Executive Summary

This report is a review of our environmental performance during the 2017/18 academic year (the ^ Œ %]v}PE‰ Œ]} _• v •µuu ŒÇ }(šZ š]}v• µŒŒ všoÇ]vP to achieve continual environmental improvement. This report describes our environmental monitoring data and key performance indicators in those areas where we have the greatest potential to impact upon on the environment. Our energy usage, water consumption, waste generation, and transport emissions are summarised, and performance is assessed in terms of compliance with the objectives and targets we had established for the reporting period.

Key Findings

During the 2017/18 Academic Year, Bangor University:

Consumed:

- 14,931,525 kWh of mains electricity
- 19,495,827 kWh of natural gas
- 881,450 kWh (80,867 litres) of heating oil
- 57,438 litres of transport fuel
- 141,203 cubic metres of mains water
- 149,192 kWh of LPG

Generated:

- 129,531 cubic metres of sewage
- 695,600 tonnes CO_2e from our agricultural activities

Sent to Landfill:

- 282.66 tonnes

1. Introduction

Bangor University is committed to excellence. Our mission statement describes our overarching aim to be a 'strong, confident institution recognised regionally, nationally and internationally as a centre of excellence for its varied portfolio of teaching and research, and for the unique,

(SIG), supported by the Sustainability Lab, with input from the Sustainability Think Tanks which are open to all staff and Students as follows (Box 1):

Box 1

Our EMS currently applies across the entire University estate in the north of Wales, with the exception of the Prince Madog Research Vessel (a joint venture with P&O which has separate environmental auditing arrangements).

6. Aspects and Impacts

Our EMS incorporates an assessment of all aspects of the University's activities that have the potential to impact upon the environment. A total of 42 discrete aspects have been identified and have been evaluated in terms of their potential environmental impact (which may be positive or negative). The criteria used for evaluation are described within the EMS and relate to the potential consequences associated with each aspect, and the likelihood of such an occurrence. This includes a consideration of relevant legislation, potential environmental damage, current controls, and risk of emergency situations. From this exercise, those aspects that have the greatest potential to adversely impact upon the environment have been identified, and appropriate objectives and targets developed to minimise those impacts.

Key aspects identified include:

- Energy consumption and associated carbon emissions
- Water Consumption
- Oil and Chemical storage and use
- Waste generation
- Travel and Transport

The impacts associated with these aspects relate to the use of natural resources, greenhouse gas emissions, pollution risk, and the decreasing availability of landfill sites.

The Aspects and Impacts register and evaluation process is reviewed annually by the Sustainability Implementation Group, and reported to the Sustainability Task Group.

7. Objectives and Targets 2017/18 (no change)

From the Aspects and Impacts assessment, we have derived the following objectives and targets for the current academic year (ending 31st July 2018):

Table 1: Environmental Objectives and Targets

Objective	Target
T1) Maximise efficient use of energy, and reduce greenhouse gas emissions.	T1 A) Reduce annual energy associated greenhouse gas emissions (CO_2e) (C by 3% each year (*)
	T1 B) Achieve a 40% reduction in energy associated greenhouse gas emissions (CO_2e) by 2020, (based on 2005/06 base year) (*)
	T1 C) Reduce overall Scope 1, 2 and 3 greenhouse gas emissions (CO_2e), (C by 3% each year (*)
T2) Maximise efficient use of water	T2 A) Reduce total annual water use by 2% per year (*)

T3) Prevent pollution from University activities	T3 A) Zero pollution incidents recorded
T4) Minimise waste to landfill.	T4 A) Recycle / divert from landfill 50% of all municipal waste generated by the University
T5) Reduce business mileage	T5 A) Achieve an annual reduction in vehicular business travel CO_2 emissions
T6) Embed a process for consideration of Sustainable Procurement issues within the wider procurement process.	T6 A) Reduce procurement related GHG emissions (excluding construction related emissions) annually T6 B) Undertake annual Procurement Fitness Checks. Achieve Level 2 the Welsh Procurement Maturity Model by 2020. T6 C) t Monitor progress against sustainability performance indicators and targets set within the Procurement Strategy
T7) Enhance Awareness and Communication	T7 A) Implement programmes and schemes to raise awareness of the wider sustainability agenda amongst staff, students, visitors and contractors
T8) Promote Biodiversity	T8 A) Ensure that biodiversity considerations are wherever practicable, incorporated in University activities

(*) these are "intensity targets" and performance will be assessed against the following normalising factors:

a) total operational floor area of the University's estate

b) total staff and student FTEs

The University will continue to monitor absolute variances on an annual basis

These Objectives and Targets were approved by the Sustainability Task Group at its Annual Review Meeting on 17th May 2018, and a report of performance against the targets will be incorporated in the 2018 Annual Environmental Report.

8. Annual Performance: Objectives and Targets 2017/18 Review

Performance in terms of our objectives and targets for the reporting period are as follows and summarised in Table 4.

Objective T1: Energy and Greenhouse Gas Emissions

Target T1 A)	Reduce annual energy associated greenhouse gas emissions (CO_2e) by 3% each year (*)
Target T1 B)	Achieve a 40% reduction in energy associated greenhouse gas emissions (CO_2e) by 2020, (based on 2005/06 base year) (*)
Target T1 C)	Reduce overall Scope 1, 2 and 3 greenhouse gas emissions (CO_2e), by 3% each year (*)

(*) Normalised by both Operational Floor Area (m^2) and Staff and Student Numbers (Full Time Equivalents)

Fig 1: Total Energy Consumption and Carbon Emission trends 2017/18

Fig 2: Energy and Carbon Emission trends as a factor of Floor Area and FTEs 2017/18

Fig 3: Higher Education Sector: Energy Consumption per m^2 floor area (2016/17)

fallen by 16.21% per FTE and 16.72% per m^2 operational floor area. These results significantly exceeds the target of a 3% reduction year-on-year.

As these takes into account all emissions from energy and transport as well as emissions arising from waste and waste water disposal, this significant reduction is a reflection of the positive results we are achieving in reducing our environmental impacts across the board.

It should also be noted that the volumes of Heating Oil and LPG consumed during the 2017/18 period seemto be significantly higher than the previous year. This is thought to be due to previously poor reporting and record keeping rather than an actual increase in consumption.

Table 2: Greenhouse Gas Emissions

Objective T1(c) : Summary	2017/18	2016/17
Overall Scope GHG emissions (kg CO_2e)	8,811,0238	10,580,578
Total staff / Student FTEs	11,264	11,333
Total Operational floor area (m^2)	220,982	220,982

Fig 6: Water Consumption normalised by floor area and FTEs since 2005/2006

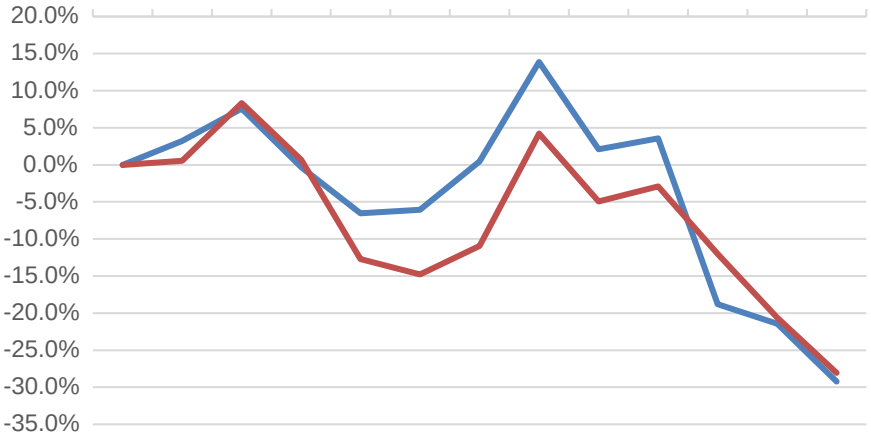
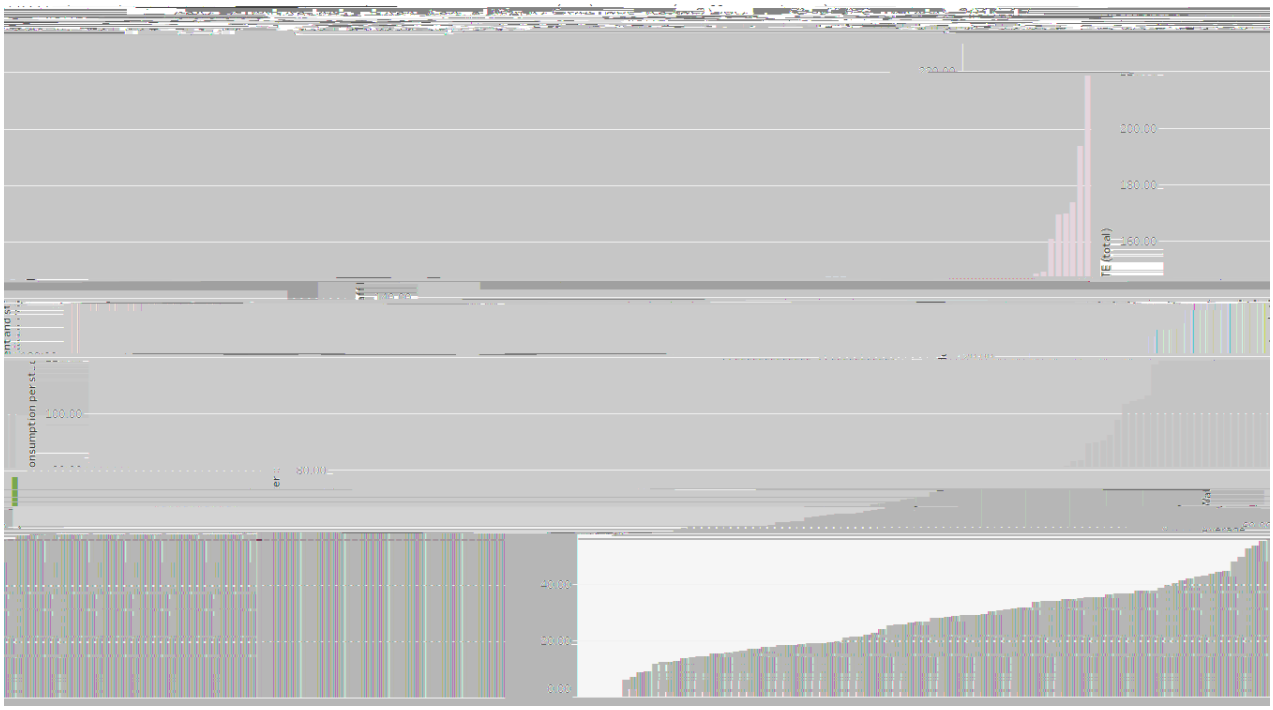


Fig 7: HE Sector Water Consumption per m^2 operational floor area 2016/17

Fig.8: HE Sector Water Consumption per FTE 2016/17

*no more recent data is currently available from HESA



Objective T3: Prevention of pollution

Target T3 A)	Zero pollution incidents recorded

There were no spillages or pollution incidents during period.

All of our heating oil storage facilities have been replaced with modern integrally bunded polyethylene tanks. We are, wherever practicable, replacing oil heating with mains gas or LPG, which not only reduces our carbon footprint, but also removes a potential source of pollution. For the academic year 2017/18, the total volume of heating oil purchased by the University has fallen to less than 20% of that purchased in the 2005/06 baseline year.

Our Pollution Prevention Plan includes an Environmental Incident Reporting Procedure for anyone discovering an environmental incident such as pollution or fly tipping on University premises. Contractors working on the estate are required to sign a declaration to comply with a range of ^ } v š Œ š } Œ ^ š v Œ • v t } Œ l] v P W Œ š] • _ Á Z] Z] v o µ • environment during works, as well as receiving a Health, Safety and Environment induction prior to the commencement of work.

Objective T4: Minimisation of Waste sent to landfill

Target T4 A)	Recycle / divert from landfill 50% of all municipal waste generated by the University

As previously reported, a wholesale review of our waste management procedures, including reporting of waste data, was initiated during the 2017/18 period and is still ongoing.

Based on the data received from our waste contractors, the recycling rate for the reporting period stands at 50.11% (Fig 9). This is an increase of 9.98% compared to the previous year, and an improvement of 100.43% compared with the baseline year Br(2568( )-133(b)-4(asel)896 841.92

Fig 10: Percentage of Waste Reused, Recycled, Recovered and Landfilled

Objective T5: Travel and Transport

Target T5 A)	Achieve an annual reduction in vehicular business travel CO_2 emissions

The previous target to reduce our vehicular business travel emissions by 20% of the 2005/06 base year by the end of the 2015/16 academic year was achieved and a new target to continue with annual reductions was set at the last Annual Review Meeting in 2017. The new target was met for the 2017/18 academic year, with total emissions arising from business travel were 18.5% lower than in the previous year (16/17) and

Objective T6: Sustainable Procurement

Target T6 A)	Reduce procurement related GHG emissions (excluding construction related emissions) annually
Target T6 B)	Undertake annual Procurement Fitness Checks. Achieve Level 2 of the Welsh Procurement Maturity Model by 2020
Target T6 C)	Monitor progress against sustainability performance indicators and targets set within the Procurement Strategy

Sustainability is a key strategic objective of the University with the aim of embedding sustainability across all functions. For that reason, the University no longer produces a separate Sustainable Procurement Policy but will incorporate sustainability objectives into the procurement process as •š v Œ v šZ ‰Œ}µŒ u vš š u Á]oo }všŒ]µš š}šZ hv]À Action Plan.

A methodology for reporting on greenhouse gas emissions associated with procurement has been developed within the Higher Education sector[3], which assesses the carbon emissions associated with expenditure on 75 key commodities. Using this methodology, we developed Target T6A to reduce procurement related greenhouse gas emissions annually. Performance is summarised in Table 3 below, however these data exclude the procurement of construction and electricity, since, a) construction activity varies significantly from year to year, and b) the reporting tool utilises a standardised conversion factor (i.e. kg CO_2E expenditure) for each commodity. Whilst this is considered acceptable for the majority of the commodities listed, the actual emissions associated with mains electricity vary significantly from year to year depending principally on the amount of coal fired generation. Conversion factors are released by Defra annually, however these variations are not currently taken into account in the HESCET reporting tool which has used the same conversion factor since 2012.

[3] HESCET – Higher Education Supply Chain Emissions Tool

In this financial year, community benefits were delivered on three contracts. Firstly, a number of social value projects were undertaken as part of the Msparc building project, which is being constructed by Willmott Dixon. The list below provides a sample of the projects undertaken this year:

- Community bulb planting day in Gaerwen.
- Three apprenticeships from the Princes Trust for an initial 6 weeks. Two of them have now had full time posts on the Msparc project.
- Seven internships provided.
- Donation of changing rooms (old site cabins) to Gaerwen Football Club.
- Workshops and training events for BU Property Staff in Building Information Modelling (BIM).
- Tanio Arts Project aimed to develop community links and to develop the STEAM agenda.
- Troi Project 12 students undertook a 2 day crash course on site with professionals working on the Msparc Project.

The Msparc Team continue to work closely with Willmott Dixon to deliver further benefits.

Secondly, as part of a contract to demolish the W Charles Evans & Memorial buildings, the appointed contractor, Kier, arranged to paint a scout hut in Caernarfon. The project was co ordinated by Kier, with materials being donated by Johnstones Paint, Travis Perkins and GTB Demolition.

- Sustainability Lab staff were present at Serendipity during Welcome Week to talk to students about sustainability at the University
- Induction training on sustainability for wardens and campus life coordinators in Halls
- Inclusion of sustainability issues within the Welcome Week presentation for new students
- Contribution to teaching, e.g.
    - Providing data and guidance to inform student assignments and research projects
    - Guest lectures for the MSc Strategic Environmental Management module
- Ongoing training of Domestics in Environmental Awareness, Environmental Incident Reporting and Waste Management.
- Continuation of a programme of monthly lunchtime talks for students. Topics have included:
    - Waste & Recycling at Bangor
    - Energy at Bangor
    - Plastic Free Bangor
    - Sustainable Travel Planning
- Carnifal Cynaliadwyedd/Sustainability Carnival for the whole month of February, showcasing the work from

Objective T8: Biodiversity

Target T8 A)	Ensure that biodiversity considerations are wherever practicable, incorporated in University activities

Considerable work is undertaken across the University to protect and enhance our natural environment and promote its biodiversity. This is primarily led by activities at Treborth Botanic Garden and Henfaes University Farm, both of which are havens for biodiversity and where proactive steps are taken to protect native flora and fauna, and to control invasive species.

The Careers and Employability department has provided a Bangor Employability Award (BEA) funded student internship for a Biodiversity Action Plan Officer each year, managed by the CEPT Biodiversity Coordinator. This is a strategic position and the student will work with CEPT to promote biodiversity within the student community, mobilise volunteering projects, student dissertations and student societies, helping to create a calendar of biodiversity events and workshops throughout the year.

				There were no pollution incidents at the University during the 2016/17 academic year

(*) these are "intensity targets" and performance will be assessed against the following normalising factors:

a) total operational floor area of the University's estate, and

b) total staff and student FTEs

The University will continue to monitor absolute variances on a annual basis

Key to Table 2

	Target met (or on course to be met)
	Target not met but improvement in performance since last year
	Target not met and deterioration in performance since last year

9. Greenhouse Gas Emissions

The Kyoto Protocol describes s

10. Future Plans

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^USTAINABILITY Deliver a financially, socially and environmentally sustainable University

The University operates in a region with unique environmental attributes and places sustainability

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ambition embraces not only the infrastructure and operation of university sites and operations, but how the University plans for growth and our role for Wales and beyond. We are not alone in recognising the changes needed to reduce our impact on the world in which we and future

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The University is building upon the commitments made during 2016/17:

- The Campus Environment and Performance Team is now established and working closely with Property and Campus Services. The relationship will be formalised further in 2018/19
- The Sustainability Lab started the process of transitioning into the Planning and Governance Team reporting directly through the Director of Planning and Governance (who is also the University Secretary) to the VC and the Executive.
- The team continued to refer to the Well-being of Future Generations (Wales) 2015 Act as a framework for sustainability and guiding principles.

We are committed to ensuring that our graduates will have a demonstrable knowledge of sustainable development practices gained from their studies and wider experiences of the University. We will enable students, staff, partners, businesses, alumni, and the wider community to implement positive change within their spheres of influence and ensure that the University is positioned at the forefront of global sustainable change (as reflected in our People and Planet University League and UI GreenMetric positions).

The Property and Campus Services department is currently being reviewed, and will incorporate sustainability as an integral consideration in the future development of the University. All of our new buildings, such as the Science Quarter (development on hold), will be designed to achieve the

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The introduction of the new ISO 14001:2015 Environmental Standard has had implications for our Environmental Management System and during the second half of 2017/18 intensive work was conducted by CEPT to review the documentation.

dZ ^µ•š]v]o]šÇ > v Wd Œ]vÀ}(o]Às[ ]vvÀ šZ šZ š}u•]šÀ]}µ•v efficiency programme ensuring that the successes of meeting objectives and targets fully are captured and communicated.

The Well-being of Future Generations (Wales) Act 2015 places a statutory duty on certain public bodies in Wales to carry out their duties in a sustainable way. Although Higher Education Institutions are not specifically listed in the Act, we have publicly stated that Bangor University will apply the principles set out in the Act to all of our work as follows:

There is ONE Principle

We must act in a manner which seeks to ensure that the needs of our students are met without compromising the ability of students in the future to meet their own needs.

When making decisions we as individuals (whatever our position) and a University need to make sure that we take account of the impact we could have on current and future Bangor students and

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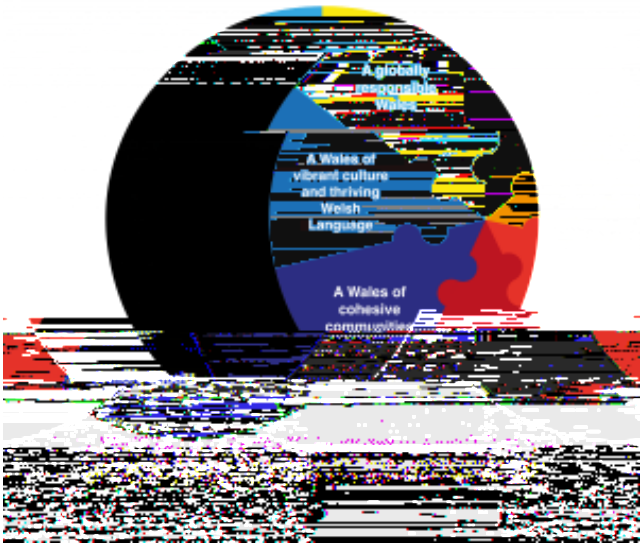
There are FOUR Pillars

We need to consider improving the financial, social, environmental and cultural well-being of the university.

There are FIVE principles in decision making:

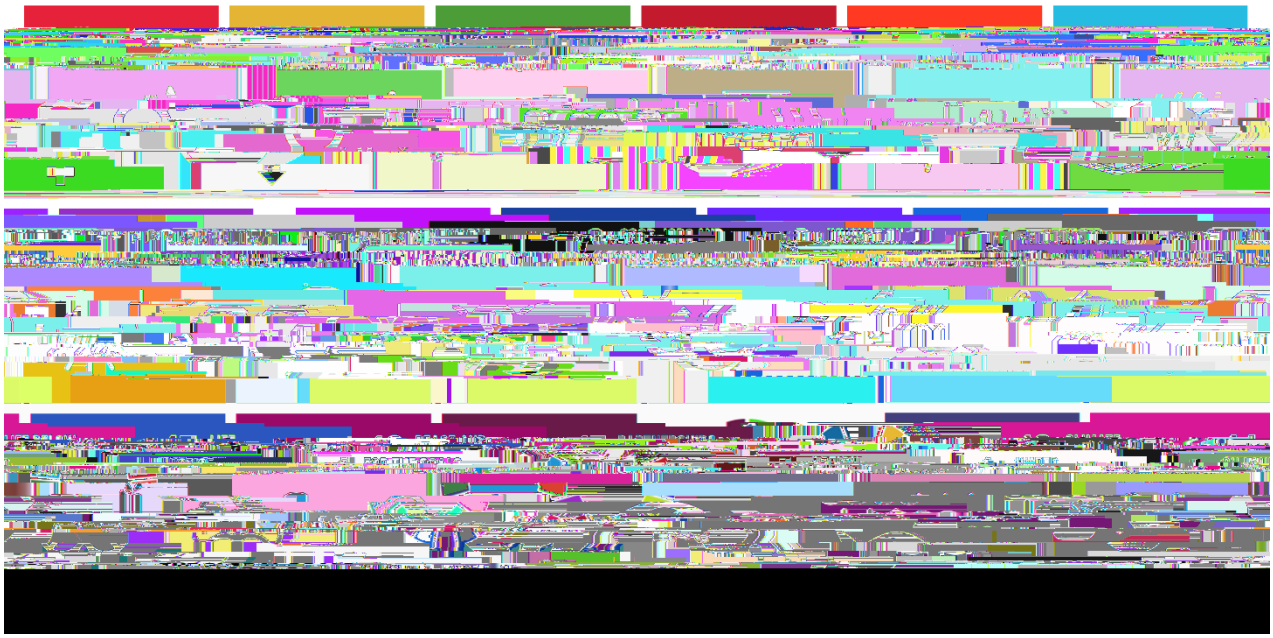
- Balancing short-term v long term,
- Will the decision prevent problems from occurring or getting worse,
- What impact will a decision have on people and the ability to deliver on BU aspirations
- In have short

Fig 10. Well-being of Future Generations (Wales) Goals



The University is also recognises the United Nations Sustainable Development goals (Fig 11) and is working to contribute to these goals, which map on to the WFG goals.

Figure 11: The United Nations Sustainable Development Goals



The Sustainability Task Group is committed to ensuring that sustainability is at the heart of the h v] À Œ •] š Ç [• (µ š µ Œ U v • • µ Z U } µ Œ v À] Œ } v u v š o D v P u influencing and achieving this commitment.

Contact Details: TBC

Contact Details:

Campus Environmental Performance Team
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Appendix 1

Environmental Policy

Bangor University has around 10,000 students and 2,000 members of staff located within an estate of some 100 buildings across 300+ hectares. Our core business is to provide high quality teaching and research whilst taking good care of our staff, students, community and environment.

We understand that our activities have an impact on the environment, and are committed to continual improvement of our environmental performance and to meeting the requirements of ISO 14001:2015 environmental standard. We will not only seek to protect our natural environment, but also actively pursue opportunities to enhance it, promote a culture of environmental stewardship amongst our staff and students