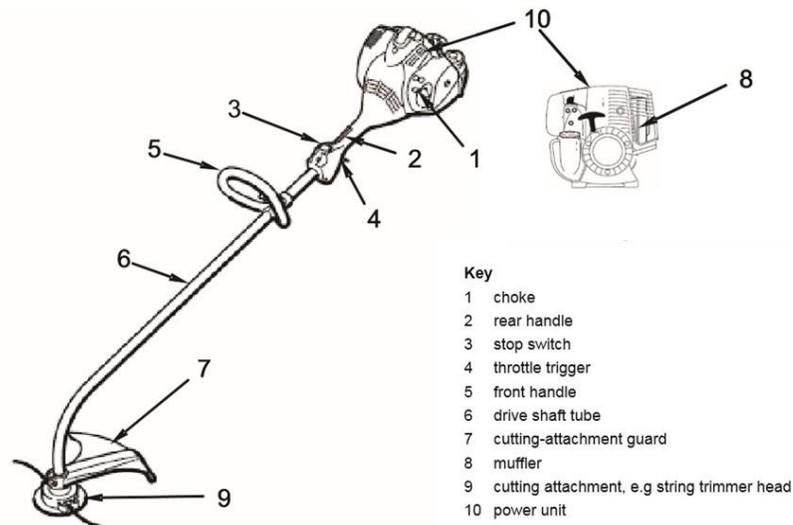


Figure 6 – Typical components of grass cutting machine or brush-cutter

- (ii) Handles
The machine shall have handles that are designed such that they can be fully gripped when wearing gloves and they are adjustable so that a suitable ergonomic working position can be achieved.
- (iii) Barrier and Distance to Cutting Attachment
The machine must be equipped with a barrier to prevent unintentional contact with the cutting attachment. The barrier shall project at least 200 mm horizontally

and perpendicularly from the centre-line of the drive shaft tube. The minimum straight-line distance from the rear of the barrier (2) at a width of 200 mm to the nearest unguarded point of the cutting attachment (1) shall be at least 830 mm – see Figure 7 below.

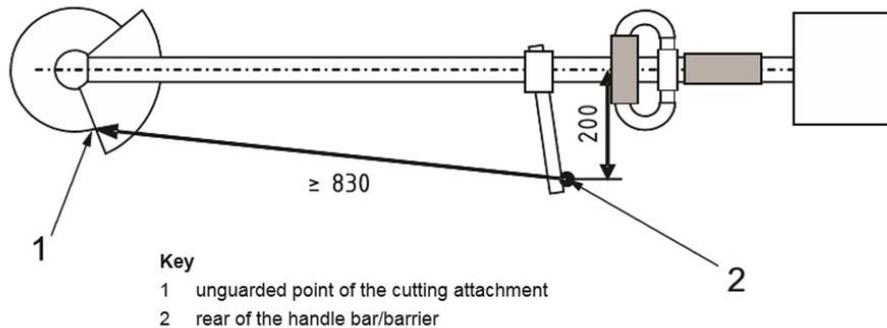


Figure 7 – Barrier distance to cutting attachment

- (iv) **Cutting Attachment Strength**
The cutting attachment excluding flexible cutting lines, i.e. metal blades, shall not break or crack when impacted against a steel rod of diameter 25 mm.
- (v) **Cutting Attachment Retention**
Metal cutting attachments or blades shall be secured to prevent relative motion between the cutting attachment and the retainer, or between the cutting attachment and shaft on which it is mounted.
- (vi) **Cutting Attachment Guards**
The machine must be fitted with cutting attachment guards. The guard dimensions shall comply with ISO 7918 and the guard strength shall comply with ISO 8380.
- (vii) **Length of Flexible Cutting Line**
Grass cutting machines with flexible cutting lines or nylon cords must have a line-limiting device or other means of control, which will cut the flexible lines to lengths compatible with the cutting attachment guard.

9. RISK MANAGEMENT

Before any grass cutting activity commences, it is imperative that the principal, employer, self-employed person or persons at work conduct a risk assessment. The process involves hazard identification (HAZID) and an assessment of the associated risks for each hazard. Controls shall be put in place to eliminate or minimise those risks and an emergency response plan shall be prepared to address any incident or unwanted event arising from the activity. The whole process shall be documented and periodically

reviewed as required for further improvement. As a guide, the general risk assessment as shown in Appendix 1 may be used for reference.

10. STANDARD OPERATING PROCEDURE

The principals, employers, occupiers or self-employed persons are expected to have in place a simple, but effective standard operating procedure (SOP) for their grass cutting activities. In its simplest form, the SOP can comprise a list of work instructions. Special attention should be given to grass cutting activities executed in open places that are exposed to the public, e.g. along the roads, open parks, around buildings, commercial and residential areas. Specific warning signs, signages, boards or barricades may need to be put in place to warn the public.

11. TRAINING

All principals, employers and self-employed persons are required to ensure that all operators shall be adequately trained on the safe use and working techniques of the grass cutting machine such that by their knowledge, skills and ability, they are able to operate the machine safely and independently, before they are allowed to undertake any grass-cutting activity. Site supervisors must be given proper training on general safety requirements and first aid by approved training providers.

12. PERSONAL PROTECTIVE EQUIPMENT

Appropriate personal protective equipment (PPE) shall be worn at all times when executing grass cutting activities. Operators shall identify the PPE as part of their risk assessment process, which may include, for example special harnesses for working on sloping ground. However, as a minimum the PPE shall consist of the items as shown in Appendix 2.

13. SUPERVISION

When working in an open area where there is risk of injury to the operator or the public, a full-time supervisor shall be made available at the place of the activity with clear roles and responsibilities, including but not limited to:

- ensuring all safety requirements are in place and adhered to before commencing any grass cutting activity;
- monitoring safe execution of the activity;
- giving warnings as to the potential danger and intervening in the event of any unsafe act, practice and condition;
- providing first aid to any injury where applicable; and
- following appropriate procedures for emergency response and reporting.

14. EMERGENCY RESPONSE

To cater for any unwanted event or any incident resulting in injury to the operator or the public, a simple, fit-for-purpose Emergency Response Plan (ERP) shall be prepared and

made available to the operators at the worksite.

The objective is to ensure that appropriate and timely response can be executed in order to save lives, prevent escalation of injury, and control (further) damage to asset and environment. It shall contain as a minimum:

- details of the actions to be taken (flowchart will be useful);
- communication protocol for reporting;
- a list of responders within the organisation and their roles; and
- a list of emergency contact numbers.

15. INCIDENT REPORTING

The employer or occupier of a workplace has the responsibility to notify the Authority of any incident leading to the injury or death of any employee or any person as well as any dangerous occurrence at the workplace as soon as reasonably practicable.

The procedure to raise an Initial Incident Notification (IIN) can be found in the SHENA website under – [Incident Reporting](#).

In addition, the employer shall submit a report on any incident resulting in injury to the employee which requires hospital treatment of more than 24 hours or granted sick leave for 3 days or more.

16. APPLICABLE STANDARDS

All principals, employers, occupiers, self-employed persons and operators are reminded to use grass cutting machines or brush-cutters that are manufactured according to recognised global standards such as European Conformity (EC), German Standards (GS), British Standards (BS), Japanese Industrial Standards (JIS), etc and that these machines must be fitted with original and genuine parts and accessories as approved by the manufacturers. Documentation on safety standards for grass cutting can be obtained from the International Organization for Standardization (ISO), including the following standard publications:

- ISO 11806-1; Agricultural and forestry machinery – Safety requirements and testing for portable, hand-held, powered brush-cutters and grass-trimmers
- ISO 7113:1999; Portable hand-held forestry machines – Cutting attachments for brush cutters – Single-piece metal blades
- ISO 7918; Forestry machinery – Portable brush-cutters and grass-trimmers – Cutting attachment guard dimensions
- ISO 8380; Forestry machinery – Portable brush-cutters and grass-trimmers – Cutting attachment guard strength
- ISO 12100; Safety of machinery – General principles for design

17. REFERENCE

ISO 11806-1; Agricultural and forestry machinery – Safety requirements and testing for portable, hand-held, powered brush-cutters and grass-trimmers.

APPENDIX 1:**GENERAL RISK MANAGEMENT FOR GRASS CUTTING ACTIVITY**

NO.	TYPE OF ACTIVITY	HAZARDS	CONSEQUENCES
1	Using grass cutting machine or brush-cutter	<ul style="list-style-type: none">• Back and muscle sprain• Machine caught fire• Rotating equipment• Flying objects or debris	<ul style="list-style-type: none">• Injury to operator• Eye injuries• Injury to passerby
2	Grass cutting machine or brush-cutter with metal blade	<ul style="list-style-type: none">• Broken blade or blade detached from its position	<ul style="list-style-type: none">• Injury to operator• Injury to passerby• Fatality
3	Chemical or hazardous substance handling	<ul style="list-style-type: none">• Toxic inhalation• Skin contact	<ul style="list-style-type: none">• Poisoning and skin irritation
4	Working below pipeline	<ul style="list-style-type: none">• Drop object• Confined or restricted area	<ul style="list-style-type: none">• Injury to operator (e.g. head injury)
5	Working in a noisy environment	<ul style="list-style-type: none">• Hearing loss	<ul style="list-style-type: none">• Hearing loss
6	Working in an open environment	<ul style="list-style-type: none">• Heat Stress	<ul style="list-style-type: none">• Heat exhaustion and fatigue
7	Working in difficult and overgrown terrain	<ul style="list-style-type: none">• Trips and falls• Snake bites	<ul style="list-style-type: none">• Injury to operator
8	Working on slope	<ul style="list-style-type: none">• Trips and falls	<ul style="list-style-type: none">• Injury to operator
9	Working near water	<ul style="list-style-type: none">• Spills, trips and falls	<ul style="list-style-type: none">• Injury to operator, drowning
10	Working in a team or in close proximity to others	<ul style="list-style-type: none">• Blade hit another team member when swinging the machine.• Flying objects or debris	<ul style="list-style-type: none">• Injury to other operator• Injury to passerby
11	Working in the vicinity of vehicular traffic	<ul style="list-style-type: none">• Hit by passing vehicle	<ul style="list-style-type: none">• Injury to operator• Fatality

APPENDIX 2:

RECOMMENDED MINIMUM PPE FOR GRASS CUTTING ACTIVITY

ITEM	ITEM DESCRIPTION	APPLICABLE STANDARD
1	SAFETY COVERALLS	BS EN 20471, BS EN 471, BS EN 531, BS EN 464
2	SAFETY HELMET	EN 397, AS/NZS 1801, ANSI /ISEA Z89.1
3	CLEAR / LIGHTLY TINTED SAFETY SPECTACLES	BS EN 166, AS/NZS 1337
4	CLEAR FACE SHIELD	EN 166 3B
5 (a)	EAR MUFF	EN 352-1, ANSI/ASA S12.6
5 (b)	EAR PLUGS	EN 352-2, AS/NZS 1270
6	SAFETY WELLINGTON BOOTS	BS EN ISO 20345
7	SAFETY HAND GLOVE	BS EN 388
8	PVC APRON	BS EN ISO 11611
9	HIGH VISIBILITY VEST (OPTIONAL)	BS EN ISO 20471, AS/NZS 460, ANSI/ISEA 107



SAFETY COVERALL



SAFETY HELMET WITH CHIN STRAP



CLEAR SAFETY GLASSES



CLEAR FACE SHIELD



EAR MUFF



WELLINGTON BOOTS



SAFETY GLOVES



PVC APRON



HIGH VISIBILITY VEST