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Dear Sir,

SUSTAINABILITY STRATEGY SUBMISSION

I would like to offer my congratulations to the Labor Government for taking the first steps in the direction of sustainability for Western Australia. Several other governments around the world and in Australia have also taken their first steps, and it is timely for WA to join the process. With more governments making the transition, there is greater opportunity for fundamental paradigm shifts in economics, pricing and taxing structures to be introduced.

GENERAL

A goal for sustainability should be articulated that indicates that it is about achieving a high quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. Consequently, the Government should adopt genuine progress indicators in order to measure 'real progress' towards sustainability, and should set specific and measurable goals for increasing activities that are consistent with sustainability, and specific and measurable goals for reducing activities that are inconsistent with sustainability. An independent body, either the EPA or a new Sustainability Commission, should be formed in order to provide an overview of sustainability performance, provide and integrated assessment of Cabinet proposals and report on the progress of Government departments and agencies with respect to sustainability indicators and targets.

Sustainable behaviours need to be rewarded, but non-sustainable behaviours should not necessarily be penalised. This will make sustainable behaviours more competitive economically and gradually lead to them being the norm, without necessarily imposing a cost on current behaviours. For example, the use of renewable energy should be cheaper than using non-renewable energy and people should be paid to recycle materials rather than imposing a levy on materials that are not recycled. Similarly, the use of Greener modes of transport such as public transport, car pooling and cycling should be encouraged by making these modes easier, such as by providing bus-only, carpool lanes, cycle paths or bicycle lockers.

Greener modes of transport should not be encouraged by directly making car use more difficult, such as by imposing a penalty or increasing parking fees. However, car use should not be encouraged by widening or providing extra freeways. The transition to greener modes of transport should occur naturally as people realise the benefits (e.g. faster commuting, reduced costs related to increased fuel costs).

Conversely, inefficient use of natural resources should not be subsidised. If subsidies are not given to non-sustainable practices, more economical and hopefully more environmentally sound means of achieving the same objective will be found, and inefficient uses and practices should gradually phase out. Rather subsidies and taxes should be introduced to encourage greater efficiency of resource usage, decreased use of virgin resources, decreased waste and increased use of recycled or reclaimed materials.

AGRICULTURE

Our present agricultural system is not sustainable, predominantly because of over clearing and inappropriate land practices, leading to salinity and loss of biodiversity. It is time that the many arms of government pulled together rather than apart. Many government departments and policies seem to working at cross-purposes, with some departments trying to reverse the damage caused by others. For example, remnant vegetation is still being cleared in the agricultural area, when both the Federal and State Governments are spending billions of dollars replanting cleared areas to reverse land degradation and salinisation.

As a means of achieving ecological sustainability in the agricultural area, I would like to offer the following suggestions:

- any further clearing in agricultural areas should be banned;
- the Government should be trying to persuade farmers in economically marginal areas to stop farming and the opportunity should be taken to return the land to native vegetation, rather than propping up an unsustainable enterprise. If necessary, farmers should be offered money to leave the land, not to stay on it. But before they leave, they should be asked (and paid if necessary) to return at least some portion of the farm to native vegetation to near original condition;
- drought assistance (whether State or Federal) offered to farmers should be conditional on them permanently reserving a portion of their land, say 10% at least, as native vegetation (in pristine condition). This would include fencing as a minimum. A conservation covenant should then be placed on that portion of their land. If there is no uncleared remnant vegetation on their property, a portion of the drought assistance should be used to establish (by revegetation) native vegetation that was once local to their area;
- more weeds, especially environmental weeds, should be declared “noxious” and the current legislation and regulations that require owners to remove declared noxious weeds from their property should be enforced. This would be assisted by reducing the tolerance of weeds in grains accepted at receival stations from the current 5% to a much lower figure, such as 0.5%, or creating (or increasing) a price differential for weed-free grain. Such economic incentives would make it worthwhile for farmers to control weeds on their property, which would result in reduced weed spread to remnant native vegetation;
- technologies that turn weeds into a resource and are exportable should be

developed. Possibilities include turning weeds into stock feed, harvesting grains such as lupins and canola (which are commercial crops) from non-farm areas such as road reserves and waste land;

- reversal of land degradation and weed control should be linked to sustainability;
- uncleared Crown land should not be regarded as wasteland or no-one's land. Rubbish dumps and gravel pits should not only be placed on uncleared Crown land. Consider private cleared land for these land uses. Agricultural land is replaceable; remnant native vegetation is not.

We should be treating uncleared native vegetation as if it was vital infrastructure – something that we will need more of in the future, something that protects our investment in agriculture (through provision of fresh water, dry land and pest control for example) and something that the community should pay for. Its retention is at the heart of sustainability.

We also need to pay attention to the continuing viability of rural communities which are being torn asunder by a variety of public and private practices. We need to provide them with ecologically sustainable alternatives to current agricultural pursuits. However we need to ensure that these pursuits are also sustainable.

Irrigated agriculture using brackish water from areas of high water tables could be feasible in appropriate areas in the Wheatbelt. The ground water in currently or potentially affected areas has a range of salinities. This water may be suitable for irrigation of a variety of crops, such as citrus crops, and even possibly grains such as wheat and barley. Obviously, the salt tolerance of potential crops, and the salinity of available ground waters would need to be evaluated, but there is no reason why WA farmers could not grow two wheat crops per year, for example. Cereal cropping in Australia is generally constrained by lack of water. Admittedly, special strains of wheat may be required, but that should not be a serious impediment given that farmers in other parts of the world grow two or even three crops of certain grains per year, and Australia has an excellent research capability.

The yield from two crops on the same acreage should presumably be able to pay for the infrastructure of water abstraction and irrigation. Further, if this idea were successful, only half the land area would need to be farmed to obtain the same yield. The other half could revert to native bush, or could be used to plant tea trees or blue gums. This would speed the recovery of the ground water system.

This scheme would not be sustainable indefinitely. The idea is to mine the ground water for a period of time until the salinity levels revert to their original condition. However, it would take a sufficiently long time for this to occur so that the scheme could be attractive. Plenty of water should be applied in order to leach the salt through the soil to the base of the ground water system. This excess of water could possibly also allow plants to be irrigated with water somewhat more saline than they would other wise tolerate. Irrigation in the desert using salt water has been made to

work, I believe.

These solutions need to be sustainable, and the following factors need to be evaluated to ensure they are:

- further land salinisation through poor drainage during irrigation must be prevented;
- drainage waters need to be collected and utilised or allowed to evaporate in defined, contained areas;
- options to recover salts from evaporated saline drainage waters could be investigated;
- options to establish aquaculture in saline water could be investigated.

URBAN NATIVE VEGETATION

In this area, it is also time that the many arms of government pulled together rather than apart, which seems to be happening with so many developments. Many government departments and policies seem to working at cross-purposes. For example, we are rapidly destroying our best Banksia woodland for housing, yet many already degraded areas, particularly unproductive near-urban farmland, remain undeveloped.

Local Councils and the WA Planning Commission should more closely scrutinise development applications, including for houses, roads and other infrastructure, to ensure that the best use is made of available land. A process should be established so that all applications to clear bushland are advertised, assessed and approved by a statutory body, in a manner similar to, but more thorough than, that being used to gain approval for rural land clearing. Clearing urban bushland should require development approval under town planning schemes and the MRS. There should be a right of third party appeal against the grant of approval to clear bushland.

The following measures should also be adopted:

- the creation of waste land through un-necessary clearing should be eliminated;
- un-necessarily wide verges and setbacks should be eliminated;
- triangular lots of land that can not be utilised productively should be eliminated;
- development should be consolidated to minimise the need for clearing;
- cleared land, degraded bushland in poor condition or relatively unproductive farmland should be used first before any bushland in good to excellent condition is cleared for intensive development;
- all matters affecting or likely to affect the environment as a consequence of clearing and development should be considered before an application is approved;
- developers should not be allowed to undertake wholescale clearing of land for urban development, only to replace a proportion of the cleared land with planted exotic, or even native, vegetation. The local ecosystem is much more interesting and viable;
- the WA Planning Commission or other statutory body should be able to impose and enforce binding conditions, such as clearing restrictions, fencing requirements and the provision of bush corridors, as part of the condition of subdivision approval.

There is too much cleared or partly cleared degraded land in urban and outer urban areas that is not used for any productive purpose, including housing. Many rural properties also appear degraded and very unproductive. There is a need to use these areas first for any in-fill and new housing. A condition should therefore be placed on privately owned property in urban or urban-deferred developmental

zones, which is either partly or fully cleared or contains bushland in poor condition and does not contain any threatened or significant flora, that cause should be shown every five years why it should not be developed by the owner for housing. This is to make previously cleared land available for housing prior to any new land being cleared in areas where there is already "unproductively" used land.

A levy should also be introduced on any bushland that is to be cleared. This levy should be on a sliding scale, with the levy increasing as the bushland condition increases. This levy should be used to purchase and reserve bushland in good condition, especially those areas recommended in Bush Forever. On the other hand, local councils should offer rate relief if bushland in good or excellent condition is reserved by the owner for conservation purposes. State Government should also offer financial assistance to Local Councils.

A penalty of environmental degradation should also be introduced to ensure developers and owners do not destroy, or allow the destruction/degradation of, vegetation un-necessarily.

WATER

For people in such a dry land, we use a lot of water, much of it unsustainably and for watering lawns and gardens. Perth should not increase its dependence on water brought from other regions if it impacts on water-dependent ecosystems, such as rivers and wetlands. Any new (and existing) surface water diversion should provide for substantial environmental flows, while groundwater abstraction should be at the level of sustainable recharge and allow for the maintenance of existing groundwater-dependent vegetation and ecosystems.

We need to value water more highly and make better use of it. Consideration should be give to permanently introducing some level of water restrictions and conservation, and/or to permanently increasing the price of water. The price structure should incorporate higher unit rates for greater usage, and should incorporate the fixed charges into the unit rate so that there is a real incentive to reduce usage. Hopefully, this will send the correct message to consumers that water is a precious commodity and that it should be used wisely. Where water use is reduced, a rise in the unit price of water may not increase the total cost of water to consumers. Nevertheless, a base volume of water should remain at a reasonable price affordable to people on low incomes. However, that base level should be no more than 100L per capita per day, which equates to 36.5kL, half the current base level allowance.

Private (individual and corporate) borewater use should be licensed and maximum free water limits set based on water-efficient indoor and outdoor (irrigation) usage. Any usage in excess of the limit should be paid for at the same rate as scheme water so that conservation and the use of alternative water supplies are encouraged.

Everyone stands to gain from reducing the consumption of water. Water utilities should be able to defer development of costly new sources, and the cost of water treatment should fall as the amount of water required decreases. Water utilities should be encouraging (and subsidising) water conservation by giving away low-water use shower heads to everyone who wants them, and paying for the extra cost of horizontal axis washing machines whenever someone needs to replace their old vertical axis machine. The cost of such measures could be cheaper than developing new sources, especially if they require treatment.

Along with water conservation, Perth needs to increase its reuse of treated wastewater (refreshed water). Industrial reuse (process water and cooling water) and horticultural reuse (irrigation of fruit, vegetables, vines and turf farms) should be high priorities. Processes are available to treat and safely use refreshed water in these applications. If there is sufficient interest, refreshed water could also be used for irrigation of local parks, gardens and golf courses, as well as individual lawns and gardens. The community should be involved in any reuse program to ensure that all the issues are addressed and there are no residual health or environmental concerns. Water pricing schedules should be re-structured, and include reduced rates for refreshed water, to encourage more efficient use of water and use of appropriate grades of refreshed water for appropriate uses.

The excess saline water being created in the Wheatbelt from rising water tables should be utilised. One option was discussed under Agriculture above. Another option is to pump it directly to the Goldfields where processes have already been developed to be able to use it in mineral processing. Another option is to desalinate it, with the fresh water being supplied to users of the Goldfields and Agricultural Area Water Supply System from Mundaring Weir, with the saline concentrate being pumped to the Goldfields for use in mineral processing. This scheme would involve the following steps:

- establish a series of groundwater abstraction bores throughout the Wheatbelt. A large number of bores would be required to supply the required quantity of drinking water because of the limited yield of each individual bore;
- desalinate the brackish groundwater using reverse osmosis or multiple effect distillation plants located either centrally or near each bore, and pump the fresh water to Perth via the Goldfields and Agricultural water supply scheme – in effect reversing the flow. Perth would then use the water from Mundaring Weir;
- power for the pumps and the reverse osmosis plants could be obtained from either on-site solar photovoltaic power stations, combined cycle gas turbines fed from the nearby gas pipeline or power from an integrated biomass-fuelled or wood processing plant similar to the Western Power pilot plant proposed for Narrogin. A multiple effect distillation plant could be powered using solar heat troughs;
- pump the saline concentrate to Kalgoorlie in a separate pipeline to supply the

goldmining industry, which can utilise saline water. Alternatively, the saline water could be injected into the bottom of the aquifer from which it came in such a way as to nearly restore the water table and salt balance to what is was before clearing occurred. The point of re-injection would obviously need to be some distance from the abstraction well, possibly in an area where the water table has already been lowered by pumping.

This scheme has many benefits, such as the following:

- it is a means of desalinating the Wheatbelt in such a manner that costs can be recovered. This would restore the Wheatbelt for farming, protect and restore the biodiversity of the Wheatbelt, and protect the infrastructure around towns such as buildings and roads. Such a process will need to occur at some stage in the future in any event, unless a 30% loss of the Wheatbelt and its associated biodiversity is acceptable to the community;
- one and possibly two useful water resources are created that can offset the cost of the scheme: fresh water and process water. In many instances, the process water would be less saline than the concentrate from a seawater desalination plant because the water to be treated would be less saline than seawater, and may thus be even more suitable as process water than the current saline water used by the gold mining industry in Kalgoorlie;
- the cost of power per cubic meter of produced water for the Wheatbelt reverse osmosis desalination plant would be less than that for a seawater desalination reverse osmosis plant (such as that proposed for Kwinana or Esperance) if the abstracted groundwater has a lower salinity than seawater;
- the need for large numbers of solar power stations would support or continue the development of a solar industry in WA;
- the scheme would provide an additional stimulus and complementary benefits to an integrated wood processing plant;
- the Wheatbelt would becomes a source of two additional products – water and power – which would be more environmentally sustainable than, but complement, the existing agricultural resource base;
- the likely relatively small scale of the pumps, solar power stations and desalination plants would create a market for operational and service personnel, thus reversing the trend of de-population of the Wheatbelt. This is a significant social dimension of sustainability.

While the overall capital and operating cost of such a Wheatbelt desalination scheme may be more than that of a seawater desalination scheme, the benefits would be much greater. Not only would it create several valuable products (drinking water, process water and power) but also it would address a huge problem for which a cost-effective solution has yet to be found. It would restore the biodiversity and productive capacity of many areas of the Wheatbelt, and potentially result in the creation of one or more export industries if the opportunity was taken to source the technology locally (e.g. solar desalination, eucalyptus oil, activated carbon from

mallee char). Other potential benefits, such as recovering valuable minerals from the concentrated saline water, such as proposed by the CSIRO for the Murray-Darling Basin, are also possible. This would re-vitalise the Wheatbelt, and remove the area from a dependency on European-style agriculture.

TRANSPORT

I support rapid transit serving the Perth-Mandurah corridor, and the concept of the route following the Kwinana Freeway where possible. However, I am now starting to question whether a train service is the most sustainable. A bus-based system utilising a variety of different buses, including two- and three-carriage buses, is possibly more efficient, cheaper and more flexible, especially if it was very frequent. It would (continue to) allow feeder buses from Fremantle which (currently) travel along South Street and Leach Highway to use the rapid transit route. Buses could safely travel at speeds greater than 100 km/hour along the rapid transit route from Mandurah. There is also the greater possibility that the rapid bus transit route could be located in existing road reserves between Rockingham and Mandurah, something which will be very difficult if not already impossible, for the train route. This would protect a considerable area of remnant native vegetation including wetlands. A bus-based system is likely to be more aesthetic, with no overhead wires along the South Perth foreshore and Perth Esplanade, and would solve the debate and disagreement over the best way for the train to enter Perth. A bus-based system is also likely to be cheaper with less new infrastructure required.

In any event, a high occupancy vehicle lane, in addition to the existing rapid transit lane, should be introduced on the Kwinana and Mitchell Freeways to encourage car-pooling. This should be at the expense of one of the existing car lanes.

Much more use should be made of the existing rail infrastructure. Rail has many advantages over road (less energy), and some disadvantages (less flexibility), and there are existing routes. Use of rail would be stimulated by upgrading the rail infrastructure and would be preferred if road travel were relatively unattractive or slow. Environmentally preferred transport options such as rail should receive priority over road. Rail is making a comeback as a transport mode, and innovations borne of necessity are likely to be able to integrate road and rail much more efficiently.

Existing rail infrastructure could possibly be used to accommodate heavy vehicular traffic directly rather than constructing extra routes through uncleared land. Exclusive heavy traffic routes could be built within rail reserves, either alongside existing rail tracks, on or within rail tracks or above it (i.e put in a tunnel). Rail is used so relatively infrequently (compared to highways) that there is plenty of expensive spare capacity that should be utilised. Entry and exit off major roads could easily be provided if this option was given serious consideration.

There are currently truck trailers commercially available which, in addition to the usual road wheels sets, are equipped with rail wheel sets. This allows them to move from road to rail and take advantage of rail's efficiencies. Prime movers equipped with rail wheel sets as well as road wheels sets are in development if not in use already. If this technology was employed, highways could be located in railway reserves with road-rail interconnections at appropriate points. If a decision to proceed down this path was taken, trucking companies would obtain the appropriate hardware to take advantage of the lower operational costs. There would be an even greater incentive to introduce this technology if interconnections were made at other locations along the metro and country rail infrastructure.

The use of rail infrastructure by unmodified heavy road vehicles by surfacing the line and sharing the track with trains is less tested, but may be feasible if the road tyre tracks can be displaced slightly from the rail tracks. Investigations would need to be undertaken to determine whether the road base would be compatible with the road bed, or what modifications would be required.

It is likely that sophisticated controls would allow road-rail movements to be scheduled and operated no less safely than a heavily used rail-only system. After all, air traffic is controlled safely even at very busy airports.

Better Public Transport, the Ten-Year Plan for Transperth 1998-2007, has many good initiatives, and should be implemented.

Land use should be planned around public transport facilities, and public transport should be integral to all planned developments. Commercial facilities, such as newsagents, book stores, coffee shops, pharmacies, film developing centres, small grocery stores and banks, should be encouraged (or provision made) to locate near Park n Ride centres and major transit stations.

Banks should be encouraged to offer interest rates on home mortgages which reflect the average commuting costs to the CBD (associated with distance from the CDB). This could encourage increased inner city dwellings and discourage urban sprawl.

The State Government needs to make representation to the Federal Government to allow employers to include green transport modes in salary packages in the same way as car packages, i.e. so that they are treated in the same fashion with respect to fringe benefits tax. Significant tax benefits are available to higher paid employees who are provided with a car as part of their salary package, but there is nothing similar available to employees who use public transport. This bias should be corrected. Further, the State Government needs to make representation to the Federal Government to reverse the current situation with respect to the sliding scale of fringe benefits tax on company car use. Rather than the fringe benefits tax decreasing as the distance travelled increase, the fringe benefits tax should increase as the distance travelled increased. This would discourage un-necessary car usage

and correct the perverse situation where some individuals currently take their car on a long trip solely to qualify for the 25,000 km threshold below which the fringe benefits tax decreases in order to qualify for a rebate.

One alternative to encourage the further use of public transport is that, where an employer reimburses employees the (substantiated) cost of their travel by public transport to and from their place of work, this benefit to employees be treated as an exempt benefit with respect to the Fringe Benefits Tax. The real cost of public transport to participants in such a scheme would thus be reduced, making public transport a more attractive alternative.

If the proposal was allowed, there could be a diminution in the amount of tax collected by the Government, but the gains would be considerable. Apart from the environmental aspects, there are others, such as:

- increased patronage of public transport, making these services more viable;
- reduced traffic congestion in our cities;
- reduced consumption of petroleum products;
- reduced maintenance and increased life of cars and roads;
- reduction in imports;
- reduced pressure for the provision of new infrastructure, such as roads, bridges, and city car parking facilities; and
- a healthier population.

Subsidies should not be given to pay for diesel fuel. This will only encourage its continued use rather than result in alternatives, such as fuel cells, being developed. Further, a rebate could be offered on the sale of fuel-efficient cars based upon how efficient they are compared to a target efficiency or to the efficiency of the car traded in. This would encourage the production of fuel-efficient vehicles.

WASTE

There needs to be greater incentive to recycle so-called waste material into new material (re-named recyclate). A landfill levy has merit, and a larger levy should lead to greater recycling. However, high landfill levies result in illegal or indiscriminate dumping, which has the potential to destroy many areas of high conservation-value bushland. To counter this, an extensive and expensive system of licensing, surveillance and inspection would be required.

An alternative to a waste levy is payment to generators for material delivered for recycling. This is well established for scrap metals which currently have a value. The difference between metals and other materials is that society has not yet valued other materials sufficiently highly. However, most material can now be recycled, including concrete, green waste, plastics and paper, so that the material now has (or should have) a value. The payment could be funded by government, in which case government purchases of the recyclate, such as road base from recycled concrete, carpet from recycled carpet material, or stationery from recycled paper, would be at a discount because the product has already been partly paid for. Such a strategy would provide an incentive for government to use recyclate. It would also not penalise businesses following normal business practice, but would benefit entrepreneurial businesses and those following a sustainable path, thereby making them more competitive and profitable. Other businesses would hopefully soon follow suit. Other measures also need to be introduced for government to use recyclate. These could include a tender requirement for tenderers to supply goods with a certain (stipulated) percentage of post-consumer waste content

Extended producer responsibility requirements should be introduced in order for producers to take responsibility for the product once its original life has ended, as well as for the packaging. This is particularly appropriate given the current problem with the disposal of superseded computers in Australia. If manufacturers were required to take back the monitor and hard disc, and there would be an incentive to change the design of the equipment to enable it to be disassembled and the components reused more readily. Government should take the lead by giving preference to, or requiring, tenderers that practice extended producer responsibility.

Further, there should be a levy (or an increased levy where there are already levies or royalties) on the use of virgin resources to reflect the reduction in natural capital and environmental impact associated with activities such as mining and forestry. As well as making recyclate more economically competitive, such a levy could fund the payment for material accepted for recycling. Alternatively, the funds for the payment for recycling could be raised by imposing a surcharge on all manufactured items which could be refunded if the manufacturer implemented extended producer responsibility.

Yours faithfully,

Dr. J.E. Wajon, FRACI, CPChem, Comp IE Aust