



ELEVATING LIVES

# GREENHOUSE GASES & CLIMATE ACTION



■ HIGH IMPORTANCE  
 ■ MEDIUM IMPORTANCE  
 ■ LOW IMPORTANCE

## SIGNIFICANCE

**A**t PROLINTAS, we prioritise the management of GHG emissions as an integral aspect of our business operations. Our commitment to sustainability and environmental stewardship drives us to strategically manage GHG emissions, contributing to the broader goal of mitigating global warming and its detrimental effects on ecosystems and biodiversity.

Recognising our responsibilities as highway operators, we are acutely aware of the impacts of climate change. Extreme weather events, particularly intense rainfall, pose immediate challenges to our operations and increase highway safety hazards. These conditions can precipitate dangerous situations, endangering road users and our personnel. Through proactive adaptation and mitigation efforts, we aim to minimise these risks, safeguard our infrastructure, and ensure the safety and wellbeing of all stakeholders who rely on our highways.

### OUR APPROACH GREENHOUSE GASES & CLIMATE ACTION

#### 01 CARBON MANAGEMENT

#### 02 CLIMATE ACTION

#### 03 ALIGNMENT TO THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)

Our comprehensive strategy in addressing Greenhouse Gases & Climate Action is segmented into three interconnected pillars, each key to this material matter.

**01:** This foundational element focuses on the reduction of GHG emissions. Our efforts here reflect our deep commitment to addressing environmental challenges head-on.

**02:** The second pillar is dedicated to proactive measures-both adaptations and innovations -designed to lessen the impacts of climate change. This showcases our forward-thinking approach to safeguarding our infrastructure against climate variability.

**03:** The third pillar emphasises incorporating the TCFD framework into our climate action strategy. This alignment demonstrates our commitment to best practices in climate and environmental reporting, ensuring our strategies are transparent and accountable.



## 01

### CARBON MANAGEMENT

In 2022, our partnership with Malaysian Green Technology and Climate Change Corporation (MGTC) marked the beginning of an extensive initiative to map out our GHG emissions across Scope 1, 2 and 3, aligning with the stringent criteria of the GHG Protocol framework. This collaboration led to the critical establishment of 2019 as our baseline year, providing a definitive starting point for understanding the landscape of our GHG emissions.

This foundational work paved the way for developing a targeted Carbon Reduction Strategy for short-to-medium-term goals, enabling our ultimate ambition of achieving a Net Zero Emissions Goal. This initiative represents a significant milestone in our quest for environmental sustainability and highlights our unwavering commitment to sustainable practices and the principles of ethical corporate governance.

*In 2022, we embarked on a crucial journey towards sustainability by establishing key initiatives and processes to monitor and track GHG emissions across our operations.*



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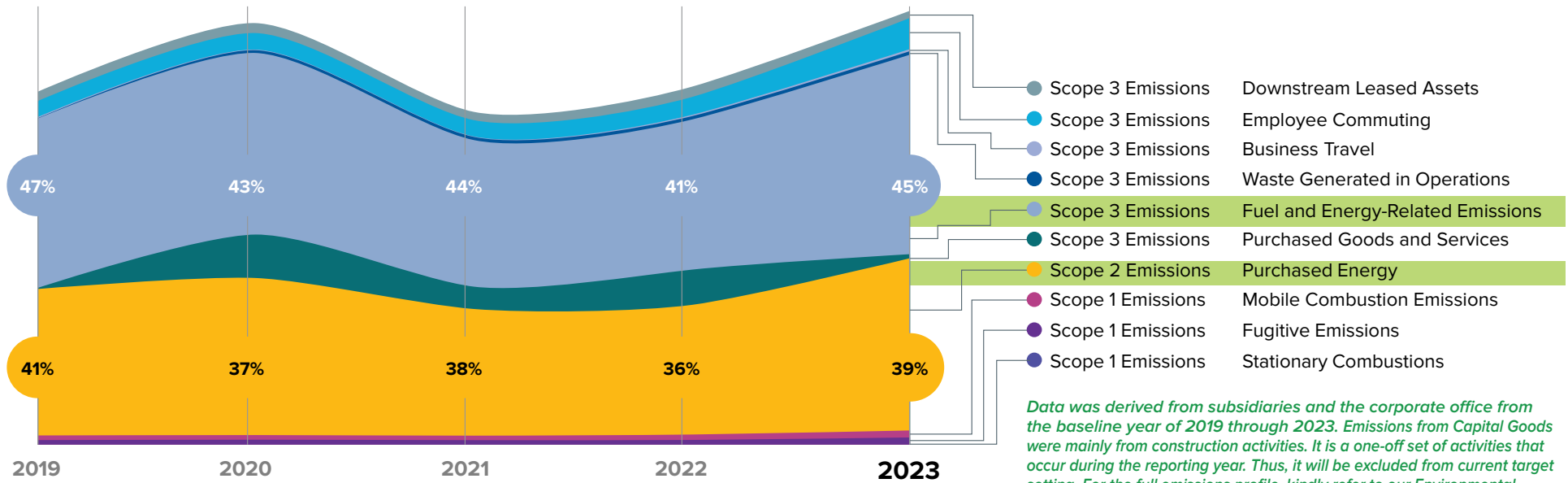
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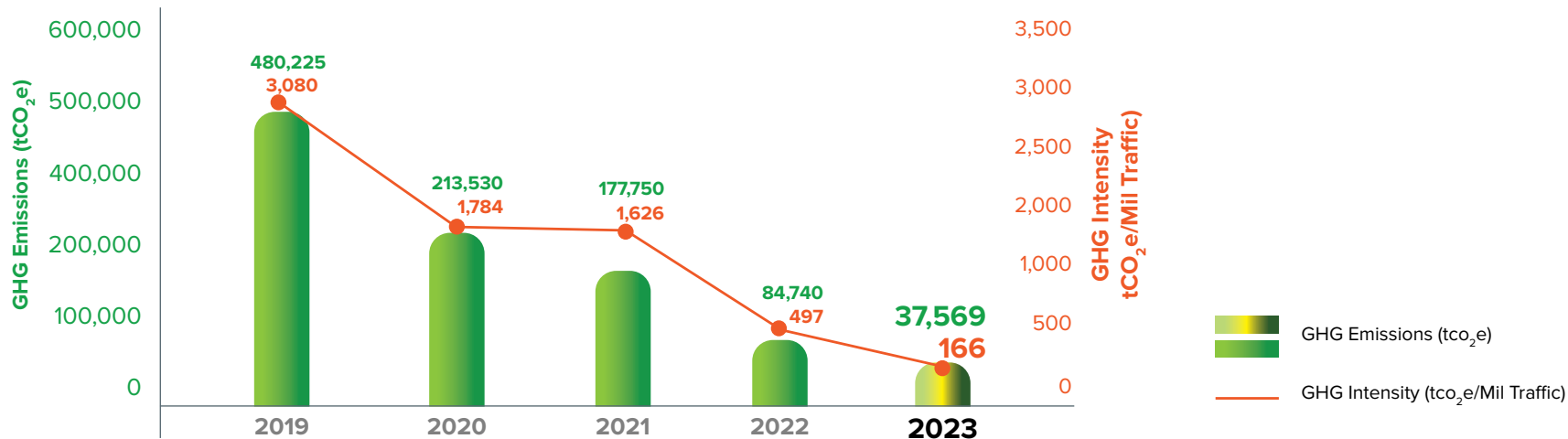
## OUR PERFORMANCE

### OVERVIEW OF PROLINTAS' GHG EMISSIONS PROFILE



Data was derived from subsidiaries and the corporate office from the baseline year of 2019 through 2023. Emissions from Capital Goods were mainly from construction activities. It is a one-off set of activities that occur during the reporting year. Thus, it will be excluded from current target setting. For the full emissions profile, kindly refer to our Environmental Performance Indicators pages 270 to 271 of this Report.

### CARBON FOOTPRINT & INTENSITY ANALYSIS (2019-2023)





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## THE ANALYSIS

Expanding upon our initial GHG emissions profile, our strategy strongly emphasises managing Scope 2 emissions, which account for 38% of our total GHG emissions on a five-year average. Given their direct link to the energy we procure and use, addressing Scope 2 emissions is pivotal.

Further analysis reveals that a significant portion of our Scope 3 emissions, constituting 44% on a five-year average, stems from fuel and energy-related sources. Recognising that Scope 2 and Scope 3 emissions constitute 82% of our overall GHG footprint, developing a comprehensive Energy Management strategy is imperative.

This strategy is crucial for our carbon reduction efforts and pursuit of a net-zero ambition, focusing on reducing energy consumption, enhancing energy efficiency, and transitioning to renewable energy sources. Through these targeted measures, we remain dedicated to environmental stewardship and actively contribute to the global fight against climate change.



***PROLINTAS' Renewable Energy and Innovation Department is powering up progress in the transition to Green Energy.***

**Pn. Farah Iylia Nordin**  
Manager,  
Renewable Energy & Innovation



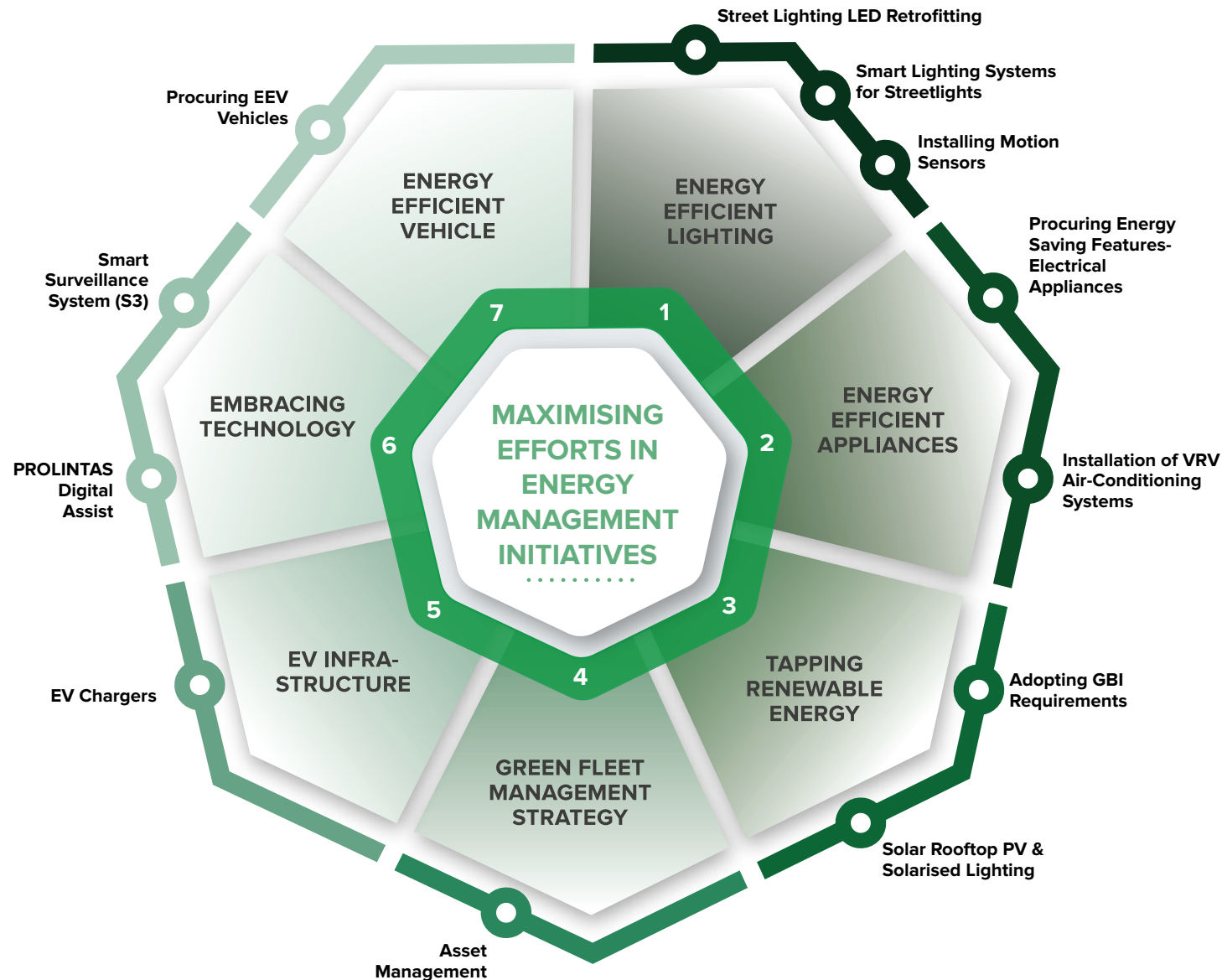
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## ENERGY MANAGEMENT INITIATIVES



## THE CARBON REDUCTION STRATEGY

The development and reinforcement of the Energy Management Framework and Strategy are imperative for the Group, given that analysis over the past five years has shown that 82% of emissions originate from direct energy consumption and its related-activities.

The Mechanical, Electrical and Electronics Department has meticulously outlined a framework and strategy to address this significant portion of our GHG footprint. This approach is aligned with our goal to effectively managing our environmental impact, as detailed in the initiatives highlighted in the accompanying infographic.



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The Energy Management strategy for 2023 comprises the following key initiatives:



**IMPLEMENTATION OF ENERGY EFFICIENCY MEASURES**



**ADOPTION OF RENEWABLE ENERGY SOURCES**



**ENERGY CONSERVATION PROGRAMMES AND AWARENESS CAMPAIGNS**

## INITIATIVE 1 LED RETROFITTING & INSTALLATION



### LOCATION

Retrofitting

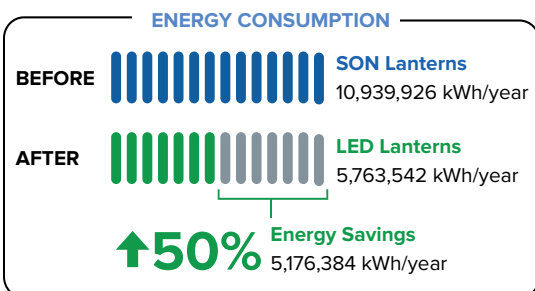


New Installation



### BENEFITS

- This initiative aims to enhance energy efficiency by transitioning from SON lanterns to LED lighting, which consumes significantly less energy.
- Anticipated energy savings of up to 50% compared to traditional SON lighting.



## IMPLEMENTATION OF ENERGY EFFICIENCY MEASURES

### INITIATIVE 2 SMART LIGHTING SYSTEMS FOR STREETLIGHTS



### LOCATION



### BENEFITS

- Smart lighting systems offer sustainable advantages, including the capacity to modulate and adapt light output based on real-time data.
- Features include dimming capabilities, photo sensors and timers. The streetlights can be programmed to halve the brightness from midnight to dawn, promoting energy conservation.

### INITIATIVE 3 INSTALLATION OF MOTION SENSORS



### LOCATION



### BENEFITS

- Incorporating motion sensors can save substantial energy by ensuring lights are activated only when needed.
- Motion sensor-equipped lights boast an extended lifespan and require less maintenance than conventional lighting solutions.
- Additionally, they improve safety and security by illuminating areas that are seldom frequented.

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## ADOPTION OF RENEWABLE ENERGY SOURCES

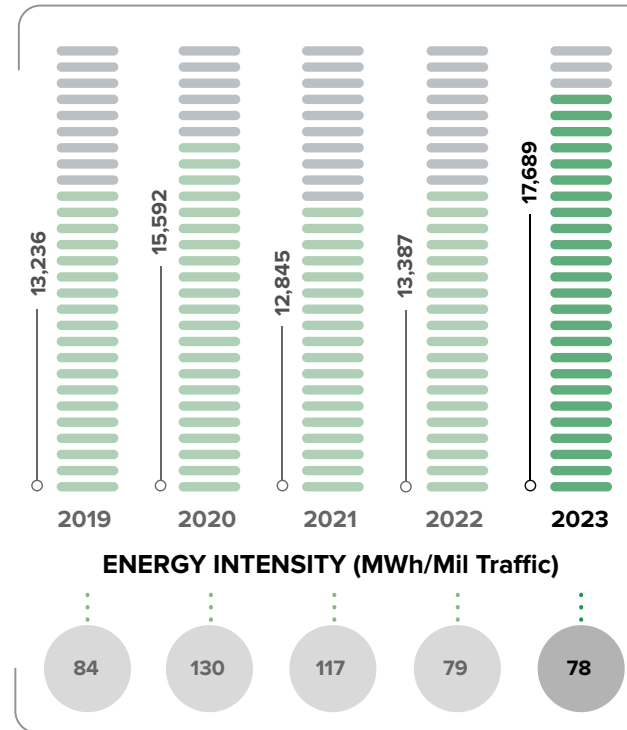
We are adopting solar photovoltaic (PV) systems to harness the power of the sun and generate clean, renewable energy. These systems are primarily installed on the roofs of our toll plazas. The following section delineates the current status and future plans for our solar rooftop project, extending until 2030.

HIGHWAY	EXISTING PV	PLANNED PV	SYSTEM SIZE (kWp)	POTENTIAL ELECTRICITY GENERATION (kWh/year)	POTENTIAL EMISSIONS REDUCTION (tCO <sub>2</sub> e)
GCE	1	2	662	773,216	603
LKSA	1	1	500	584,000	456
KAJANG SILK HIGHWAY	0	4	529	617,872	482
DASH	3	0	308	359,744	281
SUKE	3	0	78	91,104	71
<b>TOTAL</b>	<b>8</b>	<b>8</b>	<b>2,297</b>	<b>2,425,936</b>	<b>1,893</b>

Conversion of kWp to kWh/Year: System Size (kWp) x Average Peak Sun Hours (3.2) x 365 Days  
 Conversion of Electricity (kWh) to CO<sub>2</sub>e (Malaysia): kWh x 0.78 kg

## ENERGY USAGE AND INTENSITY (PER MILLION TRAFFIC VOLUME)

### TOTAL ENERGY USE (MWh)<sup>1</sup>



<sup>1</sup> The conversion for Energy Use, which comprises purchased electricity and fuel consumption, is based on NEB 2016 Conversion Coefficients and Equivalence.

## KEY HIGHLIGHTS

**8% Reduction in Energy Intensity based on the 2019 baseline.**

In 2023, our Energy Intensity continued to exhibit a downward trajectory, reflecting a **decrease of 1%** from 2022.

Moreover, compared to the baseline year 2019, we have achieved a **noteworthy reduction of 8% in intensity**. This decline can be attributed to the effective implementation of our energy reduction initiatives.

## ENERGY CONSERVATION PROGRAMMES AND AWARENESS CAMPAIGNS



In our ongoing efforts to promote energy conservation and sustainable behaviours among our employees and stakeholders, we have coordinated campaigns and competitions to encourage adopting environmentally-friendly practices in the workplace and at home. These endeavours are designed to foster a culture of environmental responsibility within our organisation and the communities we are dedicated to serve.



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02

## CLIMATE ACTION

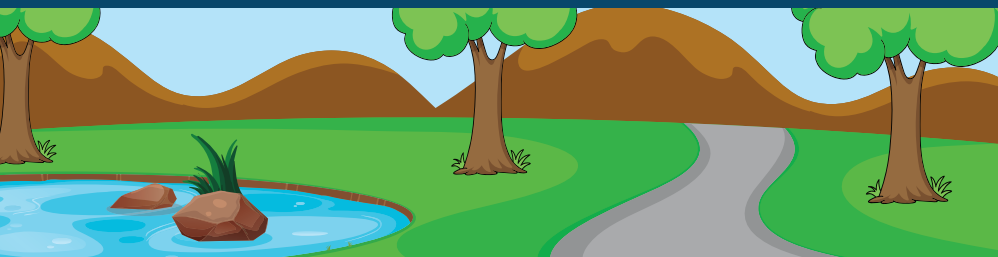
Our Climate Action approach is centered on proactive adaptations and strategic responses aimed at mitigating the effects of climate change on our highway operations.

One of our primary areas of focus is flood mitigation and slope stability. We have an effective stormwater management complemented by the deployment of remote slope and rain monitoring sensors. This comprehensive approach enables us to anticipate and effectively respond to flood and slope-related risks, ensuring continued safety and reliability of our highways, even in extreme weather conditions.

### KEY HIGHLIGHT

2023

Construction of 518 m<sup>3</sup> of an On-site Detention Pond at



PROLINTAS significantly enhanced its stormwater management capabilities by adding an on-site detention pond at Kajang SILK. This expansion increased our stormwater handling capacity by

**518 m<sup>3</sup>**, elevating our overall capacity to **59,730 m<sup>3</sup>**.

This advancement underscores our commitment to environmental stewardship and operational excellence.

### DETENTION AND RETENTION PONDS

In response to the escalating frequency and intensity of extreme weather events, such as floods, exacerbated by climate change, we are proactively implementing measures to mitigate this climate-related risk.

Understanding the potential implications for our business and the communities we support, we have initiated a comprehensive mitigation strategy. This strategy focuses on the development of advanced stormwater management infrastructure and the expansion and improvement of our road drainage systems. Our goal is to reduce the likelihood of flooding and bolster the resilience of our infrastructure against the dynamic challenges posed by the changing climate.

#### 2023 LOCATION AND CAPACITY OF EXISTING DETENTION AND RETENTION PONDS

HIGHWAY	DETENTION POND CAPACITY (m <sup>3</sup> )	RETENTION POND CAPACITY (m <sup>3</sup> )
LKSA	20,473	3,814
SUKE	12,937	8,947
LEBUHRAYA KAJANG SILK HIGHWAY	518	0
DASH	800	11,190
GCE	1,050	0
<b>TOTAL</b>	<b>35,778</b>	<b>23,951</b>

*The detention pond at GCE serves as an effective stormwater management system, mitigating flood risks by temporarily holding excess water runoff and allowing it to gradually dissipate, thus safeguarding infrastructure and ensuring road safety for commuters.*







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## SMART SLOPE MONITORING SYSTEM

In 2023, our organisation took a significant step forward in enhancing the safety and resilience of the Kajang SILK and SUKE highways, bordered by hilly slopes, by deploying an advanced Smart Slope Monitoring System.



### A PROACTIVE ALERTS FOR SLOPE STABILITY RISKS

This innovative system is designed to provide pre-emptive warnings of potential slope failures by utilising cutting-edge sensors capable of detecting critical changes in rainfall patterns and soil movement. The system employs predefined parameters to initiate timely remedial measures, thereby mitigating risk and ensuring the safety of these vital infrastructures.



### B ENHANCED SAFETY

Slope Monitoring Systems are pivotal in bolstering road safety by providing early warnings of potential landslides or slope failures. This capability is instrumental in significantly mitigating accident risks, safeguarding motorists' lives and ensuring uninterrupted travel.



### C PREVENTIVE AND TIMELY MAINTENANCE

The early detection features of these systems are critical in identifying signs of potential slope instability. This foresight allows for timely maintenance and repair measures, effectively preventing extensive and costly damage to the highway infrastructure.



### D EFFICIENT TRAFFIC MANAGEMENT

Leveraging real-time data on slope conditions, these systems facilitate the implementation of dynamic traffic management strategies. This includes enacting immediate road closures or implementing rerouting protocols, thereby minimising exposure to hazardous conditions.

The system has been designed with **two rain gauges and ten tilt sensors**, strategically positioned on the slopes adjacent to **Kajang SILK**.

An additional **ten tilt sensors** have been deployed on the **Bukit Saga slope next to SUKE**,

guaranteeing comprehensive coverage and safeguarding against the risks of slope failure.



## 03

### ALIGNMENT TO THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)

We are proud to announce our inaugural alignment with the recommendations set forth by the TCFD, marking an advancement in our commitment to climate resilience. We are in the preliminary stages of a comprehensive assessment to understand the potential impacts of both physical and transitional risks associated with climate change. This process is being conducted alongside identifying opportunities that align with our operational goals and values, all under the structured guidance of TCFD. This proactive approach highlights our dedication to integrating climate resilience into our strategic planning, ensuring we remain at the forefront of sustainability and responsible corporate stewardship.

#### TCFD PILLARS

#### WHERE WE ARE TODAY

#### PRIORITIES FOR FY2024 TO FY2027



##### GOVERNANCE

Disclose the organisation's governance around climate-related risks and opportunities.

##### Board Oversight

Periodic discussions by the Board on climate-related matters.

##### Management Oversight

Review of climate risks as part of the Group's Enterprise Risk Management.

##### Working Committees

Discussions and executions of climate-related matters.

##### Awareness and Training Programmes

For all employees.

- Continue to strengthen and improve climate risk governance.

- Continue enhancing internal capabilities, competency & culture.

- Build a cohesive approach to tackle climate strategy.

- Align understanding of climate-related risks and opportunities across the Group.



##### STRATEGY

Disclose the actual and potential impacts of climate-related risks on the the Group's operations, strategy and financial planning where such information is material.

- Continuous capacity building for TCFD adoption.

- Prioritising GHG Emissions & Climate Action as a material matter.

##### Develop Climate Strategy

Enhance Scope 1, 2 and 3 carbon emissions profiles and dashboards.

- Strengthen the Carbon Reduction Strategy.

- Establish short, medium and long-term climate targets.

- Assess physical and transition risks and opportunities using scenario analysis over the short, medium and long term.



##### RISK MANAGEMENT

Disclose how the organisation identifies, assesses and manages climate-related risks.

- Climate risks are managed under the Group's Enterprise Risk Management

- Conduct physical risk assessment covering our significant asset locations.

- Conduct transition risk assessment based on policy, technology, market and reputation risk drivers.



##### METRICS AND TARGETS

Disclose the metrics and targets used to assess and manage relevant climate-related risks where such information is material.

- Disclosed carbon reduction efforts undertaken by PROLINTAS.

- Set short, medium and long-term carbon reduction targets.



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## OUR CASE STUDY

In the contemporary push towards sustainability, the strategic shift from traditional energy sources to renewable alternatives marks a pivotal development in climate action. This transition underscores a profound commitment to environmental stewardship and operational efficiency and sets new standards for industry practices.

Adopting solar energy solutions to revolutionise how energy is sourced and utilised within critical infrastructures such as highways is at the forefront of this movement.

The initiative to harness the power of the sun reflects a broader ambition to minimise our carbon footprint and ensure a stable, dependable energy supply. It embodies the growing dedication to sustainable development and addresses the escalating demand for green energy alternatives.

*Energy consumption represents a significant portion of the operational expenses of maintaining our highways.*



*Innovation Meets Sustainability: 238 kWp Solar PV System commissioned at the Elmina Toll Plaza, GCE.*



## CHALLENGES

### GRID RELIANCE

Our toll plazas rely heavily on grid energy. This long-standing dependence on conventional energy sources has been a critical aspect of infrastructure management, ensuring the continuous functioning of these essential services.

### OPERATIONAL COSTS AND ENERGY CONSUMPTION

Energy consumption represents a significant portion of the operational expenses of maintaining our highways.

### ENVIRONMENTAL CONSIDERATIONS

The reliance on grid energy, predominantly generated from coal and gas, poses a challenge to achieving environmental sustainability objectives. This method of energy sourcing contributes to an increased carbon footprint, diverging from the global movement towards reducing environmental impact and promoting sustainable practices.

PROLINTAS realised the need for change and began exploring ways to harness the potential of renewable energy.

*Powering-Up with Solar Energy: 259 kWp Solar PV System commissioned at the Alam Impian Toll Plaza, LKSA.*

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## SOLUTION

### SUSTAINABLE TRANSITION TO RENEWABLE ENERGY SOURCE

**P**ROLINTAS has ventured towards sustainable energy by adopting an innovative solar rooftop project for its brownfield highways at the Alam Impian Toll Plaza at LKSA and the Elmina Toll Plaza at GCE.



The initiative is a strategic shift from conventional energy sources to renewable alternatives, thus emphasising our commitment to operational efficiency and environmental stewardship.

LOCATION	CAPACITY (kWp)
 Elmina Toll Plaza	238
 Alam Impian Toll Plaza	259

## BENEFITS

### ECONOMIC

The shift towards renewable energy sources has decreased our dependence on grid electricity, leading to reductions in energy costs. To date, our solar rooftop initiative has culminated in a total savings of **RM173,687**.

SITES	FY2023 TNB ELECTRICITY BILLS CONSUMPTION (RM)	SOLAR GENERATION SAVINGS (RM)
 Elmina Toll Plaza	244,228	85,627
 Alam Impian Toll Plaza	339,322	88,060

- The rooftop solar PV systems began operations in June 2023.
- Solar generation savings in RM is calculated from: Total Energy Generated (kWh) x RM0.55







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## ENVIRONMENTAL

The adoption of solar energy has lowered our carbon footprint, aligning with global efforts to combat climate change. Through this initiative, we have avoided a total of **233 tonnes CO<sub>2</sub>e** in carbon emissions.

SITES		FY2023 TNB ELECTRICITY BILLS CONSUMPTION (kWh)	SOLAR GENERATION (kWh)	EMISSIONS AVOIDANCE (tCO <sub>2</sub> e)
 Elmina Toll Plaza		319,344	155,687	121
 Alam Impian Toll Plaza		637,004	144,380	112

- The rooftop solar PV systems began operations in June 2023.
- Conversion of electricity to tCO<sub>2</sub>e (Malaysia): kWh x 0.78 kg

## GOING FORWARD

We are committed to further advancing our GHG reduction initiatives and enhancing our climate action efforts. Building on the success of our current projects, we aim to explore and implement innovative solutions that will drive our emissions even lower and foster a more sustainable future.

We will continue to align our strategies with global climate goals through proactive engagement and continuous improvement in our environmental performance.



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