Environment Policy

Landscape Design Institute (Australia)

ACN 065 777 273

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This is the new proposed environment policy for the Landscape Design Institute (LDI). It is in draft form and we welcome your feedback.

- Please email your feedback submissions to tig@ldi.org.au by 1 May 2023

Introduction:

The Landscape Design Institute (LDI) is Australia's leading industry association for qualified Landscape Designers and Landscape Management Professionals.

LDI members acknowledge that we will only be truly relevant if we understand, appreciate and express the significance of the role we play in providing a better future for humanity and the planet. The LDI Environment Policy is for the use of:

- LDI members (to affirm their environmental awareness and promote their expertise);
- Clients (both public and private sector);
- Members of the public (as an educational reference).

This policy encompasses the social/cultural, physical and economic landscape, with the use of specific and perceived concepts. It realises the global importance of environmental management and the substantial impact that landscape designers and managers have on ecological regeneration.

LDI Members Are Committed To:

- Behaving in an environmentally responsible and conscious manner, upholding professional standards and being prepared to inform public and government bodies of the importance of considering all impacts, direct and indirect, on the environment. This includes impacts on air, water and food (security – quality and availability) as well as land.

- Interacting with other professional bodies covering all aspects of the cultural and natural environment.

- Continuing their education and increasing knowledge relating to sound environmental practices.

- Designing and managing landscapes that adhere to the following principles:

1. Increasing biodiversity, advance succession & community dynamics in order to regenerate ecosystem.

2. Regenerating landscape, water and air.

3. Instil or restore 'Sense of Meaningfulness'

4. Ensure efficient long-term use of sustainable resources and materials.

5. Raise community awareness and promote ecologically sound decision-making processes, principles and processes practises.

Preamble *We are designing and managing for regenerating complex ecosystem:*

THE BIOLOGICAL ECOSYSTEM – FOUR (4) PROCESSES

Complex Inseparable
Physiological
Dynamic

INTERCONNECTEDNESS
in a non-static Dynamic

THE BIOLOGICAL ECOSYSTEM

- ❑ **Water**
  - →**THE WATER CYCLE**

TOTAL PROCESS

- ❑ **Energy**
  - →**ENERGY FLOW**

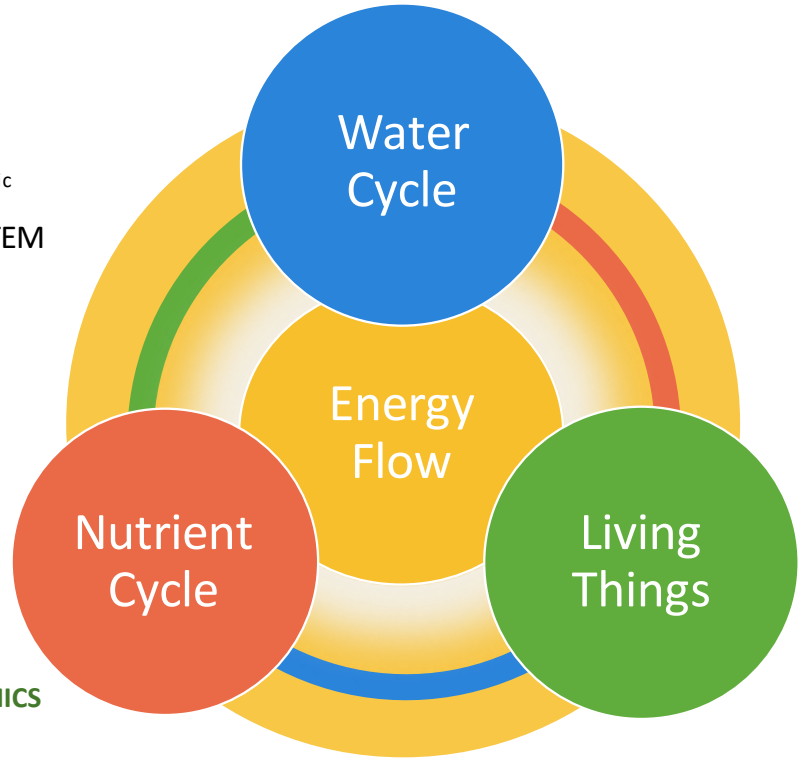
NATURAL ENERGY FLOW

- ❑ **Nutrients**
  - →**THE MINERAL CYCLE**

TOTAL RECYCLING

- ❑ **Living Things**
  - →**SUCCESSION &**
  - →**COMMUNITY DYNAMICS**

ALL LIVING THINGS.



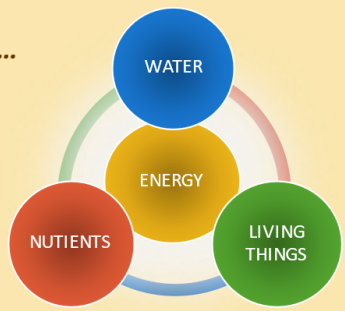
PEOPLE – WE ARE THE LANDSCAPE DESIGNERS & MANAGERS!

- There is only one Biological Ecosystem – It functions in Wholes.
- It consists of the same four (4) processes everywhere on earth, however, these processes function/respond differently in different geographical environments, landscapes, communities, (micro/macro) climates, etc.
- If one (1) Ecosystem Process fails or is removed, the Whole will degenerate. Similarly, if we manage to enhance or improve only one (1), we are inadvertently managing for all four (4). Managing the Whole.
- We are a part of the four (4) Ecosystem Processes and depend on it for all our needs. We are not separate from it and reside in "Living Things". *(If our species fail or are removed, there can still be a viable Ecosystem)*
- We need to understand that the Ecosystem is a complex, inseparable, physiological dynamic. We cannot conserve it as a constant - It is either degrading or regenerating. We can choose and manage the direction.
- We are the Weather Makers, the Climate Directors – The Managers of the Whole – Human Creativity and our ability to make Decisions Holistically, Plan & Manage Regeneratively are our greatest unique assets as a species.
- We, on the other hand, are the only species to Create Waste and Environmental Degradation.
- We need to describe "What We Really Want" in the context of our future social, economic and physical landscape.
- We are then capable of making decisions that take us towards this future landscape description.
- We can then Test, Pre-Test and Re-Test decisions and actions against our Context – as opposed to being dictated to by trends, fashion, peer pressure, vested interest, political compromise, religious beliefs, senseless greed, etc.....

Shifting from ENTITLEMENT to ENLIGHTENMENT...

WHAT DO WE REALLY WANT?

- **HIGHLY FUNCTIONING WATER CYCLE**
- **BENEFICIAL ENERGY FLOW**
- **EFFICIENT NUTRIENT CYCLING**
- **ADVANCING SUCCESSION & COMMUNITY DYMANICS**



Principle One

Increase biodiversity, advance succession, community dynamics and regenerate ecosystem. LDI members increase biodiversity by:

1. Accepting that there are many daily decisions and actions of landscape designers and managers as we plan for regenerating our complex, dynamic ecosystem.

2. At a local level, will cumulatively understand that biodiversity can either be increased or decreased/reduced – regenerated or degenerated – not maintained as a constant.

3. Using design principles and management practices which allow for regeneration and environmental ecosystem enhancement of the (local) site by:

    - Developing the CONTEXT – a brief with the client that clearly describes the desired future ecological, social/cultural and economic landscape outcome/s;
    - Identifying and evaluating the site's ecological potential as part of the initial site analysis and planning process;
    - Taking into consideration the impact of design and management decisions on ecosystem~~s~~ within and beyond the site;
    - Actively promoting ecologically sustainable construction through the use of environmentally compatible materials;
    - Abiding by environmentally responsible soil, water and air regeneration practices.
    - Avoiding toxic substances as a management tool, especially addictive, consumptive ongoing use. This includes herbicides, pesticides, fungicides and chemical fertilisers;
    - Proactively monitoring the landscape for any foreseen impact resulting from changes during construction and maintenance;
    - Establishing the period of the works;
    - Informing the client of issues that may arise as the landscape evolves (and suggest future mitigation/planning considerations);
    - Encourage 'productive areas', composting and food waste management for clients.
    - Creating healthy conditions for 'higher succession' plant communities (as opposed to choosing [hardy] low succession plantings for poor conditions).

The reason we need to Increase Biodiversity is not just to increase biodiversity.

We need to increase biodiversity in order to advance biological succession & community dynamics that enables regeneration to functioning ecosystem.

Principle Two

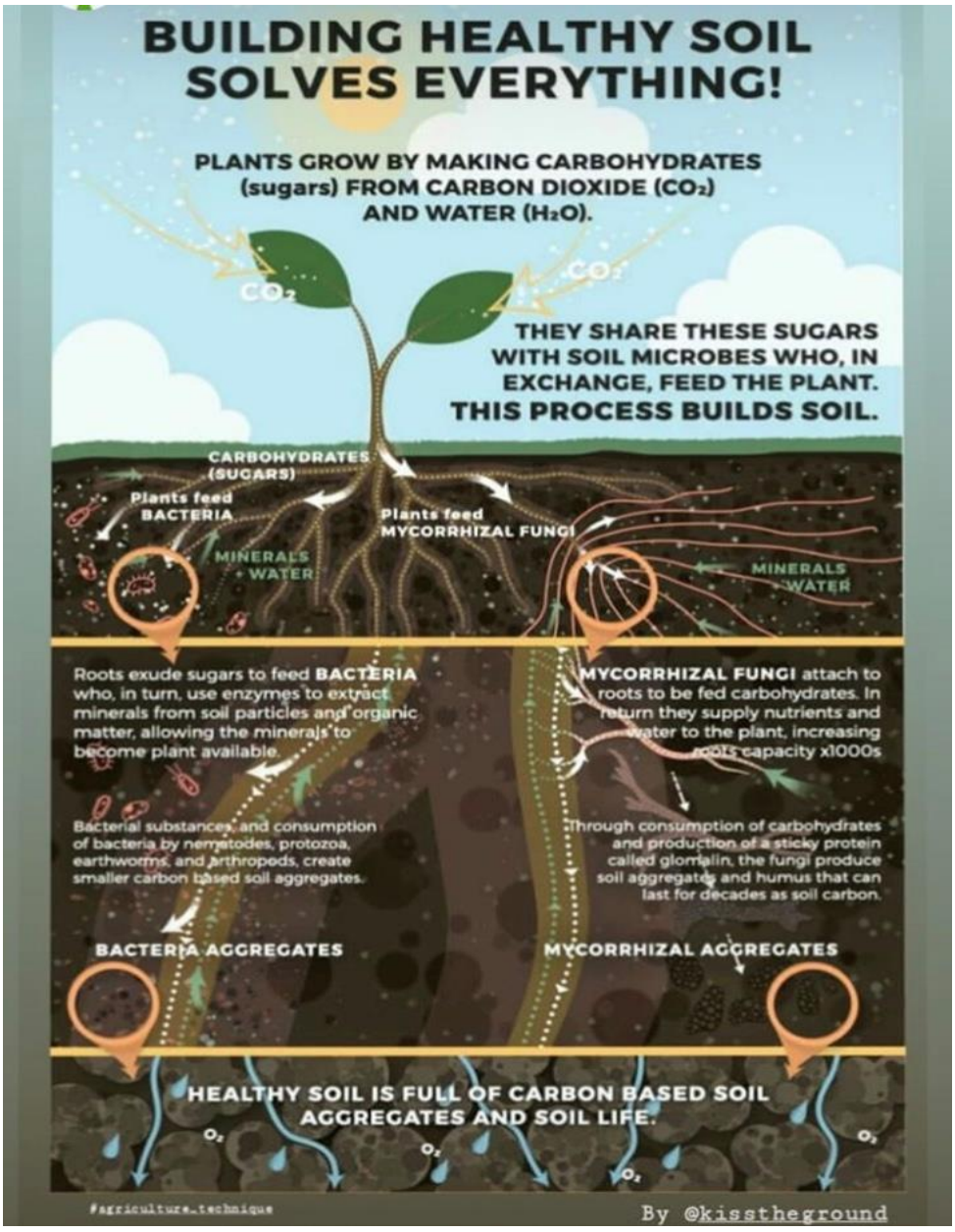
Regenerating the landscape, water and air. LDI members will promote and share responsibility for environmental planning and management with other organisations, government and non-government by:

- Maintaining an awareness of all relevant policies, standards and treaties - international, national and local. (Test and question policies and improve the outcome where possible);
- Assisting in the regeneration of environments.(All environments are degraded to some extent – 'restoration' often implies 'bringing it back to the way it was', whereas 'regeneration' is about taking it forward towards healthy functioning ecosystem);
- Encouraging the responsible design and management of land, air and water resources, consistent with the relevant regeneration principles;
- Increasing water and nutrient cycling into the landscape – filtered through vegetation and the soil – (releasing clean, clear water into waterways);
- Designing to enhance natural hydrology (Water into the landscape not across the landscape), to reverse erosion, siltation, contamination, sedimentation, eutrophication and mitigate other impacts (including fire, temperature extremes, flooding, biodiversity and species loss, etc.…) within and beyond the immediate location;
- Regenerating existing ecosystems (including terrestrial, aquatic and marine) when developments are planned;
- Ensuring and/or improving existing habitat and conditions for fauna as well as soil life when developments are planned;
- Ensuring that the selection and management of vegetation (including reducing the risk of fire) and other materials are appropriate to the site and surrounding environment;
- Observe, develop and co-ordinate policies, programs and activities relating to the principles of Total Catchment Management (TCM) in conjunction with LDI's Regenerative Landscape Management (RLM) Environment Policy;
- Identify and reverse natural resource degradation;
- Promote the sustainable use of natural resources;
- Provide stable and productive vegetation cover along with compost and ' viable' mulch.
- Designing and manage landscapes that deliver healthy soil by feeding the life in the soil;
- Providing information and advice on decisions that may affect the natural social/cultural and economic environment;
- Seeking knowledgeable advice when confronted with situations beyond their experience.

We cannot effectively protect, conserve, restore, save, preserve. sustain, resile rehabilitate or even enhance without proactive landscape regeneration.

BUILDING HEALTHY SOIL SOLVES EVERYTHING If we cover the soil surface with diverse 'viable' litter/mulch, compost and living plants, we will feed soil microbes and they will create conditions that enable effective cycling of water, air, nutrients, solar energy and vegetation. It is the 'Cycling' that is crucial!

Where we have healthy soil, we will have 'Functioning Ecosystem'. Where we have functioning ecosystem we will increase habitat for wild things, have abundant clean water and clean air, can produce healthy food, cool the planet and stabilise climate.



It is not, however, all about soil… just as it is not all about plants, animals/wildlife, birds, insects, amphibians, nematodes, microorganisms, etc., etc. It is about all of these and more, and more importantly – it is about our landscape management.

Principle Three

Instil or restore a 'Sense of Meaningfulness'. LDI members will endeavour to recognise, maintain, restore or instil a 'sense of meaningfulness'.

LDI members advocate the regeneration of neglected, abused or threatened landscapes recognising the uniqueness of cultural landscapes and considering the genius loci, identifying the key features of the landscape perceived as being critical to its 'significance of place'.

- Aesthetic
- Scientific
- Cultural / Social
- Sacred / Spiritual
- Economic
- Productivity
- Archaeological
- Landscape Character, Physical Features
- Symbolic
- Historic / Links With The Past
- Ecological / Conservation / Regeneration
- Educational / Tourism
- Geographical
- Horticultural

The following is predominately heritage considerations developed from the Burra Charter, 1981 & updated 2013 identifying:

- Investigating and interpreting historical data to determine cultural elements worthy of reservation or enhancement. By using defined evaluation and assessment criteria appropriate to the site.
- The validation of cultural values becomes objective. The community should be involved in this process whenever possible.
- Recognising 'sense of place' in design and management. In this way, the identity of the landscape is consolidated and its quality enhanced.
- Protecting and restoring landscapes and components of landscapes that are of cultural significance.
- Determining the natural features that are locally significant and then acknowledging them in design.
- Designing and constructing in sympathy with the landform and being aware of the impact (the ecological, social, cultural, economic and aesthetic costs) of altering the soil and site hydrology.
- Supporting legislation and the procedures used by heritage organisations to protect landscape heritage.
- Encouraging landscape appreciation, designing and managing of the site to reveal its inherent beauty while transcending limits to produce a place of true presence.

'Sense of Meaningfulness' encompasses a 'sense of social, cultural, heritage, historical, geographical and physical place' and should express the client's individuality or what they may want to bring to their environment.

Principle Four

Ensure the efficient long-term use of resources and materials

LDI members ensure appropriate design and materials (raw, recycled, recyclable, re-used and/or renewable) when designing and managing the landscape to utilise waste and advance ecological regeneration in the short and long term by:

- Re-use of materials.
- Designing to minimise total energy consumption and designing for beneficial solar energy flow.
- Using renewable resources in preference to finite resources.
- Using or re-using local product and/or materials – transport has a large footprint.
- Advocating the use of appropriate raw materials and resources that have originated through ethical and environmentally sound practices.
- Using recycled, recyclable and/or re-used materials or components where feasible.
- Following environmentally enhancing soil, water and air regenerating principles and practices.
- Encouraging the use of environmentally friendly resources by other user groups
- Recycle and compost garden and food waste where possible.
- Use a healthy compost rich 'viable' mulch or leaf litter – most can be recycled from within the landscape.
- 'Compost in Situ' – leaving viable mulch on the soil surface.

We are the only species on the planet that creates waste.

Our need to manage holistically and utilise regenerative landscape design and management practises should be obvious.

We focus on utilising low consumption, low cost, re-usable, recycled, replenishable materials and products and more importantly we must rapidly transition away from reductionist, extractive landscape management practices.

Principle Five

Raise community awareness and promote ecologically sound decision-making processes, principles and processes practises. Making sound decisions for people, landscapes and money.

LDI members are encouraged to expand and use their knowledge, skills and experience to promote environmentally sound practices in the community by:

1. Participating in public education, campaigns and developing ~~conservation~~ regeneration ethics.

2. Using educational mediums to raise awareness of the natural environment and cultural landscape including:
   - Promoting courses / seminars / public lectures;
   - Audio visual displays;
   - Written material (books, brochures, journal articles, posters);
   - Non-written forms (story-telling, song-making).

3. Involving the community, as much as possible, in the evaluation, assessment, design, construction and management of landscapes in order to raise community awareness, develop a sense of responsibility towards the landscape and improve public attitudes and behaviour.

4. Lobbying those responsible for making decisions that affect the welfare of Australian landscapes.

5. Effective use of the media.

6. Supporting environmental education and community awareness campaigns initiated by other organisations.

In order to make sound decisions for people, landscapes and money, we need to increase education of 'Ecological Literacy' both withing the LDI membership, education facilities and throughout the broader community.

We need to become fluent in our ecological knowledge and understanding.

We need to understand that we are managing an inseparable, complex, dynamic, biological ecosystem as well as the complexity of managing for people and money.

Glossary

Acid Sulphate Soils refers to soils which contain iron pyrite (naturally found in estuarine sediments) which on exposure to oxygen decomposes to form sulphuric acid. This can result in highly acidic soil and run-off conditions which have detrimental effects on plant growth, fish and aquatic organisms. Acid Sulphate conditions frequently occur when wetlands are drained. There are other, human induced, acidic soil problems.
Ref: Coastal Committee of NSW (1994) Draft Revised Coastal Policy for NSW.

Anthropocene relating to or denoting the current geological age (period/time interval), viewed as the period during which human activity has been the dominant influence on climate and the environment. It began in the 1950's, only seventy years ago, with the "Great Acceleration" of industrial science and technology which ushered in the so called "Green Revolution" whereby food production, horticulture and general landscape management are ideologically based on extractive practices and the reduction of ecosystem complexity.
Note: The current geological age/period represents a crucial must for us (humans) to manage and make decisions differently. We must now manage regeneratively as opposed to our current reductionist, extractive practices; this applies to all our landscape management, waste management, resource management, energy sources & usage, consumption and so on.
"The Anthropocene is distinguished as a new period either after or within the Holocene, the (Holocene) current epoch, which began approximately 10,000 years ago (about 8000 BC) with the end of the last glacial period". Source: The Encyclopedia of Earth.

Acknowledgement of Country an Acknowledgement of Country is a demonstration of respect for the traditional custodians of the land on which a meeting or event is being held. It is recognition of the continuing relationship between Aboriginal and Torres Strait Islander peoples and their Country.

Aridification is the process of a region becoming increasingly arid, or dry. It refers to long term change, rather than seasonal variation. It is often measured as the reduction of average soil moisture content. Wikipedia It is also a symptom of unsuitable land management practices leading to desertification, ecosystem dysfunction and bioregional biological collapse.

Assessment Criteria relating to physical landscape consists of three stages: landscape description, landscape characterization, and landscape evaluation.
Also, can relate to social/cultural and financial landscapes. It can be a statement which provides a documented framework for assessing landscape heritage value.
eg. Burra Charter (1981) or Rio de Janerio Agenda 21 (1992).

Australia ICOMOS
Australian International Charter for the Conservation and Restoration of Monuments and Sites (Venice 1966 and Moscow 1978) https://australia.icomos.org/

Biodiversity is the variety of all life forms including different plants, animals, micro-organisms, their variety of age and genes they contain and the ecosystems they live in. It is usually considered various levels: genetic diversity, species diversity (including diversity of age) and ecosystem diversity.

Biological Collapse or ecological collapse refers to a situation where an ecosystem suffers a drastic reduction in biodiversity, leading to permanent ecosystem failure often resulting in mass extinction. Usually, biological/ecological collapse is caused by ongoing reductionist landscape management and/or precipitated by a disastrous event (fire or other 'natural disaster') occurring on a short time scale; also, usually a consequence of human mismanagement.
Note: "Biological Collapse" in global terms is considered the "tipping point".

Biological Ecosystem refers to the complex, inseparable, biological dynamic that created and is fundamental to all life on earth. It functions as a whole and the processes can be grouped into:

- Water Cycle
- Mineral/Nutrient/Element Cycle
- Living Things (Community Dynamics & Succession)
- Energy Flow

Note: The Biological Ecosystem will comprise of different communities and function differently in different environments and at various times. It is either degenerating or regenerating and cannot be conserved or maintained as a constant

Biomass refers to the volume or density of plants and other living things in an environment.

Brittle and Non Brittle Environments refers to the Brittleness Scale whereby 1. is True Rainforest and 10. Is True Desert. The Difference Between Non-Brittle & Brittle Environments is assessed by the existence of continuous or periodic Atmospheric Humidity.

NON-BRITTLE ENVIRONMENT: describes an area of land where The Water Cycle delivers constant, continuous atmospheric humidity throughout the year. This can be related to land formation, aspect, relationships to Oceans, currents, etc. Continuous atmospheric humidity is not related to temperature or the amount of annual rainfall but a more 'reliable' pattern is experienced in Non-Brittle Environment.

Note: We are only taught the "Non-Brittle" Water Cycle through conventional education. Importantly – Vegetation will break down, recycle and become incorporated into the soil profile in a Non-Brittle Environment. This natural re-cycling of vegetation feeds the 'Living Things' in the soil which in turn cycle nutrients (mineral cycle) enabling beneficial succession.

We should identify where the specific landscape under management sits on the Brittleness Scale (brittle tending, non-brittle tending) and regardless, we can assist the vegetation recycling process manually through composting and providing habitat with well-managed animals being a powerful regenerative tool, especially in brittle tending areas.

Burra Charter is a document produced in1981 (latest ver. – 2013) that forms a framework for assessing landscape heritage value. It details how heritage sites can be conserved, restored or adapted. The document consists of definitions & principles with clearly defined articles for the conservation of places of cultural significance.

Cause & Effect Human decision making has not basically changed since we emerged on the planet, however, we must now learn manage differently as we have entered The Anthropocene. Generally (conventionally), we make decisions that (hopefully) satisfy our short term needs and focus solely on single issue outcomes. This is particularly the case when we are removed from and not living in the landscape/s that we are deriving our living from…We have become disconnected…We must learn to identify the Problem, address it and the Cause, not the Symptom and or Effect. Identified as follows:

- PROBLEM → Reductionist Management – the way we make decisions, our actions and our management.
- CAUSE → Ecosystem Dysfunction – our Ecosystem is increasingly failing to function and cycle effectively.
- SYMPTOMS → Our 'Natural Disasters' – Fire, Drought, Temperature Extremes, Severe Storms, Flood, Landslide/slip, Biodiversity loss, Eutrophication, Imbalances, Plague, Disease, etc.
- EFFECT → Climate Change

Climate Change/Extremes refers to the effect of macro ecosystem dysfunction along with an imbalance of CO2 and other volatile elements in the atmosphere.

Community dynamics refers to the change in the biological structure within an environment. Community dynamics can be either advanced or regressed through our landscape management.

Natural disasters are the primary cause of sudden decline (or even annihilation) community dynamics while ecosystem degenerating is a more gradual process.

Contaminates & Residues are by definition, any substance in the soil that exceeds naturally-occurring levels and poses human health risks is a soil contaminant and the term 'residue' is generally used to describe the amounts of chemicals (herbicide, insecticides, fungicides fertilisers, etc.) or their breakdown products, that remain in especially the soil, but also, the landscape, the air and waterways and in the produce derived from that environment.

Context a description of the desired outcome/s for individuals and collectives in terms of people, landscapes and money. An instrument for sound, universal decision-making. If the context is holistic, the outcome will be regenerative.

Complex/Complexity complex systems are unpredictable and can only effectively be managed with a defined outcome in mind (a defined holistic context). It is directional as opposed to finite. With all our science, we are unaware of all the parts, their interaction and synergies both within their ecosystem and beyond.

There are only three (3) things we manage – People, Landscapes and Money – all being complex. the main difference between complicated and complex systems is that with the former, one can usually predict outcomes by knowing the starting conditions. In a complex system, the same starting conditions can produce different outcomes, depending on the interactions of the elements in the system.

Complicated technology and science are very good at working with – designing, producing and improving complicated systems. Regardless of how extremely complicated the technology may be, however, there is a name, a place and a function for all the parts. If a part fails or runs out of energy, the technology will stop working until the part is replaced and /or the energy source is restored and consequently, the outcome is predictable.

Examples of complicated systems include your iPhone, PC, motor vehicles, spaceships, electric motors, satellites, the internet, algorithms, etc.

These complicated tools and technologies are 'produced' or 'manufactured', not 'managed'.

Conservation with reference to natural resources, is the provision for future need by the improvement and restoration to an economic balance during the present availability. Note: We are managing for complex, dynamic ecosystem/s and nothing remains as a constant.

Conservation Ethic refers to a standard of conduct for the conservation of the environment. Note: we cannot effectively conserve without proactive regeneration.

Compost is described as a mixture that consists largely of decayed organic matter and is used for fertilizing and conditioning soil within the landscape. Composing is the natural process of recycling organic matter, such as leaves and food scraps – basically feeding the soil biota which is highly beneficial in promoting humus and regenerating ecosystem. Note: we can 'Compost in Situ' by leaving most vegetation where it is cut, trimmed pruned, mown, etc.

Cultural Landscape the term "cultural landscape" embraces a diversity of manifestations of the interaction between humankind and its natural environment. Cultural landscapes embodies the associations and uses that evoke a sense of history or meaningfulness for a specific place. Physical features of cultural landscapes can include trees, buildings, pathways, site furnishings, water bodies – basically any element that expresses cultural values and the history of a site. Landscapes resulting from human inhabitation and/or intervention.

Cultural Significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Ref: Australia ICOMOS 1988

Decision-Making Process/ Framework we are not born with a natural ability to make decisions holistically – it has to be learned. It is, however, the only effective way of managing complexity for ongoing multi-faceted, beneficial outcomes.

We need ownership and compatibility of our individual & collective holistic context and continually 'Test' our decisions against that context.
Plan → Test → Monitor → Control → Re-Plan…(repeat)
Degraded Environments is the decline in the quality of the environment and natural resources commonly caused predominately by human activities. i.e., inappropriate land use.
Ref: Houghton P. D & Chairman P. E (1986) Glossary of Terms used in Soil Conservation. Soil Conservation Service of NSW. Note: there are very few managed environments that have not been degraded by human activity. We simply must learn and practice managing regeneratively.
Desertification is the process by which fertile land turns to desert, typically as a result of poor or inappropriate landscape management and excessive deforestation. Nearly 30% of the world's land has already desertified or is threatened with imminent desertification with up to 60% of the planet's total terrestrial landscape (another 30%)being susceptible to turning to desert.
Drawdown refers to natural processes of photosynthesis and organic soil sequestration – drawing carbon (and other volatile elements) from the atmosphere and cycling them through the biosphere. 100% of natural drawdown is biological.
Drought can be caused by an extended period without the required rainfall. It is also a result of a breakdown of ecosystem function through poor or inappropriate management leaving bare soil. 'Drought does not create bare soil; Bare soil creates drought'.
Dynamic in ecological terms refers to the activity and velocity of constant change. Complex systems are dynamic and cannot be maintained as a constant – they are either regenerating or degenerating.
Ecologically Sustainability in reference to landscape management is defined as the maintenance or restoration ecosystem processes, including the diversity of plant and animal communities and the productive capacity of ecological systems Note: the ecosystem is dynamic and cannot be 'maintained, restored, conserved, protected, preserved or sustained' without proactive regenerative actions.
Ecosystem refers to the complex, dynamic, cycling, biological system of plants, animals, wildlife, birds, amphibians, reptiles, insects, microorganisms, etc., their habitats and all the processes and relationships that interact within and between them. Ecosystem/s function as a whole.
Emission Reduction Targets an emissions target or greenhouse gas emissions reduction target isa central policy instrument of international greenhouse gas emissions reduction politics and a key pillar of climate policy. Wikipedia What does "Taking Action On Climate" really mean? Although it is vital that we transition, with haste, towards clean, safe, efficient sources of renewable energy, it is by no means the only solution to address climate change and global warming – as any existing CO2 will remain in the atmosphere for 2-300 years.
We must not only transition towards reducing our emissions, waste, etc., we must, even more urgently, transition towards regenerative total landscape management that increases drawdown – through increasing photosynthesis and soil carbon sequestration.
Energy Flow there are many forms of natural energy (wind, gravity, cosmic, etc.), however, energy flow usually refers to the energy of the sun. LDI members are encouraged to utilise the beneficial energy of the sun as part of ecosystem regeneration.
Environment can refer to the social/cultural, physical and/or financial landscape.
Erosion The process by which the soil surface is worn away through the action of running water, wind, rainfall, ice or other geological factor. We can reverse erosion and build soil through sound regenerative management.
Eutrophication is usually a symptom of a dysfunctional ecosystem and inappropriate landscape management practices over a prolonged period of time and/or over of a large area of landscape. It is basically the build-up of contaminates and residues from run-off flowing into waterways. This might include a build-up of excessive nutrients like phosphorus and nitrates along with

herbicide and insecticide in the waterways, consuming available oxygen for aquatic life. Eutrophication can also be a result of the excessive richness of nutrients, which causes a dense growth of plant life, frequently due to run-off from the land into a lake or other body of water. Harmful algal blooms, dead zones, and fish kills are the results of this process— which occurs when the environment becomes enriched with nutrients, increasing the amount of plant and algae growth to estuaries and coastal waters.

Extractive production is a process of mining biodiversity and habitat of its natural nutrient value in order to produce. This reductionist practise enables small timeframe before artificial fertilisers are required. It is usually associated with broad-acre agricultural or horticultural monoculture production but can be relevant to large scale public landscapes and even gardens.

Fire Management has been conventionally managed through mostly reductionist 'preventative' actions including fuel reduction burning and mechanical clearing, increasingly encouraging a 'responsive' approach of increasing fire-fighting capacity. Although, preventative actions are the obvious best choice for avoiding widespread destructive fires, it will only exacerbate the situation if it not a planned regenerative action. Note: there are many ways we can prevent unwanted fire in the environment and although these need to be trialled, we need to be focused on the planning and complimentary policy. Knowledgeable planning and design and activities that create the right conditions for high succession plant communities to prevent fire are the best first step. Ensuring people and property can be kept safe is also extremely critical.

Fire Retardant/Fire Resistant predominately high succession plants are fire retardant or resistant. See Appendix on last page.

Genius Loci refers to the spirit of a place. The qualities and attributes that make places special.

Geological Age the geologic time scale is the "calendar" for events in Earth history.

- It subdivides all time into named units of abstract time called—in descending order of duration—eons, eras, periods, epochs, and ages.
- There are four Eons - the Hadean (4.6 billion to 4 billion years ago), Archean (4 million to 2.5 billion years ago) Proterozoic (2.5 billion to 541 million years ago), and Phanerozoic(541 million years ago to today).
- There are four Eras –Precambrian, Paleozoic, Mesozoic, and Cenozoic.
- The Palaeozoic era is divided subdivided into six Periods, the Cambrian, Ordovician, Silurian, Devonian, Carboniferous and Permian with Triassic, Jurassic, Cretaceous, Paleogene, Neogene and Quatemary, being the primary periods of the Paleozoic Era after the Precambrian era.
- The Cenozoic, the era of "Recent Life", is divided into three periods: the Paleogene, Neogene, and Quaternary; and seven epochs: the Paleocene, Eocene, Oligocene, Miocene, Pliocene, Pleistocene and Holocene.
- We are now at the end of the Holocene and have entered the Anthropocene.

It is widely accepted by both geologists and astronomers that Earth formed roughly 4.6 billion years old and the earliest known life forms were microscopic organisms (microbes) that left signals of their presence in rocks about 3.7 billion years old. The signals consisted of a type of carbon molecule that is produced by living things. The times of the Eras, Periods and Epochs are specified in the graph. Ref: https://www.digitalatlasofancientlife.org/

See Appendix on the last page.

Humus the organic component of soil, formed by the decomposition of leaves and other plant and animal material by soil microorganisms. Humus is the end result of the decomposition process, whereas compost is a word that identifies a phase of the decomposition process where decomposing plant material and animal waste provides the most benefit to the soil. Humus is an identifiable, physical soil ingredient. Humus is Carbon.

Industrial Science is science that specialises in advances and improvements to technology.

Integrated Pest Management is a documented control strategy that reduces the need for environmentally harmful spray regimes. This is achieved by: increasing biodiversity, avoidance, design & plant selection, resistant plants, species diversity, eliminate other hosts, cultural practices: site preparation, timing of fertilising & watering, crop rotation, physical/mechanical: hand removal, correct pruning & care, mechanical barriers, biological controls, parasites & predators, microbial products, life cycle disruption, traps & baits: pheromone traps, sticky band traps, chemical sprays: horticultural oils, insecticidal soaps, synthetic chemical insecticides, companion planting, encouraging natural predator build-up.

Leading Practices & Management (LPM) best practices identifies the best of accepted current thinking as opposed to the best of future thinking. Leading practices implies positive change that challenges and 'tests' the accepted science and practices against our holistic context.

Landscape the sum total of the characteristics, both natural and the built environments resulting from human occupancy that distinguish a certain area of the earth's surface from other areas. Ref: Landscape Australia. 4 /1993 pp 344 347)

Landscape Heritage landscapes which demonstrate a range of natural and cultural factors which are considered to be of sufficient significance for them to be retained for present and future generations. Ref: Landscape Australia 4 / 1993 pp 344 347)

Note: Once again, we can only regenerate, not retain dynamic ecosystem in a constant.

Landscape Intent is identifying and/or describing the future environment in terms of the desired outcomes for People, Landscape and Money.

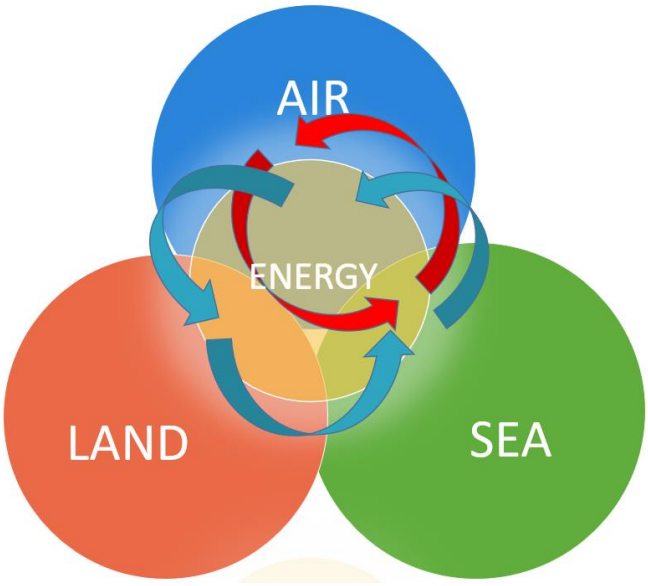
Mulch refers to a layer to protect the soil surface. There are a variety of mulches available from decorative bark mulch to leaf mulch to pebbles to Geotech to spray-on, etc. most of these do not achieve a beneficial biological outcome. Viable litter, mulch and compost will not only increase water retention and reduce evaporation, living mulch will also feed the life in the soil. This represents an essential opportunity to initiate ecosystem regeneration.

Natural Hydrology is the study of water and water movement in relation to land and soil. Ref: Houghton P. & Charman P.(1986) Glossary of Terms Used in Soil Conservation. Soil Conservation Service. NSW.

Natural Regeneration in landscape terms refers to working with nature the restore ecosystem cycling in order to reduce and then remove the need for artificial inputs.

Natural Resource Management is the practice of holistically planning and taking proactive actions for the people, landscape and money under management that benefit the resource ecologically, socially/culturally and financially.

Nutrient cycle this includes the mineral cycle. In a healthy functioning ecosystem nutrients become available to plants and other living things through increasing microorganism activity, including mycorrhizal fungi. In order to have a natural, cycling nutrient/mineral cycle, all ecosystem processes must be functioning. Note: If water cannot infiltrate and cycle into the landscape, nor can nutrients and minerals – short-circuiting cycling to sea (water) and air alone – detrimentally hastening the cycling of greenhouse gases.
Illustration by Tig Crowley.



Organic/soil Carbon is a measurable component of soil organic matter. Organic matter makes up just 2–10% of most soils and has a vital role in the nutritional, physical, chemical and biological function of soils.
Organic matter contributes to nutrient retention and turnover, soil structure, moisture retention and availability, degradation of pollutants, and carbon sequestration.
Is basically Humus, a combination of the breakdown of plant material and microorganism activity. Animals can effectively recycle revegetation and hasten the process.
Organic/soil carbon is essential for healthy soil and functioning ecosystem. It is the dark brown area of a soil profile, usually in less than 100mm from the soil surface. This narrow band is not stable and can disappear entirely in dry times or following fire. With sound regenerative management practices, however, it is possible for soil carbon to go metres into the soil profile and this provides stability and resilience.
The more carbon in our soil, the less in our atmosphere…
These two core samples were taken on the same day and only a matter of metres apart.
Science and Photo courtesy of Dr Christine Jones.

Photosynthesis* is the biological process by which green plants and some other organisms use sunlight to generate nutrients from carbon dioxide and water. Photosynthesis in plants generally involves the green pigment chlorophyll and generates oxygen as a by-product. During photosynthesis, water and carbon dioxide combine to form carbohydrates (sugars) and give off oxygen.
* 100% of drawdown is biological
Raw refers to previously unused or changed resources in their natural state.
Recycled transformation of a product from one form to another. eg. timber to mulch, concrete to crushed rubble, asphalt to new paving, organic waste to fertiliser.
Recyclable
A product that is capable of being re-used in an original or altered state..
Reductionist Management or Reductionism refers to the idea that a complex system is broken down into its component part and each part is studied individually. This largely leads to ignoring how the relationships between the elements impact the whole system.
Regeneration the Bible describes regeneration as a new creation and this is a pretty accurate description. Regeneration means 'building or creating' the future environment, and holistically, it means building that future inseparable environment for People, Landscape and Money.
Regenerative Management refers to the practice of managing regeneratively. Regenerative management does not imply 'getting things back to the way they were', conservation, protection, restoration or rehabilitation and so on, it is more about 'how do get to where we need to be'? Note: A sound holistic context will ensure a regenerative outcome.
Rehabilitation is the treatment of degraded or disturbed land to achieve an agreed level of capability and stability, preferably at least **equal to that which existed** prior to degradation or disturbance.
Ref: Houghton P. D & Chairman P. E (1986) Glossary of Terms used in Soil Conservation. Soil Conservation Service NSW Note: 'Rehabilitation' is not necessarily a regenerative practice and implies 'getting things back to the way they were' and maintaining them there…

Renewable Resources that are self-replacing. Generally, not finite. eg. solar, wind, waves, tides, falling water, geothermal and biomass combustion. Note: it is important that the landscape/s under renewable energy facilities and their connecting grids are managed regeneratively. Bare soil the most significant source of biological emissions.
Residues refers to a small amount of a substance that remains after the main part has gone or been taken or used. E.g., this chemical has leave residuals (residues) in the soil.
Rest relates to time planned to enable full recovery of plant growth along with natural increase of habitat and biomass. Over rest or 'rest in perpetuity' is a mid-long term degrading action (degenerating), especially in 'Brittle' tending environments.
Restoration returning the existing physical material of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new materials. Ref: Burra Charter Article 1 Section 1.7 1981
Reuse
Salinity the accumulation of free salts in part of a landscape to an extent which causes degradation of vegetation and/or soils. Typically caused by hydrological changes as a result of human use of land. Saline conditions can be one of the following:

- Dry land salting (natural or induced)
- Irrigation salting (induced)
- Urban (induced) or
- Estuarine (natural).

Ref: Houghton P. D & Chairman P. E (1986) Glossary of Terms used in Soil Conservation. Soil Conservation Service of NSW
Science What is science? Learning the ability of 'how to think' as opposed to 'what to think'. A practice enabling one to observe, reason and differentiate without prejudice.
Sedimentation deposition of sediment. In soil conservation context, sedimentation is an end point in the erosion process, with transported soil material being deposited in locations such as in a channel, along a fence line, on an area of low slope or in a gully, creek, river, sediment trap or dam. Ref: Houghton P. D & Chairman P. E (1986) Glossary of Terms used in Soil Conservation. Soil Conservation Service NSW
Sequestration* referring to the process of organic soil carbon being stored in the soil.
* 100% of drawdown is biological
Sense of Meaningfulness (sense of place) relates to elements of an area's physical environment that contribute to its character. Includes visual diversity and links with the past that are visible in the present. Recognises the identity of cultural landscapes and the human factor in the landscape. Examples of what contributes a sense of place include combinations of landscape features which offer an unfolding visual experience, features of an area that are unique or one of a remaining few, features or an area that are the best of their kind, complexes of outstanding features, a feature or area that if degraded or destroyed could not be recreated, features or areas that exhibit natural or cultural processes. Ref: Landscape Australia 4 / 1985 pp 300 303
Siltation is the deposition of silt particles but is more commonly known as sedimentation.
Soil "there is no life without soil and no soil without life – they evolved together". Dr Charles E. Kellogg, soil scientist & chief of the USDA's Bureau for Chemistry and Soils.
Although we have usually taught to consider the mineral, chemical and physical make up of soil/s, we must understand that the life in the soil is the most important overriding factor. E.g., Frazer Island is a geological land formation of previously sand washed up from the ocean…it now supports an increasingly elevated level of biodiversity enabling effectively functioning ecosystem.
Solar Energy Flow refers to the flow of beneficial sunlight on living things. Essential for photosynthesis; essential to all life on the planet.

Sodicity sodic soils are those which have an exchangeable sodium percentage (ESP) of more than 15. Excess exchangeable sodium has an adverse effect on the physical and nutritional properties of the soil, with consequent reduction in crop growth, significantly or entirely.
In soils, is a high measure of exchangeable sodium & lower amounts of calcium & magnesium. Difficult to manage, infiltration of water is slow, individual soil particles disperse when wet and the soil structure is poor. When it is dry, a crust forms on the surface making plant penetration difficult and on slopes these soils erode easily.
Soil Carbon is basically humus and a vital ingredient to sustain all life on the planet.
Statement of Purpose (SoP) is a one or two sentence statement proclaiming the direction that an individual, community or organisation aspire to. It is 100% 'descriptive' and 0% 'prescriptive'.
Succession refers to the biological progression of species from low towards high.

- **Primary succession** is original progression beginning when volatile elements were introduced to earth's bare rock about 4.6 billion years ago initiating the beginning of life 3.8 billion years ago when lichens slowly covered rock and helped break it down to mineral soil.
- **Secondary succession** is the progression of species and plant communities following fire, drought, flood, lava flows, glaciers, land clearing and tillage – anything that renders bare soil. In plants communities this progression is from bare soil to… lichens, mosses and annual plants → grasses and perennials → grasses, (sclerophyll) coloniser shrubs, eucalypts, wattles, etc. → advanced understory, high succession trees and shrubs. See Appendix on the last page.

Technology is the application of scientific knowledge for practical purposes, especially in industry. "advances in computer technology." Machinery and equipment developed from the application of scientific knowledge. "it will reduce the industry's ability to spend money on new technology". The branch of knowledge dealing with engineering or applied sciences.
A technological system is a set of interconnected components that has been designed to fulfil a particular function without further human design input. Technological systems transform, store, transport, or control materials, energy, and/or information for a particular purpose.
Tools, Instruments & Actions the conventional tools or managed actions will usually be restricted to one (or a combination) of the following: -

- FIRE
  - Fuel reduction burns, 'Cool & Cultural' burns.
- TECHNOLOGY –
  - Chemical – Spraying, Artificial Fertilisers, Baiting, Additives
  - Mechanical – Clearing, grading, ploughing, tilling, slashing, mowing, rolling, etc.
- REST
  - Culling, excluding interaction locking up/locking out, – in perpetual or over rest.

These are 'Reductionist Tools' and with the possible exception of well planed and well performed 'Cool & Cultural' burns, they lead to biodiversity loss, decline in succession & community dynamics and degeneration of ecosystem. They create imbalances and domination of low succession communities – e.g., Sclerophyll dominance in south-western Western Australia and the eastern seaboard – predominately coastal QLD, NSW & VIC.
Tools and planned actions that are regenerative include:

- COMPOSTING
  - Recycling viable vegetation, food, materials & plant litter, mulching, etc.
- ANIMAL IMPACT
  - Grazing, trampling, dunging, urinating, , etc.
- CONTROLLED/PLANNED REST
  - Allowing for full plant recovery and biomass build-up.

The Water Cycle refers to the biological ecosystem process of how water cycles throughout the biosphere, lithosphere and atmosphere. It functions differently in different geographical situations and Brittle and Non Brittle Environments

Total Catchment Management (TCM) the coordinated and sustainable use and management of land, water, vegetation and other natural resources on a water catchment basis. Implementing TCM is necessary to balance resource utilisation and resource conservation through the minimisation of land and soil degradation and the maintenance of water yield and quality.
Ref: TCM Draft Framework for Natural Resource Management in NSW

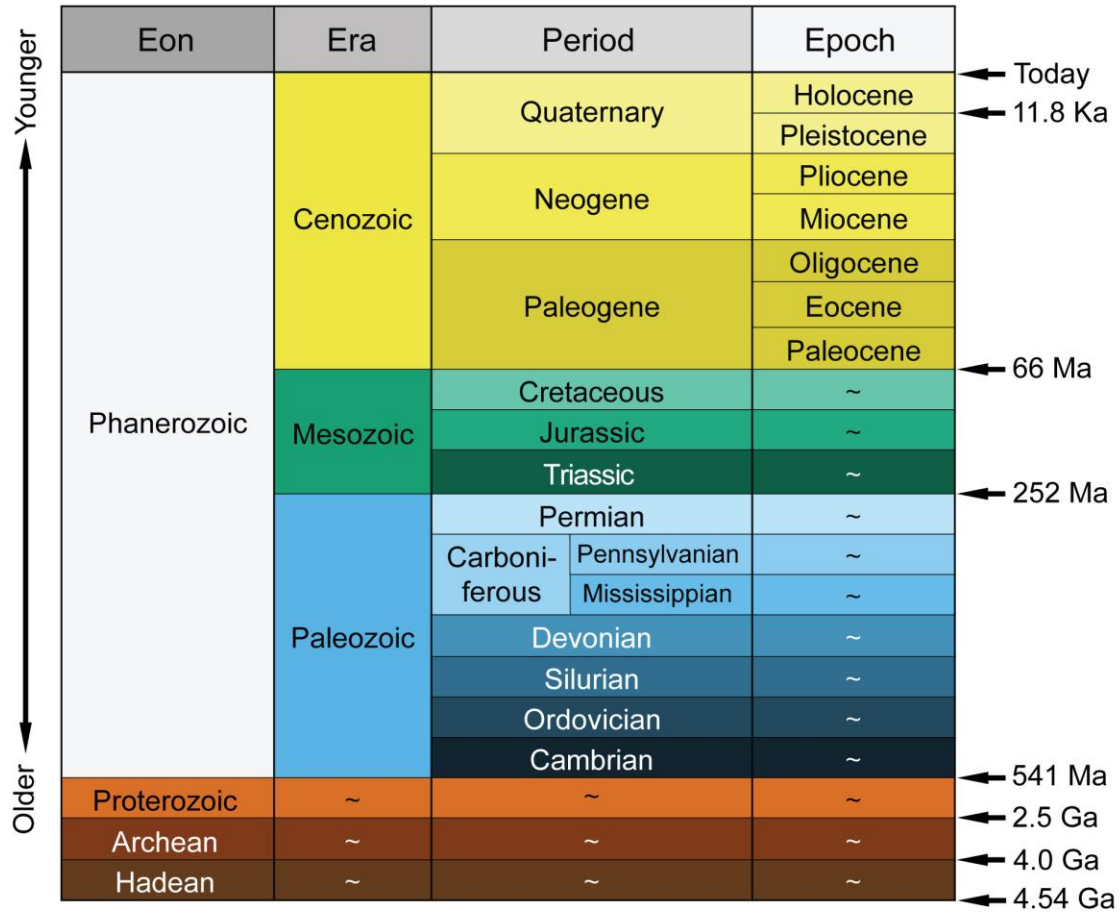
Total Energy Consumption managing energies entering the site from outside: sun, wind, fire and water. Utilising site sourced raw materials, in an ecological manner, in the design when possible. Correct choice and positioning of vegetation is as important as drainage, soil type, mulch, aspect, slope and the construction resources used, as this will dictate the frequency of maintenance & input of further energies eg. watering, fertilising, pruning, mulching or planting.

Volatile Elements are elements that appeared on earth when a large celestial body collided with earth about 4.2-4.7 billion years ago. Volatile elements have a low boiling point and accordingly change state under different temperature or pressure. They are essential to life on earth and especially vital to healthy soil and consequently healthy functioning ecosystem. When there is too little in the soil and cycling throughout the biosphere, then we have too much in the atmosphere and that is not a healthy situation.
The volatile elements include the following:
Nitrogen, Phosphorus, Carbon dioxide, Oxygen, Magnesium, Hydrogen, Ammonia, Methane, Francium, Zinc, Iron, Aluminium, Sulphur dioxide, Ethanol, Calcium, Mercury, Water vapour…

Note: This Environment Policy and Glossary remains in draft form and will continually be updated. March 2023.

Appendix on following page.

1. **Geological Age – Eon/Era/Period/Epoch/Age** Ref: https://www.digitalatlasofancientlife.org/
2. **Secondary/Future Succession** Ref: Tig Crowley



1.

SECONDARY/FUTURE SUCCESSION

LOW SUCCESSION ENVIRONMENTS ← → HIGH SUCCESSION ENVIRONMENTS

HYDROPHOBIC LANDSCAPE		HYDRATED LANDSCAPE
• Fire	← →	• No Fire
• Species Loss		• Abundant Habitat/Refuge
• Temperature Extremes	← →	• Moderate Temperature
• High Evaporation	<Evapotranspiration Transpiration>	• Effective Transpiration/Condensation
• Regular Drought	← →	• Occasional Dry Periods
• Wind		• Wind Reduction
• Storm Damage	← →	• Habitat Stability
• Dust		• No Dust
• Air Contamination	← →	• Clean Air
• Run-off		• No Run-off
• Flooding	← →	• Little to No Flooding
• Erosion		• No Erosion – Building Soil
• Water Contamination	← →	• Clean Clear Water
• Imbalances		• In Balance
• Poor Nutrient Levels	← →	• Effective Nutrient Cycling
WATER ACROSS THE LANDSCAPE	← →	WATER INTO THE LANDSCAPE
EMITS ORGANIC CARBON	← →	SEQUESTERS CARBON
CLIMATE EXTREMES		**CLIMATE STABILITY**

WARMING THE PLANET ← → COOLING THE PLANET

2.