
Workshop A

Hume West Industrial Estate

10-11 March 2008, Kingston
'As Written & Presented' Report



Facilitated by *The Natural Edge Project*
in Collaboration with the ACT Land Development Authority

Executive Summary

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The Natural Edge Project (TNEP) is a not-for-profit partnership for research in innovation prosperity driven by a group of young engineers and scientists, based in Australia (www.naturaledgeproject.net).

The team receives mentoring and support nationally and internationally from a wide range of individuals and organisations, in business, government and in research.

EXECUTIVE SUMMARY: WORKSHOP A - SUSTAINABILITY OPTIONS

The Land Development Agency (LDA) has awarded GHD Pty Ltd a *Planning and Engineering Consultancy* for a project known as Hume West Industrial Estate (HWIE). HWIE is approximately 73 hectares located adjacent to the south-west of the existing predominantly developed area of the suburb of Hume. The LDA sees the opportunity of developing this estate in conjunction with the ACT Government's '*Weathering the Change*' policy and setting benchmarks for future industrial estates.

On 11 - 12 March 2008, representatives gathered from across the Land Development Authority (LDA), subdivision consultants GHD, state government departments, business partners and representatives from professional bodies for the first of two workshops, to brainstorm opportunities over two days for the proposed Hume West Industrial Estate Subdivision Design. The purpose of the workshop was to facilitate a process to develop a list of potential sustainability options, which could then be peer-reviewed throughout the process.

In the workshop introduction, it was acknowledged that as there is little precedent to developing industrial estates using the process proposed by LDA, there is an opportunity to develop the process for national use. In addition to identifying specific opportunities for the Hume West Industrial Estate, the workshop outcomes would also be used to consider a national process.

Participants were reminded that the workshop's focus is at industrial subdivision level (i.e. everything up to engaging the tenants), not at the building or user-end level. Within this context, the workshop's aims were:

- 1) to try to set new benchmarks for the jurisdiction;
- 2) to make the jurisdiction itself a benchmark; and
- 3) to ensure that there are no surprises for stakeholder (i.e. the objectives for the overall process are clear).

Workshop Method Summary

DAY 1. THEMATIC CONSIDERATION OF SUSTAINABILITY OPTIONS.

Workshop participants chose to sit at one of six tables which were each allocated a thematic area. Participants were then introduced to the *Rotating Control Group* workshop process and their specific tasks as summarised below. It was explained that this method would ensure each participant had the opportunity to comment on each of the six thematic areas being considered: 1. Energy, 2. Water, 3. Transport, 4. Landscaping, 5. Amenity & Security, and 6. Subdivision Construction.

- *Task 1: Control Group Generation of Sustainability Options.* The six groups, or 'control groups' were tasked with being responsible for the write-up of opportunities for their topic area. Each control group was provided a document listing some prompting considerations, technologies, niche opportunities and cautions for the subdivision development relevant to their topic. Control groups spent an hour discussing and annotating the provided document, expanding upon the initial prompt list.
- *Task 2: Rotating Comments on Sustainability Options, by Thematic Area.* Groups then left their control group base and rotated in five 25-minute blocks, through each of the other five tables. Each table contained a copy of the expanded list developed in the first task by the control group for that topic. Groups discussed and annotated the original document, developing the

discussion from the perspective of their original topic. A blue pen was used by each group to add constructive notes and to show ties with their topic. A red pen was used to add concerns or cautions. In each rotation, the group's were provided fresh copies of the original document to annotate.

- *Task 3: Control Group Summary of Sustainability Options.* Groups then returned to their control group tables, and were supplied with the documents developed by each group in the previous task. Control groups spent an hour reviewing the blue and red pen annotations by each group, consolidating the ideas and refining their recommendations for potential synergies with and impacts on various parts of the industrial development.
- *Task 4: Control Group Presentation of Sustainability Options.* On the second day, the control groups reconvened and reflected on their recommendations, before presenting a short summary to Gordon Lowe, who provided commentary on the challenges for each of the thematic areas, for further consideration.

The output from Day 1 was a list of potential sustainability options to be considered in the project, under a set of key themes.

DAY 2. THEMATIC CONSIDERATION OF COVENANT OPTIONS.

Following comments provided by Gordon Lowe, participants were then asked to consider, in the same control groups for the same thematic areas, what could be written into tenant agreements to ensure that the aspirations of the industrial development as a whole would be adequately reflected at a lot-scale. Participants were reminded to stay at subdivision level, including discussion about opportunities for changes to land titles and change planning, using whatever tools they could to, 'prime the pump' to enable planning decisions. This exercise was facilitated in the following tasks, using an *accelerated rotation* workshop process:

- *Task 1: Control Group Generation of Tennant Agreement Options.* Participants spent an hour discussing, 'What can we add to agreement in light of discussion from yesterday?'. The control group generated a list of items for consideration in the Tennant Agreements.
- *Task 2: Spokesperson Rotation.* Each control group nominated a spokesperson, who then took the list of items for consideration around to each of the other five groups for comment. In 25-minute blocks, the spokespersons rotated through each of the other five groups. The spokesperson's role was to present their thematic area considerations for the tenant agreements and to interrogate the other five groups with regards to, 'what do we need in our recommendations that help your recommendations'. The remaining group members' role was to provide feedback to the visiting spokespersons, from their thematic area's perspective.
- *Task 3: Spokesperson Report-Back.* The spokesperson then returned to their control group and reported on the feedback from the other groups. The control group team members listened, then discussed with the spokesperson their feedback to the visiting spokespersons.
- *Task 4: Control Group - Options Refinement.* The control groups then refined their recommendations, and recorded the synthesised list on a new sheet.

The output from Day 2 was a list of potential items to be considered in the tenant agreements, under the key themes.

Section 1:
Key Findings by Theme

GROUP 1: ENERGY

It is anticipated that in the future we will use less energy to support improvements to our lifestyle. We will use 'greener' forms of energy rather than dirtier fossil fuels. We will plan our buildings and infrastructure to be more energy efficient and to withstand changed climate patterns... we must stabilise rising per capita consumption of energy and, over time, reduce it whilst allowing for sustainable growth... A recent audit of typical buildings occupied by ACT agencies indicated that significant savings and cost and emissions could be made by improving energy efficiency.

The ACT Climate Change Strategy 2007 – 2025

1 Recommended Sustainability Options

Amended Starter List:

[Generation] Ensure renewable energy sources (solar, wind etc) are maximised to reduce use of fossil fuels or enable eventual elimination. (Where intermittent energy sources are used (wind or solar) explore energy storage systems e.g. fuel cell batteries, water, graphite, phase change). (Contributing to meeting ACT renewable energy targets)

[Generation] Provide export options for onsite local low-carbon energy (gas fired power)

[Consumption] Use energy efficient street lighting, while ensuring that 'wayfinding' is adequate, precluding direct glare

[Performance] Ensure car parks are designed to reduce heat sinks as well as improve air quality, promote multiple function space, enable runoff reuse, etc. (This may in turn contribute to attaining a higher rating – for example, carbon neutral status or 5-6 Greenstar status)

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[Performance] Consider site orientation to allow best practice passive solar design of tenant development including macro wind-tunnelling for passive cooling

Control Group Additions:

Apply Green Star – design, built form and management

Future proof (reticulation and onsite generation)

Link in with Tralee – working as one

Use renewable energy technologies (wind, solar, gas, methane) feed back into the grid

Design for cogeneration synergies (where possible)

Install energy efficient street lighting

Use energy efficient onsite vehicles

Install green roofing

Prepare and use an Energy Management Plan

2 Recommended Covenant Options

Amended Starter List:

Ensure 100% of Buildings score \geq 6 Star FirstRate or NatHERS, Green Star equivalent rating. The building envelope should provide multiple functions (e.g. fire and storm mitigation, integrated solar cells, water collection, views, light shelves, noise and insulation etc)

Use heating and cooling equipment that is the best available Australian Gas Association Energy Star

Ensure adequate information is used in developing the Concept & Master Plan including options to increase resource efficiency in new (or existing) industries

Use onsite renewable, co-generation, waste from other industries or gas energy generation to supplement 40% target. This needs an 'up front' policy decision on proposed tenant mix

Apply potential for co-generation and energy exchange to reduce consumption and waste

Control Group Additions:

Prepare and use CMS and ongoing Management Plan – Essential

Apply Green Star or equivalent tools Guidelines in line development - essential (design, construct and operations)

Ensure that energy systems for the lots tap into the estate infrastructure to enable re-usable energy to be put back into the grid. Encourage on site use of renewable energy within lots

Ensure that any steps do not intrude the market into core business function or operations or have net financial impacts

Design the orientation of the buildings to enhance solar, wind or shade issues that will reduce energy use

Install green roof, green walls

Use clear visual statements or indicators to show 'green agenda'

Install low energy cooling/heating systems

Design landscape not to compromise renewable energy options

Design in options to embrace future technology options

Mandate water tanks

Future proof building design and reticulation to take advantage of future new technologies

Provide cycleway, parking, walking facilities and change rooms

Encourage hybrid vehicles, car pooling and shuttle bus

Use energy efficient electrical appliances throughout the building (this does not apply to business operation)

Perform sub-metering

Design in co-ordinated waste management and re-cycling opportunities

3 Director's Notes

On Day 2, LDA Director Gordon Lowe provided brief comments to inform and guide each control groups' discussions, following their short presentations on their interim recommendations.

Gordon's main points to all groups were:

- LDA has a view that the product is suitable for 5 years into the future
- LDA has experience in residential/commercial, but not so much industrial
- Good lease and development practice is good business practice
- Thanks to workshop participants for time and enthusiasm. It is a big ask for everyone in the room to contribute 2 days to this type of exercise. Previous experience suggests that this investment of time up front saves significant money in the rollout of the process.

Gordon's main points to the Energy control group were:

- Future technologies: fantastic to consider – workshop participants need to assume change
- Future technologies: don't want to create a prescriptive list of everything LDA/estate management is going to do with this estate. Things will change and a prescriptive list is likely to quickly become redundant. Rather, interested in using a management strategy instead, that is constantly open to embracing new technologies and techniques that LDA/estate management can apply to the site.
- Energy generation (onsite, cogeneration, streetlights): presents a commercial opportunity to sell power from cogeneration power for example within the estate, to then maybe export to grid. There is a fundamental question to consider about the Titleing of the estate – workshop participants will need to optimise the commercial benefits from the initiatives that are being considered. In this case, LDA/estate management can't do a traditional 'slice and dice', which is fine. LDA/estate management could instead do a 'community title' which creates the flexibility to roll it out, with a management entity to own the estate and own the utilities within the estate. So it is important to consider the form of tenure and title to match the industries to the energy sources and vice versa.
- Energy generation: needs to be cost effective and competitive with established utilities. LDA/estate management needs to know what it will cost per kW to generate the power. Provided LDA/estate management can sell it for less than market but more than it costs, then there is a competitive advantage on the estate. So, as well as titleing, need to consider setting up utilities for the estate.

GROUP 2: WATER

The ACT is expected to experience little change in total annual rainfall, but ... wetter conditions in summer and autumn ... drier conditions in winter and spring, and more intense events. Greater runoff from storms and higher evaporation from overall higher temperatures will lead to less water being available for consumption both by the community and the natural environment and decreases in water quality ... Droughts are likely to become more frequent and more severe... Water resources are likely to be further stressed due to projected growth in demand from progressive growth and climate-driven changes in supply for irrigation, cities, industry and environmental flows. [This] change in annual rainfall, combined with higher evaporation and increased demand would reduce run-off into rivers, leading to decreases of up to 20 percent in the ACT's Cotter and Googong catchments.

The ACT Climate Change Strategy 2007 - 2025

1 Recommended Sustainability Options

Amended Starter List:

- Ensure stormwater effective management is used, including onsite detention and retention and treatment to remove pollutants and allow reuse.
- Ensure rainwater is collected, conserved, treated and reused on site in a closed loop system where feasible [stormwater harvesting, rainwater harvesting].
- Ensure waterway rehabilitation occurs where possible through integrated ecological and landscape planning.
- Ensure low maintenance and reduced costs by displacing infrastructure with natural systems where feasible.
- Incorporate wastewater treatment and (optional) reuse, including 'sewer mining'.

Control Group Additions:

- Take into consideration potential impacts of climate change for all investigations
- Ensure water use efficiency (fit for purpose, fixtures/fittings)
- Apply integrated water cycle management on lots and throughout estate
- Substitute potable water throughout estate and on individual lots (stormwater, grey-water, black-water)
- Maintain existing conditions of hydrologic regime
- Maintain and improve riparian corridors
- Apply Water Sensitive Urban Design (WSUD) to improve stormwater management quality and quantity through the incorporation of more natural conveyance mechanisms and less hard engineering infrastructure.
- Investigate groundwater options including aquifer storage, recharge and recovery/reuse, will need to consider potential contamination of groundwater and treatment options required for end use. N/b groundwater only, we can change the Act, appropriate water sources only.

- Use triple bottom line techniques in analysis and presentation of options to determine feasibility
- Provide for third pipe throughout estate in anticipation of potential future use of recycled water
- Determine whether the WSUD and IWCM system is to be owned, maintained and monitored by the ACT Government or a body corporate
- Take into consideration soil conditions, including contamination and salinity (although soil map indicates salinity is not prevalent) during selection of appropriate WSUD treatment measures

2 Recommended Covenant Options

Amended Starter List:

- Sufficient quantities of water to service office functions should be collected from on-site. Install water saving devices and biological grey-water treatment for all office-related water systems (sinks, showers, kitchens, dual supply piping etc). (i.e. potential for third pipe.)
- Collect water for open space irrigation from on-site sources, such as roofs, parking areas facades, stormwater runoff, sewerage and clean wastewater from on site facilities.
- Include options to increase water efficiency in new (or existing) industries in the Concept and Master Plan.
- Consider the potential for a closed water system to reduce consumption and waste.
- Develop a strategy to attract or create new industries that recover or reuse water generated within the park.

Control Group Additions:

- Provide for monitoring and maintenance systems for WSUD and IWCM
- Undertake a study to determine water quality targets and appropriate water quality treatment levels for: 1) post development flow to mimic pre-development flows, and 2) post development water quality to replicate pre-development water quality
- Select endemic species for water quality treatment, including drought tolerance and frost hardy
- Undertake a water balance for site (and lots) to consider daily demand including internal and external users
- Include a three pipe system, to include recycled water for internal and external users
- Incorporate groundwater storage, recharge, recycle and reuse to supplement potable water substitution
- Take climate change into consideration in selection of appropriate WSUD and IWCM measures

- Ensure road layout follows topography to maximise benefits of WSUD measures and aligns with overland flow patterns and open space
- Maintain and improve riparian corridors
- Break up the Lot layout to incorporate WSUD throughout
- Include turnouts in road drainage, into rain gardens
- Use sediment and erosion control measures during construction phase to maximise storm water reuse

3 Director's Notes

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Gordon's main points to the Water control group were:

- Aquifer: when considering opportunities like aquifer storage and recharge, LDA/estate management need to own the entire estate
- Water treatment: needs to be cost effective and competitive with established utilities

GROUP 3: TRANSPORT

The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance... Transport is estimated to produce about a quarter of all greenhouse emissions in the ACT... The pattern of land use has a major impact on travel needs and the type of transport people use... The ACT Government's land use planning processes will include systemic integration of transport planning at both the strategic and individual development levels.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

1 Recommended Sustainability Options

Amended Starter List:

[Alternate Modes] Ensure access to, and provide incentives for, alternative transport modes, with priority on low impact transport

[Alternate Modes] Provide convenient public access and visitor parking including bike storage, showers and change rooms to encourage commuting and recreational biking, jogging, etc

[Local Network] Provide access to existing transport and freight distribution networks, Capitalising on materials handling, storage capacity and other infrastructure requirements

[Multimode] Design roads and traffic management systems based on safe vehicle, pedestrian and cycle movement

[Pedestrian Friendly] Provide an environment for pedestrians that is safe, convenient, easy to navigate (i.e. design for visual connectivity), and accommodates special needs

[Wear and Tear] Reduce Industrial Truck Transport Load and wear and tear on the site by ensuring where possible Sharing of Delivery and Pick Up sites onsite

Integrate into ACT park and ride strategy

Control Group Additions:

Acknowledge that early transport decisions have big, long-term impacts (macro scale)

Coordinate cross-border opportunities, challenges and regulations

Promote alternative modes => Shift our thinking from 'one per car'

Work with existing infrastructure and developments to address capacity and create/maintain sense of community

Future-plan (Future 'proof') without a crystal ball (bus => Queanbeyan is coming)

Improve public transport to the site (investigate shuttle buses and light rail) (issue of hours of operation)

Incorporate walking and bicycle paths (+ amenities) into all planning (map) => Centralise car parking but spread bicycle facilities

Integrate freight/bicycle/walk/drive/wildlife into site (wide streets) – B-double access issues?

Investigate other sustainable developments (lessons learned)

2 Recommended Covenant Options

Amended Starter List:

Establish paid staff parking to encourage and subsidize carpooling, green fleet, shared van or other car use reduction programs

Provide convenient public access and visitor parking including bike storage, showers and change rooms to encourage commuting and recreational biking, jogging, etc.

Ensure accessibility of buildings, open space, transport modes and pathways for disabled or people with special needs (e.g. wheel chairs)

Institute system of physical and/or financial incentives to reduce fossil fuel use and encourage public modes of transportation

Provide adequate temporary parking for bikes near each building, and secure bike storage for commuters, protected from the elements

Ensure that industrial and personal transport are not to within 20 metres of each other

Control Group Additions:

Water

- Design roads with contours
- Ensure balance with green areas
- Capture water in carparks

Orient heavy vehicle movement to Monaro Hwy and existing Hume developments

Provide a number of centralized parking stations

Prohibit carparking on roads

Plant trees/landscaping with emphasis on sight lines for egress

Zone people near amenities (office to overlook bike paths etc.) – to connect to existing paths

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Gordon's main points to the Energy control group were:

- Future technologies: incorporating into transport and distribution is a great idea
- Transport loads: In ACT, normally people think of transport as moving people from home to place of work. Workshop participant also need to think of resource import and export.
- Ownership: LDA/estate management can't own transport systems, but if it can be cheaper to get to and work at the estate, as a favourable alternative to a competing estate, then we have a competitive advantage. How much cheaper can workshop participants make it for a worker to work at Hume West rather than Fyshwick or elsewhere?

GROUP 4: LANDSCAPING

Changes in water availability, temperatures and bushfires will also affect our natural environment. Aquatic ecosystems are likely to be stressed. Local land ecosystems will be affected by decreasing water availability, increased bushfires and changes in the distribution and number of pests. Species that rely on a particular habitat and climate, such as the corroboree frog and many alpine and sub-alpine species, are likely to suffer and may eventually become extinct. Soil loss from drought, floods and degradation will increase, further stressing ecosystems and making sustainable land management increasingly important ... The CSIRO predict increases in average wind-speeds across much of NSW in summer ... a greater fire risk is predicted. By 2020 the predicted number of days with very high or extreme fire danger could average 26-29 in Canberra (now 23).

The ACT Climate Change Strategy 2007 - 2025

1 Recommended Sustainability Options

Amended Starter List:

- Use water efficient landscaping and irrigation systems.
- Employ garden features such as arbours, planting strips and trellises to create legible pathways and 'place markers' to improve sense of place.
- Provide micro and macro biodiversity conservation corridors or areas to increase multi-functional and community values of the park (Ecosystem Connectivity maps).
- Ensure native planting is used to the greatest extent possible to support indigenous species and ecosystems (special consideration for fuel reduction characteristics and native plants that are not prone to fire). Small contribution to offsetting local emissions.

Control Group Additions:

- Create places where people enjoy going to work
- Integrate natural and engineered systems – water (WSUD), waste, heating, cooling, visual, transport
- Retain and restore habitat (Yellow Box/ Red Gum) and wildlife corridors
- Apply consistent guidelines for sustainable landscape across the whole site
- Design to encourage many methods for moving around and in and out of site – walking, cycling, rail, public transport, car, truck, modular transport.
- Ensure connections between the site and surroundings, which are crucial to landscape design
- Consider fire management (different requirements from residential)
- Incorporate heritage into design – TSR, well, farm houses, aboriginal artefacts
- Develop a 'no irrigation' landscape (Based on traveling stock route ecosystems?)
- Design in natural surveillance of recreational areas.

2 Recommended Covenant Options

Amended Starter List:

- Provide for wildlife corridors through the site, and enhance these with pocket native gardens or green roofs where applicable.
- Optimise use of land and roofs to increase area available for eco-systems, biodiversity and habitats.
- Employ garden features such as arbours, planting strips and trellises to create legible pathways and 'place markers'.
- Combine landscape features (fountains) or garden structures (gazebos, trellises or screens) to support sprays to use in case of fire.
- Select native plants, ground cover and landscape features for fuel reduction characteristics. Utilise xeriscape principles and native plants reduce need for mowers/trimmers, pesticides and irrigation.

Control Group Additions: Estate Code

- Exclude Yellow Box/Red Gum in travelling stock route from private ownership or building sites – trade off: area used to clean water, add to public domain (passive recreation areas), circulation corridor, avoid costs in developing it (drainage, Aboriginal artefacts), increased real estate value for adjacent blocks
- Use waterways to guide placement of circulation and blocks and put into public domain
- Recognise natural corridors along ridges around western side (outside site)
- Create boulevard streetscape – apply WSUD combined with accessibility for large trucks
- Ensure pre-designed streetscape that is friendly to use
- Pave only parts that need to be used – paths, roads, parking

Control Group Additions: Tenant Code

- Stay with pre-determined landscape theme including planting design – style guides include lights, furniture, materials, driveway entrances
- Integrate S/W disposal systems into the estate systems, e.g. controlled release and cleaning and slowing of water
- Make a percentage of the whole subdivision permeable – be flexible about where this will be (as part of Title)
- Incorporate tradeable development rights for area of permeability (with exceptions for some protected areas)
- Ensure tenants look after systems including landscaping through Body Corporate (take ownership of public realm through Body Corporate)

- Design to feel safe to be outside
- Ensure tenants manage vehicle access into/out of site by designated roads/driveways and prevent damage of soft landscaped areas
- Ensure tenants manage weeds onsite
- On each block – adopt CTEP principles (as well as public realm)
- For construction:
 - Designate clear entry/exit places for vehicles and parking areas during construction
 - Designate location of stock piles (onsite/on estate)
 - Protecting soil and waterways
 - Reinstalling landscape works damaged during construction
 - Consider/obey exclusion zones/no go zones for protected areas
 - Incentives for buildings for looking after public realm landscape – or landscape bond, i.e. what to do for areas that can never be replaced/damage
- Use landscape to provide Summer shade
- Use green roots and green walks – will help with solar panel efficiency
- Use green screens/wind breaks on west
- Look for ways landscape can reduce energy use
- Ensure landscape does not compromise passive and renewable options
- Ensure tenants comply with WSUD guidelines
- Ensure sightlines for driveways

3 Director's Input

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Gordon's main points to the Energy control group were:

- Landscaping: LDA/estate management/workshop participants need to consider largely owning and managing the landscaping, across the public and private domains, rather than handing it back to municipal management.
- Landscaping: Want to put the landscape to work
- Water treatment: See the landscape as an organic component to the water treatment system and other components. The landscape acts as a working element within the treatment system, reducing the costs of water treatment etc.

GROUP 5: AMENITY & SECURITY

Climate change will impact on all aspects of life ... The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance ... Individuals and businesses have a role in encouraging sustainable design and planning in the buildings they buy and use.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

1 Recommended Sustainability Options

Amended Starter List:

Optimise views and environmental amenity in all work places and public spaces to improve well-being, sense of place and rental value without forcing out or limiting

Ensure subdivision, building, fencing and landscaping design encourages the surveillance and activity of the public realm. Design spaces to ensure surveillance cameras can survey all appropriate areas if deemed necessary

Map and address access routes to major service, employment and retail nodes to ensure site connectivity and encourage entry to estate

Encourage mixed public-private activities on site such as public education events (to increase indirect surveillance)

Incorporation of public art, i.e. providing industrial character, landmark to provide identity

Control Group Additions:

A. Ensure that policy formulation and review are flexible to outcomes, for example:

1. Planning system – Territory Plan Codes
 - to allow for delivery, monitoring and updating
 - Territory Plan Variation requirement
 - A new Code/s – precinct, and general code (template)
2. ACT Government Interagency agreements opportunity
 - to allow innovations
 - allocate management/custodianship responsibilities
3. Commercial/Corporate responsibility
 - continuity between stages and developers responses
 - targeted at real estate marketing sourcing of potential client fitness

B. Ensure ‘neighbourhood’ unit design framework:

- is walkable, accessible, active
- an interesting environment – creating a sense of arrival, interest in spaces

- considers the local community + provides community uses, commercial support functioning (shops, chemist, child care, banking, offices, shopfront, and the like) + includes environmental and heritage character reference points
 - reflects the principle of stay for the day for local services
 - has uses outside of 'business' hours
- C. Enhance the relationship of new and existing development”
- Transition + sense of arrival, road/rail network separation + extension of HWIE outcomes into adjoining areas – tendrils, e.g. street furniture
 - Integration + connecting with north Hume, Queanbeyan trade, Mugga Way Industrial areas + accessibility to existing nodes – residential, commercial (Fyshwick) and industries outside ACT (rail network)
 - Compatibility between uses + waste to product relationships + different streetscapes for precinct identification within overall area, street hierarchy distinguishes between use areas + town square principles that are relevant with regards to open space, commercial centre, residential core zones, mixed use diversity
- D. Encourage activity in public spaces
- Land use location – mix of uses framework zoning within precinct within estate, density around spaces, co-location of uses both active and passive
 - Density to commercially justify/sustain the amenity provided
 - Identify the public realm within the estate
- E. Design for linkages:
- Movement in/out of estate
 - Open space corridors allowing pedestrian and cycle movement
 - Focal points – art spaces, active and passive recreation opportunities
 - Through traffic to Tralee
 - Links to external recreation/connectivity adjoining areas (outside estate boundary)
- F. Provide visual amenity:
- To encourage activity
 - Welcome entry
 - Reduce the sterility in industrial areas
 - Constructed landscape defines character and use, themes (but no big banana)
 - Iconic art, buildings, spaces, architecture
 - Storage areas screened and removed from the streetscape (including Monaro and internal streets)
 - Architectural design input – recycled materials to encourage different materials in construction – avoid single materials like concrete or tin

- Tourist destination for building design, integrated landscape and art
- Attracting people (general public) to the area additional to the local workforce – potential weekend use
- Landscape to exotics to distinguish from adjoining rural landscape

G. Provide public facilities:

- Toilets – enviro-type, incorporated into complexes, connections for sewer mining – multi functional
- Playgrounds/parks – spaces to loiter in, not just tidy, human scale spaces
- Shade and outdoor eating opportunities
- Lighting/security
- Cameras hidden, private purpose for individual sites (self serve) – not passive surveillance opportunity
- Public realm street-front surveillance included in design

2 Recommended Covenant Options

Amended Starter List:

The 'Starter List' does not capture design initiatives to deliver the estate's objectives

Control Group Additions:

Water sensitive urban design:

- Develop and use Management plan for BC
- Ensure staging continuity – design/infrastructure/construction
- Connect internal to external using existing links
- Provide irrigation for private BC
- Swales, ponds – management plan framework
- Code response to requiring it with lease

Transport:

- Design a hierarchy of roads – grid pattern – NU design response
- Include body corporate roads
- Include major road connections on public land
- Provide visitor and disable requirements in car parking locations
- Incorporate generation (solar/wind) and investigate the potential for basement/underground parking for a centralised car park/system

Landscaping:

- Ensure connectivity – continuity of landscape/planting
- Ensure walkable and secure/safe
- Provide green space behind buildings
- Separate visitor parking from heavy vehicle uses
- Separate walking paths from roads (through greenbelts) in conjunction with cycle-paths
- Provide foot paths interesting places to walk (continuing journey points/destination markers)
- Enhance/preserve eco areas and link to paths

3 Director's Notes

On Day 2, LDA Director Gordon Lowe provided brief comments to inform and guide each control groups' discussions, following their short presentations on their interim recommendations.

Gordon's main points to all groups were:

- LDA has a view that the product is suitable for 5 years into the future
- LDA has experience in residential/commercial, but not so much industrial
- Good lease and development practice is good business practice
- Thanks to workshop participants for time and enthusiasm. It is a big ask for everyone in the room to contribute 2 days to this type of exercise. Previous experience suggests that this investment of time up front saves significant money in the rollout of the process.

Gordon's main points to the Energy control group were:

- Titleing: Can't change the Planning Act, but can challenge the groups to consider changing the titleing (something that the LDA can influence) from conventional subdivide with a public domain authority, to a community title form that can overcome problems with the innovations being implemented.
- Management: Like the idea of integrated estate management

GROUP 6: SUBDIVISION CONSTRUCTION

Part of the challenge of reducing our emissions and adapting to climate change is to be smarter in how we design our offices, homes, roads and infrastructure ... Being sustainable in how we design our suburbs and infrastructure can help reduce the costs of buildings and maintaining our energy, water, communications and transportation infrastructure.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

1 Recommended Sustainability Options

Amended Starter List:

- Ensure construction waste is minimised to reduce pressure on natural environments, resource consumption and costs (specifically diversion of construction waste to landfill, and elimination of organic waste to landfill).
- Encourage the use of recycled content in products (such as recycled aggregate).
- Ensure materials are selected to reduce embodied energy and ecological damage in extraction, production and end of life.
- Ensure sediment control measures are in place to minimise waterway pollution.
- Minimise air pollution from dust during construction phase (from operations by backhoes, graders and plant).
- Ensure recycling and site management to avoid waste and site damage during the construction process.

Control Group Additions:

- Ensure that environmental outcomes in construction are largely set in design phase
- Have a clear vision of project objectives - to inform estate design, then to inform civil engineering design, to inform construction method, planning and contract administration – follow the whole chain through
- Investigate Green Star rating systems for industrial subdivisions and construction.
- Design issues:
 - Ensure flexible lot layout ideal to accommodate ultimate uses that are not known at subdivision design phase
 - Design stormwater system to suit construction phase outcomes (erosion and sediment control) as well as long term environmental outcomes
 - Specify construction materials with small environmental footprint (embodied energy, travel distances)
 - Aim to minimise earthworks volumes – cut/fill
 - Consider road design is in context of traffic, and depends on lot usage

- Construction Management Plan:
 - Ensure construction contractor performance and commitment meets intended credibility of environmental outcomes
 - Require construction contract to consider environmental performance including – environmental site induction for workers, sub-contractors, environmental accreditation (contractor and materials), biofuels, greenhouse gas emission assessment
 - Consider timing of works – wildlife impacts, seasonal weather
 - Ensure erosion and sediment control is a priority
 - Stage construction to limit physical and visual impacts
 - Use reclaimed water (treated sewage) for construction (or captured stormwater runoff)
 - Plan for materials handling – topsoil stockpiles, deliveries to works
- Subdivision Construction:
 - Design in a Public Information Strategy – objectives: Promote development; Inform development; industry – model site; Public accountability for performance; Use onsite display and website
 - Investigate using onsite materials and/or producing materials onsite to reduce transport impacts – e.g. consider concrete batching plant within estate to supply subdivision works, industrial/commercial building works. Also use of stabilised local soils for road pavements.

2 Recommended Covenant Options

Amended Starter List:

- Select materials to reduce environmental impacts during extraction (such as harm to ecosystems and biodiversity) and throughout the life cycle.
- Use organic materials and components that do not release toxic emissions (such as particle board that off-gasses VOCs) and avoid materials using petrochemical inputs where possible.
- Use materials that have appropriate insulation and thermal mass characteristics to reduce heat loss and heat gain. (Covered in BCA and ACT Standards)
- Ensure safe provision for handling and storage of all chemicals on site to reduce risks of chemical mixing and fire hazards. (Cover under OH&S legislation)
- Apply potential for closed resource loops and material flows between industries to reduce consumption and waste.

Control Group Additions:

- Ensure integrated estate management – Community Titles Scheme. Estate Environmental Manager to implement lot level controls, including:
 - Coordinate all earthworks through estate manager – for use on other sites
 - Design exclusion zones to protect values/sensitive areas
 - Design access ways for vehicles and machinery and parking areas – possibly fenced
 - Reduce dust irrigation requirements
 - Use centralised stockpile locations
 - Register material use and distribution – promote re-use of fill and materials
 - Protect of existing native vegetation for incorporation to overall layout
 - Include environmental site inductions for builders, subcontractors, estate maintenance staff
 - Coordinate maintenance of estate assets – open space, landscaping, possibly roads, services – ongoing role
 - Enforce control measures on lot development works
- Ensure Construction Management Plans are prepared for all lots by developers of those lots to address:
 - Earthworks
 - Erosion and sediment control
 - Management of sediment control devices
 - Site access and parking
 - Protection of landscape features
 - Site areas not to be disturbed
 - Stockpile locations
 - Dust, noise controls
 - Staging
 - Temporary traffic management plans
 - Site stormwater management
- Ensure the Community Titles Scheme incorporates landscape standards – protected vegetation in lots building construction and design standards

3 Director's Input

On Day 2, LDA Director Gordon Lowe provided brief comments to inform and guide each control groups' discussions, following their short presentations on their interim recommendations.

Gordon's main points to all groups were:

- LDA has a view that the product is suitable for 5 years into the future
- LDA has experience in residential/commercial, but not so much industrial
- Good lease and development practice is good business practice
- Thanks to workshop participants for time and enthusiasm. It is a big ask for everyone in the room to contribute 2 days to this type of exercise. Previous experience suggests that this investment of time up front saves significant money in the rollout of the process.

Gordon's main points to the Energy control group were:

- Flexibility: The LDA will experience at least 1 or 2 building economic cycles, so flexibility for the unknown is good.
- Contract. Need good contract administration, and LDA/workshop participants also need to think about the type of contract, for example conventional fixed price, design and construct, fixed term lump sum, alliance, NSW GC21 where the risk is articulated to decide who bears various risks and how they will be rewarded for good project management.
- Contract: Actively seek out innovation contract solution – what would prospective industries want?

Section 2:
Group Discussions
by Theme

Document Guide:

This document provides an 'as written' record of the workshop outcomes for this thematic area. The text has been annotated as follows:

Part 1: Control Group Original with Rotation Comments

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- Red text shows where the other groups have made cautionary comments, from the perspective of that group's thematic area.

Part 2: Control Group Final Alterations

The second part presents an 'as written' summary of the control group's final alterations, after they reviewed comments by all of the other groups. **Bolded Black** text and 'strikethrough' text shows the control group's final annotations.

DAY 1 - GROUP 1: ENERGY

Part 1: Control Group Original with Rotation Comments

It is anticipated that in the future we will use less energy to support improvements to our lifestyle. We will use 'greener' forms of energy rather than dirtier fossil fuels. We will plan our buildings and infrastructure to be more energy efficient and to withstand changed climate patterns ... we must stabilise rising per capita consumption of energy and, over time, reduce it whilst allowing for sustainable growth ... A recent audit of typical buildings occupied by ACT agencies indicated that significant savings and cost and emissions could be made by improving energy efficiency.

The ACT Climate Change Strategy 2007 - 2025

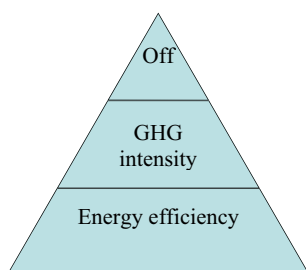
Starter List:

- [Generation] Ensure renewable energy sources (solar, wind etc) are maximised to reduce use of fossil fuels or enable eventual elimination. (Where intermittent energy sources are used (wind or solar) explore energy storage systems e.g. fuel cell batteries, water, graphite, phase change). (Contributing to meeting ACT renewable energy targets). (G3: Going carbon neutral for an industrial park would be the greatest aim - feeding in during the day to use at night, G4: Look at options for integrating alternative energy sources across whole development)
- [Generation] Export options for onsite local low-carbon energy (gas fired power) (G3: Export options for on-site low carbon energy - cogeneration)
- [Consumption] Use energy efficient street lighting, while ensuring that 'wayfinding' is adequate, precluding direct glare. (G3: Energy efficient street lights, i.e. 'Homebush' Olympic street lights - choice of street lights is important)
- [Performance] Ensure car parks are designed to reduce heat sinks as well as improve air quality, promote multiple function space, enable runoff reuse, etc. (This may in turn contribute to attaining a higher rating – for example, carbon neutral status or 5-6 Greenstar status) (G3: Multistorey car park - low footprint, solar orientation)
- [Performance] Consider site orientation to allow best practice passive solar design of tenant development including macro wind-tunnelling for passive cooling.
- ...

Additional list by workshop participants:

- Green Star
- Embodied energy (G3: Type of embodied energy must be balanced by operating energy, G6: Materials source, uses - road widths, etc.)
 - Future proofing (G3 Caution: Clarify what reference to Future Proofing means in this context? Future proofing is good often opportunities for future tenants)
 - Maximising energy corridors (G4: wind corridors)
 - Shared trenching
 - (G5: Adaptability of service corridors and trenches, G5 Caution: Spare capacity for future)
- Energy sub-metering (G3: Sub-metering is good – operating for tenants or to monitor aspects of business)
- Closing the circle – renewable energy – recycling energy (G3 Caution: Renewable energy is separate point to 'closing the loop')
- Mixed-use needed (core of sustainability) - service needs, commercial use (less used for transports) (G4: walkable distances)
- Green roofing (G4: Could mean many things – water collection, plants on roof)
- Solar panels
- G2, G5: Geothermal energy – layout of pipes and services
- G2: Use of methane generated from resource recovery centre
- G2: Promote use of recyclable materials to reduce waste (waste management principles) - palette recycling
- G4, G5, G6: Incentives for tenants/business/industry to consider alternate energy/to do this stuff
- G4: Integrating different types of energy sources, including geothermal, labyrinth heating/cooling
- G4: Design to reduce need for energy use e.g. for heating, cooling, hot water – read design response report for Ethical Investments building in Bruce.
- G5: Wind power generation
- G6: Consider Body Corporate/Community Title to deliver renewable energy needs
- G6: Grid road system – reduces travel time and energy use for the life of the subdivision
- G6: Consider total energy costs of transport – include child care facilities, should residential be mixed with industrial? – reduce commuting)

Principles



1. Energy efficiency

- High performance buildings/construction
 - o Embodied energy (G5 Caution: Cost impacts – high performance materials have bigger energy footprints)
 - o Operational energy in buildings/process
- Waste management principles
- (G3: Energy efficiency should be in everything)

- Vehicles
 - Lighting
 - Ventilation
 - Solar heating
 - Maintenance
 - Monitor oven time
 - Part of lease arrangements
 - Place manager responsibility)
2. Lower intensity energy source
- Renewables
 - Co-generation
3. Offsetting residential GHG (G4: A good thing to aspire to, G3: Two different points – Offsetting emissions + Indirect emissions from up stream and downstream off onsite operations, G4: Energy consumption will vary day to day, day and night - could look for mixed energy uses to balance energy import/export)

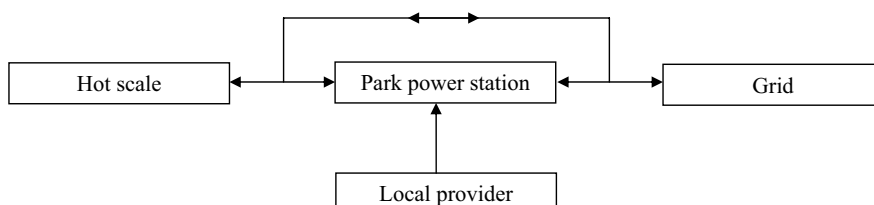
Green Star

- Base building design (G2: Cooling/heating methods, Insulation, G5 Caution: Materials)
- Energy sub-metering
- Electrical generation on-site (G4: and how to share management/maintenance with centralised)
- External lighting reduced/day-lighting
- Car park ventilation (G4: Passive, natural systems, electric vehicles/bicycles for use around estate, shared/community vehicles – modular transport system)
- Centralised energy stations (G4: and how to share management/maintenance with on-site)
- Transport
- (G4: Require maximum Green Star rating, Reduce heat island effect, Design landscape to reduce energy use of buildings (shade buildings in summer))

Energy Concept

On site	At the park	Grid
(Buildings) - Green Star	(Wind/solar etc, solar thermal, etc.) - local generation - G5: Capture of thermal energy stored in shared trenching/service corridors	(Green power)
G2: Geothermal	G2: Geothermal	G2: Potential to feed energy back into grid through wind/solar generation

Energy Model



DAY 1 - GROUP 1: ENERGY

Part 2: Control Group Final Alterations

It is anticipated that in the future we will use less energy to support improvements to our lifestyle. We will use 'greener' forms of energy rather than dirtier fossil fuels. We will plan our buildings and infrastructure to be more energy efficient and to withstand changed climate patterns ... we must stabilise rising per capita consumption of energy and, over time, reduce it whilst allowing for sustainable growth ... A recent audit of typical buildings occupied by ACT agencies indicated that significant savings and cost and emissions could be made by improving energy efficiency.

The ACT Climate Change Strategy 2007 - 2025

Starter List:

- [Generation] Ensure renewable energy sources (solar, wind etc) are maximised to reduce use of fossil fuels or enable eventual elimination. (Where intermittent energy sources are used (wind or solar) explore energy storage systems e.g. fuel cell batteries, water, graphite, phase change). (Contributing to meeting ACT renewable energy targets). (G3: Going carbon neutral for an industrial park would be the greatest aim - feeding in during the day to use at night, G4: Look at options for integrating alternative energy sources across whole development)
- [Generation] Export options for onsite local low-carbon energy (gas fired power) (G3: Export options for on-site low carbon energy - cogeneration)
- [Consumption] Use energy efficient street lighting, while ensuring that 'wayfinding' is adequate, precluding direct glare. (G3: Energy efficient street lights, i.e. 'Homebush' Olympic street lights - choice of street lights is important)
- [Performance] Ensure car parks are designed to reduce heat sinks as well as improve air quality, promote multiple function space, enable runoff reuse, etc. (This may in turn contribute to attaining a higher rating – for example, carbon neutral status or 5-6 Greenstar status) (G3: Multistorey car park - low footprint, solar orientation)
- [Performance] Ensure car parks are designed to reduce heat sinks as well as improve air quality, promote multiple function space, enable runoff reuse, etc. (This may in turn contribute to attaining a higher rating – for example, carbon neutral status or 5-6 Greenstar status) (G3: Multistorey car park - low footprint, solar orientation, **Solar on roof**)
- [Performance] Consider site orientation to allow best practice passive solar design of tenant development including macro wind-tunnelling for passive cooling.
- ...

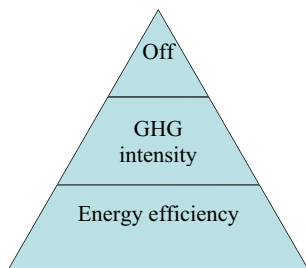
Additional list by workshop participants:

(Bold text below designates alterations made by the control group in the final session)

- Green Star – **design, built form and management**
- Embodied energy (G3: Type of embodied energy must be balanced by operating energy, G6: Materials source, uses - road widths, etc.)
 - Future proofing (G3 Caution: Clarify what reference to Future Proofing means in this context? Future proofing is good often opportunities for future tenants) (**reticulation and onsite generation**)
 - Maximising energy corridors (G4: wind corridors)
 - Shared trenching
 - (G5: Adaptability of service corridors and trenches, G5 Caution: Spare capacity for future)
- **Must link in with Tralee – working as one**

- Energy sub-metering (G3: Sub-metering is good – operating for tenants or to monitor aspects of business)
- **Renewable (wind, solar, gas, methane) feed back into the grid**
- **Cogeneration synergies (where possible)**
- Closing the circle – renewable energy – recycling energy (~~G3 Caution: Renewable energy is separate point to 'closing the loop'~~)
- **Energy efficient street lighting**
- **Energy efficient onsite vehicles**
- Mixed-use needed (core of sustainability) - service needs, commercial use (less used for transports) (G4: walkable distances)
- Green roofing (G4: Could mean many things – water collection, plants on roof)
- Solar panels
- **Management plan**
- G2, G5: Geothermal energy – layout of pipes and services
- G2: Use of methane generated from resource recovery centre
- G2: Promote use of recyclable materials to reduce waste (waste management principles) - palette recycling
- G4, G5, G6: Incentives for tenants/business/industry to consider alternate energy/to do this stuff, **mandatory regulation and incentives**
- G4: Integrating different types of energy sources, including geothermal, labyrinth heating/cooling
- G4: Design to reduce need for energy use e.g. for heating, cooling, hot water – read design response report for Ethical Investments building in Bruce.
- G5: Wind power generation
- G6: Consider Body Corporate/Community Title to deliver renewable energy needs
- G6: Grid road system – reduces travel time and energy use for the life of the subdivision
- G6: Consider total energy costs of transport – include child care facilities, should residential be mixed with industrial? – reduce commuting)

Principles



4. Energy efficiency

- High **energy (efficiency)** performance buildings/construction
 - o Embodied energy (G5 Caution: Cost impacts – high performance materials have bigger energy footprints)
 - o Operational energy in buildings/process
- Waste management principles
- (G3: Energy efficiency should be in everything)
 - **Vehicles (operated by management company)**
 - **Lighting**
 - **Ventilation**

- Solar heating
 - Maintenance
 - Monitor oven time
 - Part of lease arrangements
 - Place manager responsibility)
5. Lower intensity energy source
- Renewables
 - Co-generation
6. Offsetting residential GHG (G4: A good thing to aspire to, G3: Two different points – Offsetting emissions (**scope 1 and 2**) + Indirect emissions from up stream and downstream off onsite operations (**scope 3**), G4: Energy consumption will vary day to day, day and night - could look for mixed energy uses to balance energy import/export)

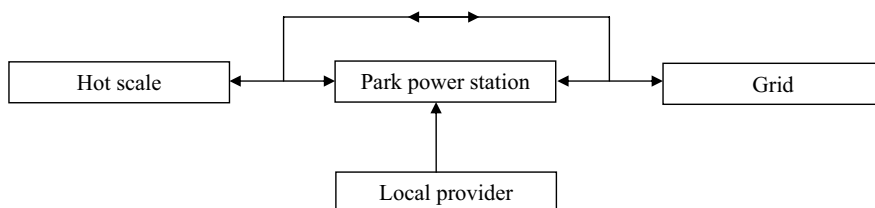
Green Star

- Base building design (G2: Cooling/heating methods, Insulation, G5 Caution: Materials)
- Energy sub-metering
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- External lighting reduced/day-lighting
- Car park ventilation (G4: Passive, natural systems, electric vehicles/bicycles for use around estate, shared/community vehicles – modular transport system)
- Centralised energy stations (G4: and how to share management/maintenance with on-site)
- Transport
- (G4: Require maximum Green Star rating, Reduce heat island effect, Design landscape to reduce energy use of buildings (shade buildings in summer))

Energy Concept

On site	At the park	Grid
(Buildings)	(Wind/solar etc, solar thermal, etc.)	(Green power)
- Green Star	- local generation - G5: Capture of thermal energy stored in shared trenching/service corridors, Good idea but how?	
G2: Geothermal	G2: Geothermal	G2: Potential to feed energy back into grid through wind/solar generation

Energy Model



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- Red text shows where the other groups have made cautionary comments, from the perspective of that group's thematic area.

Part 2: Control Group Final Alterations

The second part presents an 'as written' summary of the control group's final alterations, after they reviewed comments by all of the other groups. **Bolded Black** text and 'strikethrough' text shows the control group's final annotations.

DAY 2 - GROUP 1: ENERGY

Part 1: Control Group Original with Rotation Comments

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The ACT Climate Change Strategy 2007 - 2025

Starter List:

- ~~50%~~ 100% of Buildings score \geq 6 Star FirstRate or NatHERS, Green Star equivalent rating. The building envelope should provide multiple functions (e.g. fire and storm mitigation, integrated solar cells, water collection, views, light shelves, noise and insulation etc).
- Heating and Cooling Equipment: All provided within ~~4.5 stars of~~ best available Australian Gas Association Energy Star.
- Ensure adequate information is used in developing the Concept & Master Plan including options to increase resource efficiency in new (or existing) industries.
- Onsite renewable, co-generation, waste from other industries or gas energy generation encouraged to supplement 40% target.
- Apply potential for co-generation and energy exchange to reduce consumption and waste.

Additional list by workshop participants:

(Without CMS and Management Plan all the below items are pointless)

- The more we increase the restrictions the more you erode your competitive advantage (must be cost effective)
- Ongoing cost cannot jeopardise business
- 'Green' advantage has a minimal life-span advantage – 'Feel Good'

- Commitment must be shown to future
- Serious Management Plan
- Can't intrude the mark into core business function/operations
- Green Star Code in all building design and operation aspects as part of Architecture design codes/requirements
- Ownership of utilities and ongoing running costs - like paid by Body Corporate
- On-site
- Percentage of roof to be solar panel (or equivalent)/compatible
- Orientation of building to enhance solar/wind/shade issues
- Must tap into the estate infrastructure (no choice) – water power etc.
- Guaranteed core supply at all times – renewable important but only add-ons to viability considerations
- Green roof
- Clear visual indication on estate to show 'green agenda' (solar panels, wind turbines, water tanks)

Additions from discussion with other groups:

- Body Corporate/Unit Corporate – explore further
- Ongoing reduced costs
- Management Plan
- Incentivise
- Water trading
- Visibility
- Integration in terms of cooling/heating
- Regular auditing of implementation of the Management Plan
- Building orientation
- Minimise parking/communal parking
- Road layout
- Build structures which integrate into the landscaping
- Integrated into the natural and built development/built locale
- No irrigation landscape
- Low energy cooling/heating systems
- Deciduous trees
- Plantings close to buildings/shading
- Orientation – solar
- Roof wall/gardens
- Economic balance
- Onsite capture and off scale
- Multiple Body Corporates/overarching community title
- Individual metering
- Sourcing local materials
- Recycling, use of onsite materials
- Centralised stock pile locations
- Mitigation measures, controlled vehicle movements

- Onsite materials maximised
- Use of non-potable water
- Protection of existing native vegetation for incorporation into the design layout
- Construction overseen by environmental supervisor
- Explore new technology regarding road surfaces producing energy on impact (peizo)
- Hybrid vehicles
- Mandate solar hot water
- Energy efficient street lights
- Non-potable water used encouraged for most uses
- Excess water (grey) to use for heating/cooling purposes within buildings

DAY 2 - GROUP 1: ENERGY

Part 2: Control Group Final Alterations

It is anticipated that in the future we will use less energy to support improvements to our lifestyle. We will use 'greener' forms of energy rather than dirtier fossil fuels. We will plan our buildings and infrastructure to be more energy efficient and to withstand changed climate patterns ... we must stabilise rising per capita consumption of energy and, over time, reduce it whilst allowing for sustainable growth ... A recent audit of typical buildings occupied by ACT agencies indicated that significant savings and cost and emissions could be made by improving energy efficiency.

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Starter List:

- 50% 100% of Buildings score \geq 6 Star FirstRate or NatHERS, Green Star equivalent rating. The building envelope should provide multiple functions (e.g. fire and storm mitigation, integrated solar cells, water collection, views, light shelves, noise and insulation etc).
- Heating and Cooling Equipment: All provided within 1.5 stars of best available Australian Gas Association Energy Star.
- Ensure adequate information is used in developing the Concept & Master Plan including options to increase resource efficiency in new (or existing) industries.
- Onsite renewable, co-generation, waste from other industries or gas energy generation encouraged to supplement 40% target. This needs an 'up front' policy decision on proposed tenant mix.
- Apply potential for co-generation and energy exchange to reduce consumption and waste.

Final list by control group:

- Without CMS and **ongoing** Management Plan – **Essential** all the below items are pointless
- ~~- The more we increase the restrictions the more you erode your competitive advantage (must be cost effective)~~
- Ongoing cost cannot jeopardise business
- ~~- 'Green' advantage has a minimal life-span advantage – 'Feel Good'~~
- Commitment must be shown to future
- ~~- Serious Management Plan~~
- **Any steps must not** Can't intrude the mark into core business function or operations **or have net financial impacts**
- Green Star **or equivalent tools Guidelines in line development - essential (design, construct and operations)**
~~Code in all building design and operation aspects as part of Architecture design codes/requirements like paid by Body Corporate~~
- Ownership of utilities and ongoing running costs
- ~~- Onsite~~
- Percentage of roof to be solar panel (or equivalent)/compatible
- Orientation of the buildings to enhance solar, wind or shade issues **that will reduce energy use**
- **Energy systems for the lots to** Must tap into the estate infrastructure **to enable re-usable energy to be put back into the grid. Encourage on site use of renewable energy within lots (no choice)** – water power etc.
- Guaranteed core supply at all times – renewable important but only add-ons to viability considerations
- Green roof, **green walls**

- Clear visual **statements or indicators** indication on-estate to show 'green agenda' (solar panels, wind turbines, water tanks)
- ~~— Body Corporate/Unit Corporate — explore further~~
- ~~— Ongoing reduced costs~~
- ~~— Management Plan~~
- ~~— Incentivise~~
- ~~— Water trading~~
- ~~— Visibility~~
- ~~— Integration in terms of cooling/heating~~
- ~~— Regular auditing of implementation of the Management Plan~~
- ~~— Building orientation~~
- ~~— Minimise parking/communal parking~~
- ~~— Road layout~~
- ~~— Build structures which integrate into the landscaping~~
- ~~— Integrated into the natural and built development/built locale~~
- ~~— No irrigation landscape~~
- Low energy cooling/heating systems
- **Landscape not to compromise renewable energy options**
- **Options to embrace future technology options**
- **Mandate water tanks**
- **Future proof building design and reticulation to take advantage of future new technologies**
- **Provision of cycleway, parking, walking facilities and change rooms**
- ~~— Deciduous trees~~
- ~~— Plantings close to buildings/shading~~
- ~~— Orientation — solar~~
- ~~— Roof wall/gardens~~
- ~~— Economic balance~~
- ~~— Onsite capture and off scale~~
- ~~— Multiple Body Corporates/overarching community title~~
- Individual sub-metering
- ~~— Sourcing local materials~~
- ~~— Recycling, use of on site materials~~
- ~~— Centralised stock pile locations~~
- ~~— Mitigation measures, controlled vehicle movements~~
- ~~— On-site materials maximised~~
- ~~— Use of non-potable water~~
- ~~— Protection of existing native vegetation for incorporation into the design layout~~
- ~~— Construction overseen by environmental supervisor~~
- ~~— Explore new technology re road surfaces producing energy on impact (poizo)~~
- Hybrid vehicles **encouraged, car pooling and shuttle bus**

- **Use of energy efficient electrical appliances throughout the building (this does not apply to business operation)**
- **Co-ordinated waste management and re-cycling opportunities**
- **Sub-metering**
- ~~Mandate solar hot water~~
- ~~Energy efficient street lights~~
- ~~Non-potable water used encouraged for most uses~~
- ~~Excess water (grey) to use for heating/cooling purposes within buildings~~

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DAY 1 - GROUP 2: WATER

Part 1: Control Group Original with Rotation Comments

The ACT is expected to experience little change in total annual rainfall, but ... wetter conditions in summer and autumn, ... drier conditions in winter and spring, and more intense events. Greater runoff from storms and higher evaporation from overall higher temperatures will lead to less water being available for consumption both by the community and the natural environment and decreases in water quality ... Droughts are likely to become more frequent and more severe... Water resources are likely to be further stressed due to projected growth in demand from progressive growth and climate-driven changes in supply for irrigation, cities, industry and environmental flows. [This] change in annual rainfall, combined with higher evaporation and increased demand would reduce run-off into rivers, leading to decreases of up to 20 percent in the ACT's Cotter and Googong catchments.

The ACT Climate Change Strategy 2007 - 2025

Starter List:

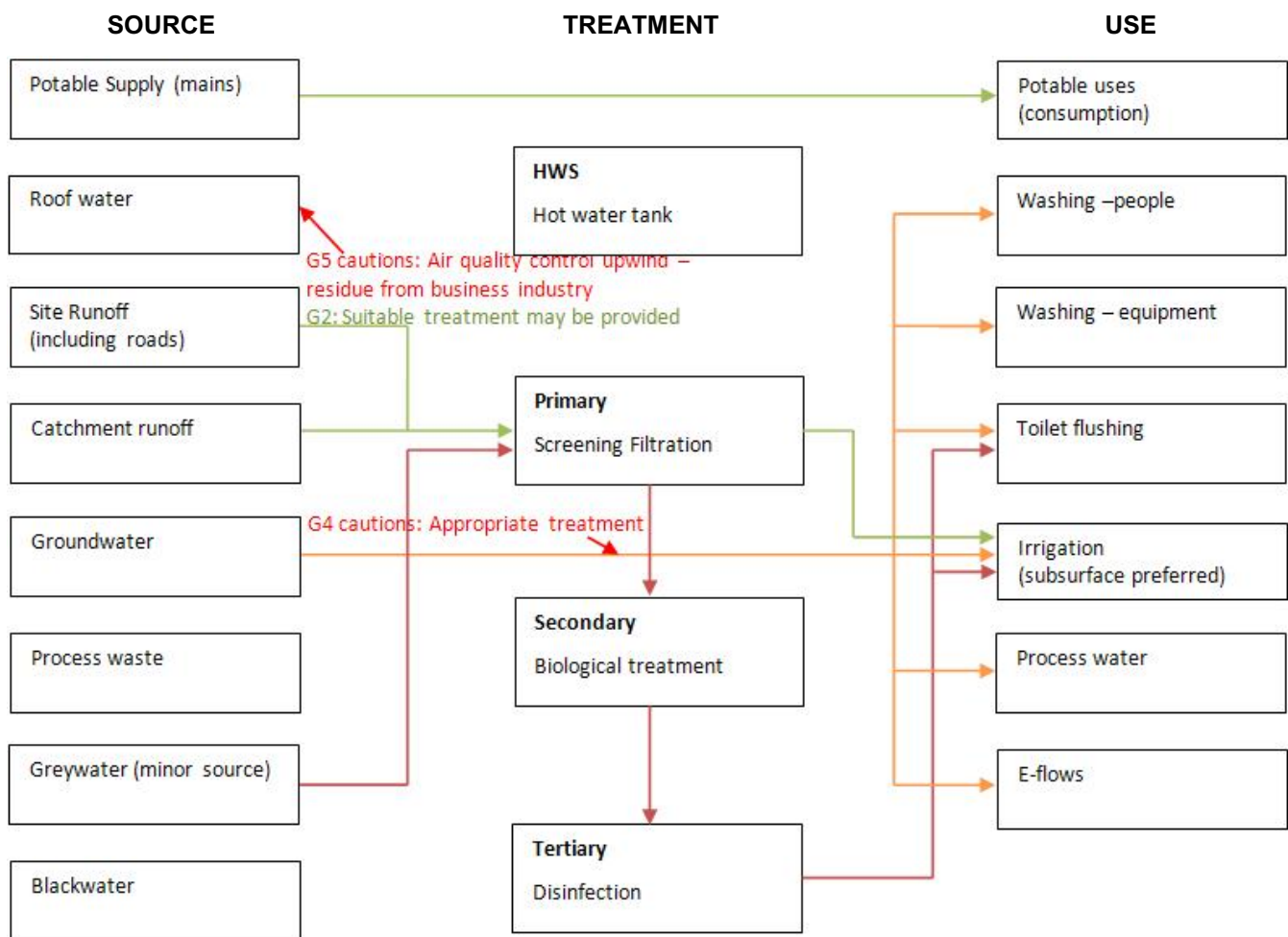
- Ensure stormwater minimisation and management is used, including onsite (**G5:and detention**) and retention and treatment to remove pollutants and allow reuse.
- Ensure rainwater is collected, conserved, treated and reused on site (**G5: and offsite?**) in a closed loop system where feasible [stormwater harvesting, rainwater harvesting].
- Ensure waterway rehabilitation occurs where possible through integrated ecological and landscape planning.
- Ensure low maintenance and reduced costs by displacing (**G5: stormwater**) infrastructure with natural systems where feasible
- Consider moats or ponds as buffers and emergency water supply (to separate buildings from possible fire or fuel sources, on or off site). (**G4 Caution: Moats or shallow ponds may not be efficient due to evaporation, G4: Shallow ponds can be used for UV treatment with moving shallow waterways for water re-use**)
- Wastewater treatment and (optional) reuse, including 'sewer mining' for evaporative cooling options.
- **G6: Consider Body Corporate/Community Title to deliver water recycling systems**

Additional list by workshop participants:

- Water use efficiency (fit for purpose; fixtures/fittings) (G4 Caution: Durability may be an issue, suited to purpose?)
- Potable water substitution throughout estate and on individual lots (stormwater, grey-water, black-water). (G1 Caution: Approvals and agency acceptance, G3: Potable water substitution where practical throughout site and on individual sites, G4 Caution: Refer to the Water Resources Act, G5 Caution: health risks with black water?, G6 Caution: Consider energy costs, and lack of reliability as to contents of industrial sewerage flow, as well as the economics of black-water/grey-water treatment, G6: substitute or export treated grey water, provide dual system)
- Consider distributed and centralised options for all substitutes (G3: Preferred option is block recycling for this Greenfield site, as rainwater tanks are more efficient than centrally reticulation back to each site, G6 Caution: Vulnerable to changes in water pricing)
- Aim to achieve a more natural hydrological regime (low and high flows)
- Improved stormwater management quality and quantity (G1: WSUD, G3: Stormwater management efficiency must be qualified – rainwater tanks for each development to capture maximum amount of water from the site and/or capture water within the estate as part of a reticulated system)
- Maintain and improve riparian corridors
- Use natural and/or less infrastructure intensive systems (G3: natural and less intensive infrastructure such as grassed swales preferred, G4: Use natural landscape to collect/manage water runoff)
- Investigate groundwater options including aquifer storage and recovery/reuse (ASR) and aquifer storage transfer and reuse (ASTR) (G3: Groundwater system will need to be looked at as part of the greater ground water system (into NSA and Valley) and should not be regarded as only site specific, G4 Caution: Contamination issues on site and refer to Water Resources Act, G5 Caution: Health caution of effluent quality – pharmaceuticals, G6 Caution: Major issue with affecting natural systems, must be cautious with sustainable yields, modelling contamination)
- Use triple bottom line techniques in analysis and presentation of options
- Full remediation of soils and groundwater in the area due to any contaminating activities previously undertaken
- Provision for third pipe throughout (for potential future use)
- Ensure guaranteed management.
- G1: Integrated water cycle management (Lot Scale: Water efficiency, reusing water and emissions control; Park Scale: Storm water management, waste water management, landscaping water efficiency)
- G1: Water and drought resistant landscaping
- G1: Green roof (reduced roof run-off) plus reduce A/C or heat reduction needs (applies to landscaping)
- G1: Green Star compliance (related to water use ↔ energy use)
- G3: Post and pre development water use monitored and demonstrated
- G3: Net balance in water use or minimal use
- G3: Salinity to be investigated
- G3: Runoff to be retained onsite during construction
- G3: Identify site water issues.
- G4: Passive water systems using gravity - use natural landscape to collect/manage water runoff
- G4: Need a corporate identity to manage water use/quality/ and treatment
- G4: ACT Water policy document, Water leaving site is a good quality (rural quality)
- G4: Waterway – Water Sensitive Design General Code (ACTPLA Document)
- G4: Use new methods e.g. broken/permeable kerbs
- G4: Design for wet season as well as dry
- G6: Peak stormwater discharge at pre-development levels
- G6: Plan floodway's through site to avoid property damage
- G6: Use of sediment basin for construction water and landscape watering (licence may be required)

- G6: Consider embodied water in goods produced
- G6: Consider energy use in water treatment and reclaiming
- G6: Retain estate to retain natural watercourses to help filter stormwater for sediment and nutrient control
- G6: System needs to be reliable for fire fighting.

Control Group Diagram



DAY 1 - GROUP 2: WATER

Part 2: Control Group Final Alterations

The ACT is expected to experience little change in total annual rainfall, but ... wetter conditions in summer and autumn, ... drier conditions in winter and spring, and more intense events. Greater runoff from storms and higher evaporation from overall higher temperatures will lead to less water being available for consumption both by the community and the natural environment and decreases in water quality ... Droughts are likely to become more frequent and more severe... Water resources are likely to be further stressed due to projected growth in demand from progressive growth and climate-driven changes in supply for irrigation, cities, industry and environmental flows. [This] change in annual rainfall, combined with higher evaporation and increased demand would reduce run-off into rivers, leading to decreases of up to 20 percent in the ACT's Cotter and Googong catchments.

The ACT Climate Change Strategy 2007 - 2025

Starter List:

- Ensure stormwater ~~minimisation~~ and effective management is used, including onsite detention and retention and treatment to remove pollutants and allow reuse.
- Ensure rainwater is collected, conserved, treated and reused on site in a closed loop system where feasible [stormwater harvesting, rainwater harvesting].
- Ensure waterway rehabilitation occurs where possible through integrated ecological and landscape planning.
- Ensure low maintenance and reduced costs by displacing infrastructure with natural systems where feasible.
- ~~- Consider moats or ponds as buffers and emergency water supply (to separate buildings from possible fire or fuel sources, on or off site). (G4 Caution: Moats or shallow ponds may not be efficient due to evaporation, G4: Shallow ponds can be used for UV treatment with moving shallow waterways for water reuse)~~
- Wastewater treatment and (optional) reuse, including 'sewer mining' for evaporative cooling options.

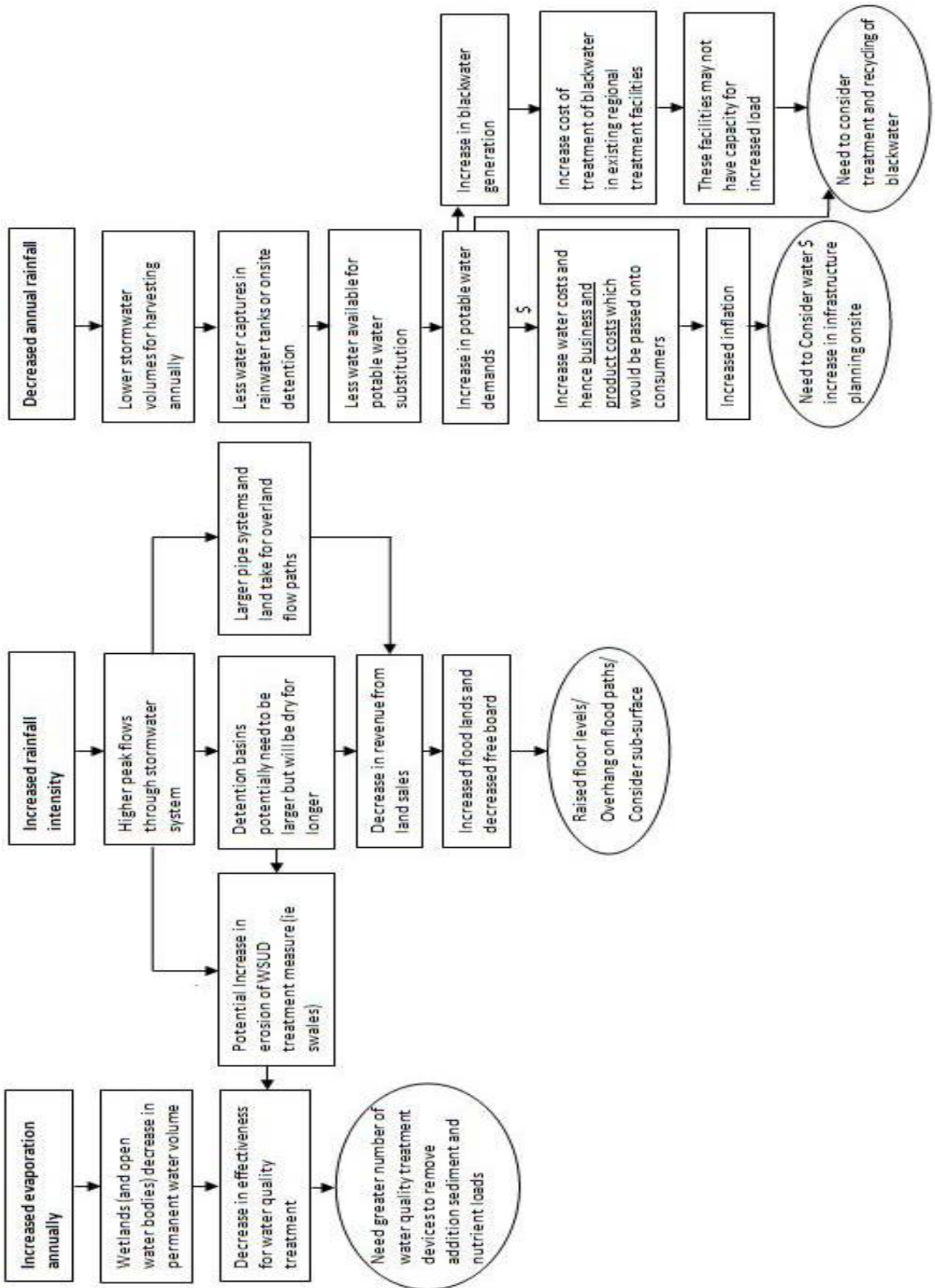
Additional list by workshop participants:

(Bold text below designates alterations made by the control group in the final session)

- Take into consideration potential impacts of climate change for all investigations
- Water use efficiency (fit for purpose; fixtures/fittings) (G4 Caution: Durability may be an issue, suited to purpose?)
- Integrated water cycle management to be applied on-lot and throughout estate
- Potable water substitution throughout estate and on individual lots (stormwater, grey-water, black-water) **to be applied on-lot and throughout estate** (G1 Caution: Approvals and agency acceptance, G3: Potable water substitution where practical throughout site and on individual sites, G4 Caution: Refer to the Water Resources Act, groundwater only and we can change the Act, G5 Caution: health risks with black water? In future only, G6 Caution: Consider energy costs, and lack of reliability as to contents of industrial sewerage flow, as well as the economics of black-water/grey-water treatment, TBL Analysis, G6: substitute or export treated grey water, provide dual system)
- ~~- Consider distributed and centralised options for all substitutes (G3: Preferred option is block recycling for this Greenfield site, as rainwater tanks are more efficient than centrally reticulation back to each site TBL investigate, G6 Caution: Vulnerable to changes in water pricing)~~
- Aim to achieve a more natural hydrological regime (low and high flows) **Maintain existing conditions of hydrologic regime**

- Maintain and improve riparian corridors
- **Water Sensitive Urban Design (WSUD) to be applied to** improve stormwater management quality and quantity (G1: WSUD, G3: Stormwater management efficiency must be qualified – rainwater tanks for each development to capture maximum amount of water from the site and/or capture water within the estate as part of a reticulated system) through the incorporation of more natural conveyance mechanisms and less hard engineering infrastructure. (G3: natural and less intensive infrastructure such as grassed swales preferred. G4: Use natural landscape to collect/manage water runoff)
- Investigate groundwater options including aquifer storage, **recharge** and recovery/reuse, **will need to consider potential contamination of groundwater and treatment options required for end use.** (G3: Groundwater system will need to be looked at as part of the greater ground water system (into NSA and Valley) and should not be regarded as only site specific, **G4 Caution: Contamination issues on site and refer to Water Resources Act, groundwater only and we can change the Act, G5 Caution: Health caution of effluent quality – pharmaceuticals, Appropriate water sources only, G6 Caution: Major issue with affecting natural systems, must be cautious with sustainable yields, modelling contamination**)
- Use triple bottom line techniques in analysis and presentation of options **to determine feasibility**
- Provision for third pipe throughout **estate in anticipation** of potential future use **of recycled water**
- **Determine whether WSUD and IWCM system is to be owned, maintained and monitored by the ACT Government or a body corporate**
- **Soil conditions, including contamination and salinity (although soil map indicates salinity is not prevalent) to be taken into consideration during selection of appropriate WSUD treatment measures**
- Full remediation of soils and groundwater in the area due to any contaminating activities previously undertaken
- Ensure guaranteed management.
- *G1: Integrated water cycle management (Lot Scale: Water efficiency, reusing water and emissions control; Park Scale: Storm water management, waste water management, landscaping water efficiency)*
- *G1: Water and drought resistant landscaping*
- *G1: Green roof (reduced roof run-off) plus reduce A/C or heat reduction needs (applies to landscaping)*
- *G1: Green Star compliance (related to water use ↔ energy use)*
- *G3: Post and pre development water use monitored and demonstrated*
- *G3: Net balance in water use or minimal use*
- *G3: Salinity to be investigated*
- *G3: Runoff to be retained onsite during construction*
- *G3: Identify site water issues.*
- *G4: Passive water systems using gravity - use natural landscape to collect/manage water runoff*
- *G4: Need a corporate identity to manage water use/quality/ and treatment* **Management aspects**
- *G4: ACT Water policy document, Water leaving site is a good quality (rural quality)*
- *G4: Waterway – Water Sensitive Design General Code (ACTPLA Document)*
- *G4: Use new methods e.g. broken/permeable kerbs (WSUD)*
- *G4: Design for wet season as well as dry (assuming there is a wet season)*
- *G6: Consider body corporate/community title to deliver water recycling systems*
- *G6: Peak stormwater discharge at pre-development levels*
- *G6: Plan floodway's through site to avoid property damage*
- *G6: Use of sediment basin for construction water, landscape watering (licence may be required) groundwater only*
- *G6: Consider embodied water in goods produced; consider energy use in water treatment and reclaiming*
- *G6: Retain estate to retain natural watercourses to help filter stormwater for sediment and nutrient control*
- *G6: System needs to be reliable for fire fighting.*

Potential Climate Change Impacts



Document Guide:

This document provides an 'as written' record of the workshop outcomes for this thematic area. The text has been annotated as follows:

Part 1: Control Group Original with Rotation Comments

This text presents an 'as written' summary of the control group's considerations, and comments provided by other groups, where:

- Black text shows the control group's work.
- Blue text shows where other groups have made comments regarding text that could be enhanced, from the perspective of that group's thematic area. These comments are annotated by 'GX' where X is the group number corresponding to: 1. Energy, 2. Water, 3. Transport, 4. Landscaping, 5. Amenity & Security, 6. Subdivision Construction.
- Red text shows where the other groups have made cautionary comments, from the perspective of that group's thematic area.

Part 2: Control Group Final Alterations

The second part presents an 'as written' summary of the control group's final alterations, after they reviewed comments by all of the other groups. **Bolded Black** text and 'strikethrough' text shows the control group's final annotations.

DAY 2 - GROUP 2: WATER

Part 1: Control Group Original with Rotation Comments

The ACT is expected to experience little change in total annual rainfall, but ... wetter conditions in summer and autumn, ... drier conditions in winter and spring, and more intense events. Greater runoff from storms and higher evaporation from overall higher temperatures will lead to less water being available for consumption both by the community and the natural environment and decreases in water quality ... Droughts are likely to become more frequent and more severe... Water resources are likely to be further stressed due to projected growth in demand from progressive growth and climate-driven changes in supply for irrigation, cities, industry and environmental flows. [This] change in annual rainfall, combined with higher evaporation and increased demand would reduce run-off into rivers, leading to decreases of up to 20 percent in the ACT's Cotter and Googong catchments.

The ACT Climate Change Strategy 2007 - 2025

Starter List:

- Sufficient quantities of water to service office functions should be collected from on site. Install water saving devices and biological grey-water treatment for all office-related water systems (sinks, showers, kitchens, dual supply piping etc).
- Water for open space irrigation should be collected from on-site sources, such as roofs, parking areas facades, stormwater runoff, sewerage and clean wastewater from on site facilities.
- Ensure adequate information is used in developing the Concept & Master Plan to include options to increase resource efficiency in new (or existing) industries.
- Apply potential for closed resource loops and material flows between industries to reduce consumption and waste.
- Develop strategy to attract or create new industries that recover or reuse resources generated by the initial tenants of the park.

Additional list by workshop participants:

- Provision for monitoring and maintenance systems of WSUD and IWCM components (funding to 'body corporate' rather than ACT government responsibility)

- Post development flow to mimic pre development flows
- Post development water quality to replicate pre-development water quality
- Selection of endemic species for water quality treatment
- Water balance for site (and lots) to consider daily demand including internal and external users
- Inclusion of three pipe system to include recycled water for internal and external users
- Incorporation of groundwater storage and recharge, recycle and reuse to supplement potable water substitution
- Climate change to be taken in to consideration in selection If appropriate WSUD and IWCM measures
- Road layout to follow topography to maximise benefits of WSUD measures and align with overland flow patterns and open space
- Maintain and improve riparian corridors
- Mandated water storage facilities (i.e. water tanks)

Additions from discussion with other groups:

- Lot layout and car parking to be broken up to incorporate WSUD through out
- Road drainage to include turnouts into rain gardens
- Sediment and erosion control measures during construction phase to maximise storm water reuse
- Do study to determine appropriate water quality treatment levels.

DAY 2 - GROUP 2: WATER

Part 2: Control Group Final Alterations

The ACT is expected to experience little change in total annual rainfall, but ... wetter conditions in summer and autumn, ... drier conditions in winter and spring, and more intense events. Greater runoff from storms and higher evaporation from overall higher temperatures will lead to less water being available for consumption both by the community and the natural environment and decreases in water quality ... Droughts are likely to become more frequent and more severe... Water resources are likely to be further stressed due to projected growth in demand from progressive growth and climate-driven changes in supply for irrigation, cities, industry and environmental flows. [This] change in annual rainfall, combined with higher evaporation and increased demand would reduce run-off into rivers, leading to decreases of up to 20 percent in the ACT's Cotter and Googong catchments.

The ACT Climate Change Strategy 2007 - 2025

Starter List:

- Sufficient quantities of water to service office functions should be collected from on site. Install water saving devices and biological grey-water treatment for all office-related water systems (sinks, showers, kitchens, dual supply piping etc). (i.e. potential for third pipe.)
- Water for open space irrigation should be collected from on-site sources, such as roofs, parking areas facades, stormwater runoff, sewerage and clean wastewater from on site facilities.
- ~~Ensure adequate information is used in developing The Concept & Master Plan to include options to increase resource~~ water efficiency in new (or existing) industries.
- Apply potential for closed ~~resource loops and material flows between industries~~ water system to reduce consumption and waste.
- Develop strategy to attract or create new industries that recover or reuse ~~resources~~ water generated by the initial ~~tenants of the park~~ within the park.

Final list by control group:

- Provision for monitoring and maintenance systems of WSUD and IWCM components (~~funding to 'body corporate' rather than ACT government responsibility~~)
- **Study to determine water quality targets and appropriate water quality treatment levels** for post development flow to mimic pre-development flows, and post development water quality to replicate pre-development water quality
- Selection of endemic species for water quality treatment, **including drought tolerance and frost hardy,**
- Water balance for site (and lots) to consider daily demand including internal and external users
- Inclusion of three pipe system to include recycled water for internal and external users
- Incorporation of groundwater storage, recharge, recycle and reuse to supplement potable water substitution
- Climate change to be taken in to consideration in selection If appropriate WSUD and IWCM measures
- Road layout to follow topography to maximise benefits of WSUD measures and align with overland flow patterns and open space
- Maintain and improve riparian corridors
- ~~Mandated water storage facilities (i.e. water tanks)~~
- Lot layout and car parking to be broken up to incorporate WSUD throughout
- Road drainage to include turnouts into rain gardens
- Sediment and erosion control measures during construction phase to maximise storm water reuse
- ~~Do study to determine appropriate water quality treatment levels.~~

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Part 2: Control Group Final Alterations

The second part presents an 'as written' summary of the control group's final alterations, after they reviewed comments by all of the other groups. **Bolded Black** text and 'strikethrough' text shows the control group's final annotations.

DAY 1 - GROUP 3: TRANSPORT

Part 1: Control Group Original with Rotation Comments

The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance ... Transport is estimated to produce about a quarter of all greenhouse emissions in the ACT... The pattern of land use has a major impact on travel needs and the type of transport people use... The ACT Government's land use planning processes will include systemic integration of transport planning at both the strategic and individual development levels.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- [Alternate Modes] Ensure access to, and provide incentives for, alternative transport modes, with priority on low impact transport.
- [Alternate Modes] Provide convenient public access and visitor parking including bike storage, showers and change rooms to encourage commuting and recreational biking, jogging, etc. (G4: Bike paths)
- [Local Network] Access to existing transport and freight distribution networks, Capitalising on materials handling, storage capacity and other infrastructure requirements.
- [Multimode] Road design and traffic management systems based on safe vehicle, pedestrian and cycle movement.
- [Pedestrian Friendly] Provide an environment for pedestrians that is safe, convenient, easy to navigate (i.e. design for visual connectivity), and accommodates special needs.
- [Wear and Tear] Reduce Industrial Truck Transport Load and wear and tear on the site by ensuring where possible Sharing of Delivery and Pick Up sites onsite.
- Integration into ACT park and ride strategy. (G5 Caution: ?)
- G1: Greenstar accreditation

Additional list by workshop participants:

- Queanbeyan connection to site
- Trade connections (G4 Caution: Across railway? Potentially a large amount of traffic to go through Hume, G2: plus Googong, G5: plus Mugga/Monaro)

- Existing infrastructure (G4 Caution: Without compromising traffic availability)
- Existing developments (G4: and links to other suburbs to reduce local isolation)
- Broad-acre structure/studies
- Jurisdictions QCC/ACT
- Mix with existing and industrial zones
- Existing traffic studies
- Existing problems
- Fixed freight routes (G2 Caution: Feasible?)
- Large site leads to take up over time
- Upgrade ability of construction (car park depth)
- Emergency (industrial) services access
- Industrial restrictions constraints
- Alternate transport notes
- Limitations/opportunities of bike use (G6: industrial/commercial uses need to be encouraged to provide amenities/parking)
- Dedicated micro-buses for workers (small and regular)
- Better public transport - light rail (G2 Caution: Feasibility? Lost/patronage? Generally expensive, inflexible and potentially high greenhouse footprint, G6: freight rail)
- Use existing transport movement corridor
- Use drainage channels for green routes through the site (G2: i.e. Riparian corridor protection/enhancement)
- Resource recovery centre
- Security concerns (vandals) – isolation
- Reduce air pollution
- Street lighting
- Integrating commercial applications
- 70ha → 1000+ employees → moderate commercial shopping centre → central location → sports/passive recreation (G2 Caution: Wrong location – remote from residential areas)
- Hours of operation affect access → variable peaks (wide peaks)
- Intrusion of light to abating areas
- Body corporate contributes to (bus) integration transport options to the site → reduces the need for car parking
- Single parking station multi-storey → reduces footprint → shuttle around the site
- Commercial bicycles and shelters for a fee
- Commercial childcare at shopping/commercial centre (increase density of services to reduce trips out of the centre/site) (G6: Consider mixed use options – some residential)
- Helipad
- Cater for different modes of transport to work
 - Enforced share driving!!! (G2 Caution: how do you enforce?, G1 Caution: Encourage share driving, G5 Caution: How? – encourage share driving)
 - Transit lanes (G2: on Monaro Hwy, G5: increased use of T2 or T3 lanes)
 - Separate truck lanes
 - Cars with > 3 people (G2: transit lanes - as above)
 - (G1: Shuttle bus service – free service interface with town centre)
 - (G5: Separated bus lanes)

- Internal circulation routes through the site and journey to Trade Employment Precinct (TEP) (G2: plus Googong)
- Centrally located bike facilities spread across the site and TEP
- Integration of public transport (frequently in peaks) for the site
- Wider streets for freight/heavy transport and manoeuvrability for loading and unloading operations
- Taxi operations and control parking pick up (G2 Caution: ?)
- Scope to load/unload on site (double handling will not be acceptable for control operations)
- Waste collection facilitation
- Edge roads/access collection points in an emergency (G2: edge road along NSW border side for access, emergency access and as a buffer, G6 Caution: while edge roads create good amenity and access to open space, however, the costs are higher – environment and money - as it is only loaded on one side)
- Disabled parking access
- Security
 - lighting of parks
 - As much overlooking though building design and layout as possible
 - Illuminate bus stops and access to bus stops for people using the area at night
 - Promotion of neighbourhood works with security of the site/area/buildings
- Incorporate Hill Station and Canberra's first air strip, and trade into the sense of community/neighbourhood into the design of the Estate
- Plan for development of transport options; using the rail line as a corridor for light rail infrastructure
- G1: *Interregional communication solutions: (Queanbeyan)*
 - *B Double-access, separation cars-transit where possible*
 - *Source service and commercial use on site/in the area! Get down the need for transport! Mixed use.*
 - *Bikeways – encourage bike use by providing safe and weatherproofed bike parking (+ showers) close to goal points and entries.*
 - *Centrally managed carpooling*
 - *Major transport routes – railway a must*
 - *Inter-modal site! Specifically designed transport facility that facilitates the transfer of goods from rail to truck, based on rail connection – facility for part of the site, changing over goods one mode to another*
- *G2 Caution: Big-picture strategic issue of 25% residents in West of city and 75% employment in East. This development exacerbates this situation – not good!*
- *G2: Stronger public transport link for this area – suggest Tugg-Hume-Fyshwick-Airport-City*
- *G5: Coordination of traffic control lights*
- *G5: Recognition of future networks and connections into Monaro/Mugga and Estate*
- *G5: Light rail shuttle opportunities using existing corridors – Fyshwick/Queanbeyan/Defence HQ/Hume*
- *G6 Caution: Ensure that the Hume West estate does not reduce traffic capacity on the Monaro Highway*
- *G6: Consider what the Hume West estate looks like from the Monaro Highway*
- *G6: Flight paths to the airport could be over the Hume to free up land at Tralee for development*
- *G6: Use of railway for freight transfer to match with expanded airport*
- *G6: Extend inter-town public transport route – already planned but does not go near the Hume*

DAY 1 - GROUP 3: TRANSPORT

Part 2: Control Group Final Alterations

The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance ... Transport is estimated to produce about a quarter of all greenhouse emissions in the ACT... The pattern of land use has a major impact on travel needs and the type of transport people use... The ACT Government's land use planning processes will include systemic integration of transport planning at both the strategic and individual development levels.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- [Alternate Modes] Ensure access to, and provide incentives for, alternative transport modes, with priority on low impact transport.
- [Alternate Modes] Provide convenient public access and visitor parking including bike storage, showers and change rooms to encourage commuting and recreational biking, jogging, etc. (G4: Bike paths)
- [Local Network] Access to existing transport and freight distribution networks, Capitalising on materials handling, storage capacity and other infrastructure requirements.
- [Multimode] Road design and traffic management systems based on safe vehicle, pedestrian and cycle movement.
- [Pedestrian Friendly] Provide an environment for pedestrians that is safe, convenient, easy to navigate (ie design for visual connectivity), and accommodates special needs.
- [Wear and Tear] Reduce Industrial Truck Transport Load and wear and tear on the site by ensuring where possible Sharing of Delivery and Pick Up sites onsite.
- Integration into ACT park and ride strategy. (G5 Caution: ?)
- **G1: Greenstar accreditation – How does this relate to transportation?**

Additional list by workshop participants:

(Bold text below designates alterations made by the control group in the final session)

- Queanbeyan connection to site
- Trade connections (G4 Caution: Across railway? Potentially a large amount of traffic to go through Hume, G2: plus Googong, G5: plus Mugga/Monaro)
- Existing infrastructure (G4 Caution: Without compromising traffic availability) **Work with existing infrastructure and developments to address capacity and create/maintain sense of community**
- Existing developments (G4: and links to other suburbs to reduce local isolation)
- Broad-acre structure/studies
- Jurisdictions QCC/ACT
- Mix with existing and industrial zones
- Existing traffic studies
- Existing problems
- Fixed freight routes (G2 Caution: Feasible?)
- Large site leads to take up over time
- Upgrade ability of construction (car park depth)
- Emergency (industrial) services access
- Industrial restrictions constraints

- Alternate transport modes
- Limitations/opportunities of bike use (G6: industrial/commercial uses need to be encouraged to provide amenities/parking)
- Dedicated micro-buses for workers (small and regular)
- Better public transport - light rail (G2 Caution: Feasibility? Lost/patronage? Generally expensive, inflexible and potentially high greenhouse footprint, G6: freight rail) **Issue of hours of operation**
- Use existing transport movement corridor
- Use drainage channels for green routes through the site (G2: i.e. Riparian corridor protection/enhancement)
- Resource recovery centre
- Security concerns (vandals) – isolation
- Reduce air pollution
- Street lighting
- Integrating commercial applications
- 70ha → 1000+ employees → moderate commercial shopping centre → central location → sports/passive recreation (G2 Caution: Wrong location – remote from residential areas)
- Hours of operation affect access → variable peaks (wide peaks)
- Intrusion of light to abating areas
- Body corporate contributes to (bus) integration transport options to the site → reduces the need for car parking
- Single parking station multi-storey → reduces footprint → shuttle around the site
- Commercial bicycles and shelters for a fee
- Commercial childcare at shopping/commercial centre (increase density of services to reduce trips out of the centre/site) (G6: Consider mixed use options – some residential **Consider theory**)
- Helipad
- Cater for different modes of transport to work - **Shift our thinking from ‘one per car’**
 - Enforced share driving!!! (G2 Caution: how do you enforce?, G1 Caution: Encourage share driving, G5 Caution: How? – encourage share driving)
 - Transit lanes (G2: on Monaro Hwy, G5: Increased use of T2 and T3 lanes larger than site)
 - Separate truck lanes
 - Cars with > 3 people (G2: transit lanes - as above)
 - (G1: Shuttle bus service – free service interface with town centre)
 - (G5: Separated bus lanes not on this site - larger than site)
- **Integrate freight/bicycle/walk/drive/wildlife into site (wide streets) – B-double access issues?**
- Internal circulation routes through the site and journey to Trade Employment Precinct (TEP) (G2: plus Googong)
- Centrally located bike facilities spread across the site and TEP
- Integration of public transport (frequently in peaks) for the site
- Wider streets for freight/heavy transport and manoeuvrability for loading and unloading operations
- Taxi operations and control parking pick up (G2 Caution: ?)
- Scope to load/unload on site (double handling will not be acceptable for control operations)
- Waste collection facilitation
- Edge roads/access collection points in an emergency (G2: edge road along NSW border side for access, emergency access and as a buffer, G6 Caution: while edge roads create good amenity and access to open space, however, the costs are higher – environment and money - as it is only loaded on one side)
- Disabled parking access

- Security
 - lighting of parks
 - as much overlooking though building design and layout as possible
 - illuminate bus stops and access to bus stops for people using the area at night
 - promotion of neighbourhood works with security of the site/area/buildings
- Incorporate Hill Station and Canberra's first air strip, and trade into the sense of community/neighbourhood into the design of the Estate
- Plan for development of transport options; using the rail line as a corridor for light rail infrastructure
- **Early transport decisions have big, long-term impacts (macro scale)**
- **Coordinate cross-border opportunities, challenges and regulations**
- **Future-plan (Future 'proof') without a crystal ball (bus - Queanbeyan is coming)**
- **Centralise car parking but spread bicycle facilities**
- **Investigate other sustainable developments (lessons learned)**
- *G1: Interregional communication solutions (Queanbeyan)*
 - *B Double-access, separation cars-transit where possible ? Maybe possible for part side*
 - *Source service and commercial use on site/in the area! ~~Get down~~ Reduce the need for transport! Mixed use.*
 - *Bikeways – encourage bike use by providing safe and weatherproofed bike parking (+ showers) close to goal points and entries.*
 - *Centrally managed carpooling **By who?***
 - *Major transport routes — railway a must **Not likely in this environment – no demand***
 - *Inter-modal site! Specifically designed transport facility that facilitates the transfer of goods from rail to truck, based on rail connection — facility for part of the site, changing over goods one mode to another **Not feasible/economic***
- *G2 Caution: Big-picture strategic issue of 25% residents in West of city and 75% employment in East. This development exacerbates this situation – not good!*
- *G2: Stronger public transport link for this area – suggest Tugg-Hume-Fyshwick-Airport-City and bus link to Queanbeyan*
- *G5: Coordination of traffic control lights **on the highway***
- *G5: Recognition of future networks and connections into Monaro/Mugga and Estate*
- *G5: Light rail shuttle opportunities using existing corridors – Fyshwick/Queanbeyan/Defence HQ/Hume ('Big Light')*
- *G6 Caution: Ensure that the Hume West estate does not reduce traffic capacity on the Monaro Highway*
- *G6: Consider what the Hume West estate looks like from the Monaro Highway*
- *G6: Flight paths to the airport could be over the Hume to free up land at Tralee for development*
- *G6: Use of railway for freight transfer to match with expanded airport **Not possible – move mounds***
- *G6: Extend inter-town public transport route — already planned but does not go near the Hume **Not on the direct routes it is a different level to serve by IPT Route***

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Part 2: Control Group Final Alterations

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DAY 2 - GROUP 3: TRANSPORT

Part 1: Control Group Original with Rotation Comments

The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance ... Transport is estimated to produce about a quarter of all greenhouse emissions in the ACT... The pattern of land use has a major impact on travel needs and the type of transport people use... The ACT Government's land use planning processes will include systemic integration of transport planning at both the strategic and individual development levels.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- Establish paid staff parking to encourage and subsidize carpooling, green fleet, shared van or other car use reduction programs.
- Provide convenient public access and visitor parking including bike storage, showers and change rooms to encourage commuting and recreational biking, jogging, etc.
- Ensure accessibility of buildings, open space, transport modes and pathways for disabled or people with special needs (e.g. wheel chairs).
- Institute system of physical and/or financial incentives to reduce fossil fuel use and encourage public modes of transportation.
- Provide adequate temporary parking for bikes near each building, and secure bike storage for commuters, protected from the elements.
- Industrial and Personal Transport not to be within 20 metres of each other.

Additional list by workshop participants:

Transport Principles:

- Contribute to shuttle service levy
- Development links are coordinated with all forms of access/connects to pedestrian access
- Each development in >Xm² provides amenities for bicycle access
- Disabled and visitor parking only provided on site

- Pedestrian access to rear green path link/system for recreation and access
- Development to accord with Hume West master transport plan
- Building development to reflect transport access planning
 - Orientation
 - Loading bay
 - Storage
- Storage not on or abutting public amenity
- Appropriate sites for heavy vehicle loading - re: distillation of sites to accord with use as set in overall master planning of development
- Areas of highest employment to be overlooking park/paths (addressing security)
- Contribution to maintenance of green space – cycle network paths and landscaping
- Invest/support staff incentives to reduce fossil fuel use (car pooling, light rail)
- Light rail into site/small bus acting like light rail or train
- Pedestrian permeability through site – address security

Additions from discussion with other groups:

- Light vehicles parking – permeable? Runoff – support?
- more pleasing (aesthetics) for people to walk/cycle (public art)
- Concentrating people and amenities promotes security
- Contribute to waste management/movement facilities (food?)
- Construct lots of green areas for aesthetics (to promote walking)
- Centralised parking promotes public/shared transport (park n ride)
- Not just in construct but management off site
- Low-emission/efficient buses
- Overland flow paths aligned with roads
- Integrate water design features with pedestrian and cycle paths (visibility/aesthetics)

DAY 2 - GROUP 3: TRANSPORT

Part 2: Control Group Final Alterations

The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance ... Transport is estimated to produce about a quarter of all greenhouse emissions in the ACT... The pattern of land use has a major impact on travel needs and the type of transport people use... The ACT Government's land use planning processes will include systemic integration of transport planning at both the strategic and individual development levels.

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Starter List:

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- Ensure accessibility of buildings, open space, transport modes and pathways for disabled or people with special needs (e.g. wheel chairs).
- Institute system of physical and/or financial incentives to reduce fossil fuel use and encourage public modes of transportation.
- Provide adequate temporary parking for bikes near each building, and secure bike storage for commuters, protected from the elements.
- Industrial and Personal Transport not to be within 20 metres of each other.

Final list by control group:

Transport Principles:

- Contribute to shuttle service levy
- Development links are coordinated with all forms of access/connects to pedestrian access
- Each development in >Xm² provides amenities for bicycle access
- Disabled and visitor parking only provided on site
- Pedestrian access to rear green path link/system for recreation and access
- Development to accord with Hume West master transport plan
- Building development to reflect transport access planning:
 - Orientation
 - Loading bay
 - Storage
- Storage not on or abutting public amenity
- Appropriate sites for heavy vehicle loading - re: distillation of sites to accord with use as set in overall master planning of development. **Heavy vehicle movement oriented to Monaro Highway - also to existing Hume developments with bus park to South**
- Areas of highest employment to be overlooking park/paths (addressing security)
- Contribution to maintenance of green space – cycle network paths and landscaping
- Invest/support staff incentives to reduce fossil fuel use (car pooling, light rail)
- Light rail into site/small bus acting like light rail or train

- Pedestrian permeability through site – address security
- Light vehicles parking – permeable? Runoff – support?
- More pleasing (aesthetics) for people to walk/cycle (public art)
- Concentrating people and amenities promotes security - **zone people near amenities (office to overlook bike paths etc.) – to connect to existing paths**
- Contribute to waste management/movement facilities (food?)
- Construct lots of green areas for aesthetics (to promote walking) and balance roads with green corridors and plant trees/landscaping with emphasis on sight lines for egress
- **Car parking:**
 - centralised parking promotes public/shared transport (park n ride)
 - **no car parking on roads**
 - **car park to be designed efficiently with Whole Systems Design (WSD) principles**
 - **minimise pavement areas – efficient car park design**
 - **Security on centralised parking**
- Not just in construct but management off site
- Low-emission/efficient buses
- Overland flow paths aligned with roads
- Integrate water design features with pedestrian and cycle paths (visibility/aesthetics)
 - **Design roads with contours**
 - **In balance with green areas**
 - **Capture water in car parks**
 - **Recycle water on lot - rainwater tanks etc.**
- Consider kerb design – WSD principles
- **Will Body Corporate pay for maintenance/re-construction for roads/paths/corridors?**

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DAY 1 - GROUP 4: LANDSCAPING

Part 1: Control Group Original with Rotation Comments

Changes in water availability, temperatures and bushfires will also affect our natural environment. Aquatic ecosystems are likely to be stressed. Local land ecosystems will be affected by decreasing water availability, increased bushfires and changes in the distribution and number of pests. Species that rely on a particular habitat and climate, such as the corroboree frog and many alpine and sub-alpine species, are likely to suffer and may eventually become extinct. Soil loss from drought, floods and degradation will increase, further stressing ecosystems and making sustainable land management increasingly important ...

The CSIRO predict increases in average wind-speeds across much of NSW in summer ... a greater fire risk is predicted. By 2020 the predicted number of days with very high or extreme fire danger could average 26-29 in Canberra (now 23).

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The urban forest is an important element of our city. Urban green areas provide corridors for species to move through and play a role in cooling the city and reducing our emissions.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- Water efficient landscaping and irrigation systems.
- Employ garden features such as arbours, planting strips and trellises to create legible pathways and 'place markers' to improve sense of place.
- Provide micro and macro biodiversity conservation corridors or areas to increase multi-functional and community values of the park (Ecosystem Connectivity maps).
- Ensure native planting is used to the greatest extent possible to support indigenous species and ecosystems (special consideration for fuel reduction characteristics and native plants that are not prone to fire). Small contribution to offsetting local emissions.
- **G5: Public art**

Additional list by workshop participants:

- Public art to establish identity
- Use natural heritage and cultural heritage to create recreation spaces and wild life connectivity (G2: Conservation areas yellow box, red gum etc. – EEC's)
- Encourage people to walk/cycle into and around estate (G3: how do we encourage people to walk? We agree this is a WSUD aim – difficult to encourage if people live distant to site/work, encouraging bikes around the site is recommended)
- WSUD including use of local native plant material (biodiversity) (G2: Endemic species, G2 Caution: nutrients for native plants? G5 Caution: mix of exotics and natives (edible landscape) – diversify fire risk mitigation)
- Look at biosphere reserves (big picture)
- Integrate buildings into landscape
- Light rail link (G2 Caution: Feasibility?)
- Contaminated groundwater – what is extent?
- Fire (G3: edge road treatment is a priority need – landscape must be evergreen/fuel loading treated (80/100m zones) – management issue, but who?, G5: develop as incremental edge considering full ultimate development)
 - Fire management zone/buffer (G5: fire retardant tree specimen options)
 - Cemetery/crematorium development may provide buffer, plus Monaro Hwy
 - (G5: manage fire risk and load off site)
- Habitat trees – often rated poor quality (G3: agree but how is this done? Balance needed between fire/emergency and habitat, must be in groups and on corridor, G5 Caution: safety concern within public spaces)
- Exceptional trees can be registered and not removed – some on site (G6 Caution: have to think about trade offs – will the tree impact on other environmental issues?)
- Opportunity to encourage endangered species (G2: conservation areas for EEC's, G3: protect endangered species, G5: relocate/regenerate outside)
- Provide wild life corridor connection with surrounding areas including on ridge in adjacent area (G2: incorporation with drainage/riparian corridors, G5 Caution: balance against alternative of enhancing corridors around urban area)
- Opportunity to restore creeks and look at bigger picture (G2: In conjunction with re-habitation of riparian corridor, G3 Caution: does it mean businesses who are part of the Park need to repair creek lines? what does restore the creek mean?, G5 Caution: restructure or divert?)
- To have big picture planning (outside our area) for environment
- See Canberra spatial plan (wild life connectivity) and water
- Action Plan 28 – grassy woodlands (Nature Conservation Act)
- ACTPLA has open space network maps – hills and ridges
- GIS layer for water ways (Water Unit)
- Integrate buildings with surroundings (G3 Caution: need clarification on how?)
- Place people want to be in
- Integrate with broader landscape e.g. Monaro Hwy (G3: integrate with QCC planning/trade)
- Native landscape/species around buildings, streets (G2: larger range of trees and shrubs throughout, trees to be located suitably)
- Incorporate heritage items into landscape design – well, houses, travelling stock routes
- Overlay layers of information before making decisions
- Use WSUD – swales, broken kerbs (G2: and rain gardens with low flow diversion to street landscaping with high flows to s/w system including ponds, G3 Caution: need more detail, G6 Caution: with parking and traffic control)
- Recreational paths/lunch spots making opportunity to enjoy natural environment
- Explain/interpret signage
- Underground buildings to conserve corridors

- Natural filtration of runoff water – using landscape (G2: using bio-retention)
- Look at opportunities for incorporating old Koppers block – if decontaminated would be good spot for building
- Can use roof water for industrial purposes (G2: and other potable uses)
- Water Resources Act restricts re-use of surface water – 10% (G2: may be able to get changes made to Act, G3: Increase 10% for reuse)
- No irrigation landscape (once established) (G2: install moisture sensors for irrigation systems, G6 Caution: why not? If recycled water is used?)
- Areas for recreation at lunchtime
- Fitness path/walking cycling path
- Café
- Encourage walking
- Connectivity and continuity of paths, verges
- Conflict between needs for large vehicles and pedestrians (G3: Reduce conflict)
- Double frontages to avoid backing onto spaces with low surveillance
- Pedestrian connections for recreation across Monaro Hwy near Isabella Drive (G3: Tralee)
- Light rail link to Canberra (G2 Caution: feasibility?)
- G1: Environmental Management plan needed (site wide EMS):
 - Biodiversity protection/enhancement – flora and fauna
 - Visual amenity/sense of place – cultural
 - Functionality
 - Water
 - Low maintenance
- G1 Caution: Life cycle management strategy required for this and all other elements
- G1: Hierarchy
 1. Protection – green corridors, significant trees, fauna (management plan), surface/groundwater
 2. Rehabilitation
 3. Enhancement – connectivity, bioregions, functional/amenity
- G3: Question irrigation by business only – dry load landscape for common land reserves
- G5: Landscape compatible with development i.e. air quality, runoff, dust etc?
- G6: Provide low maintenance landscape
- G6: Reduce verge widths to minimum requirements for infrastructure – less to manage in terms of landscaping
- G6: Body Corporate/Community Title to manage landscaped areas – may not work without
- G6: Landscaping on blocks should be required – may justify higher buildings to maintain net density – but need to consider view sheds.

DAY 1 - GROUP 4: LANDSCAPING

Part 2: Control Group Final Alterations

Changes in water availability, temperatures and bushfires will also affect our natural environment. Aquatic ecosystems are likely to be stressed. Local land ecosystems will be affected by decreasing water availability, increased bushfires and changes in the distribution and number of pests. Species that rely on a particular habitat and climate, such as the corroboree frog and many alpine and sub-alpine species, are likely to suffer and may eventually become extinct. Soil loss from drought, floods and degradation will increase, further stressing ecosystems and making sustainable land management increasingly important ...

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Starter List:

- Water efficient landscaping and irrigation systems.
- Employ garden features such as arbours, planting strips and trellises to create legible pathways and 'place markers' to improve sense of place.
- Provide micro and macro biodiversity conservation corridors or areas to increase multi-functional and community values of the park (Ecosystem Connectivity maps).
- Ensure native planting is used to the greatest extent possible to support indigenous species and ecosystems (special consideration for fuel reduction characteristics and native plants that are not prone to fire). Small contribution to offsetting local emissions.
- [G5: Public art](#)

Additional list by workshop participants:

(Bold text below designates alterations made by the control group in the final session)

- Public art to establish identity
- Use natural heritage and cultural heritage to create recreation spaces and wild life connectivity, **where people enjoy going to work** (G2: [Conservation areas yellow box, red gum etc.](#) – EEC's)
- Encourage people to walk/cycle into and around estate (G3: [how do we encourage people to walk? We agree this is a WSUD aim – difficult to encourage if people live distant to site/work, encouraging bikes around the site is recommended](#))
- WSUD including use of local native plant material (biodiversity) (G2: [Endemic species](#), [G2 Caution: nutrients for native plants? G5 Caution: mix of exotics and natives \(edible landscape\) – diversify fire risk mitigation Not residential so lower fire risk](#))
- Look at biosphere reserves (big picture)
- Integrate buildings into landscape
- Light rail link ([G2 Caution: Feasibility?](#))
- Contaminated groundwater – what is extent?

- Fire Management (G3: edge road treatment is a priority need – landscape must be evergreen/fuel loading treated (80/100m zones) – management issue, but who?, G5: develop as incremental edge considering full ultimate development)
 - Fire management zone/buffer (G5: fire retardant tree specimen options)
 - Cemetery/crematorium development may provide buffer, plus Monaro Hwy
 - (~~G5: manage fire risk and load off site~~) **Can't get others off-site to manage risk**
 - **Consider the different requirements for residential areas**
- Habitat trees – often rated poor quality (G3: agree but how is this done? Balance needed between fire/emergency and habitat, must be in groups and on corridor, G5 Caution: safety concern within public spaces **Could be retained in conservation/habitat area**)
- Exceptional trees can be registered and not removed – some on site (~~G6 Caution: have to think about trade offs – will the tree impact on other environmental issues? No~~ – **registered trees cannot be removed**)
- Opportunity to encourage endangered species (G2: conservation areas for EEC's, G3: protect endangered species, G5: relocate/regenerate outside) **Encouraging growth of endangered plants form nearby, endangered ecological communities**
- Provide wild life corridor connection with surrounding areas including on ridge in adjacent area (G2: incorporation with drainage/riparian corridors, G5 Caution: balance against alternative of enhancing corridors around urban area)
- Opportunity to restore creeks and look at bigger picture (G2: In conjunction with re-habitation of riparian corridor, ~~G3 Caution: does it mean businesses who are part of the Park need to repair creek lines? what does restore the creek mean?, G5 Caution: restructure or divert?~~) **Apply accepted creek restoration principles**
- To have big picture planning (outside our area) for environment
- See Canberra spatial plan (wild life connectivity) and water
- Action Plan 28 – grassy woodlands (Nature Conservation Act)
- ACTPLA has open space network maps – hills and ridges
- GIS layer for water ways (Water Unit)
- Integrate buildings with surroundings (G3 Caution: need clarification on how?)
- Place people want to be in
- Integrate with broader landscape e.g. Monaro Hwy (G3: integrate with QCC planning/trade)
- Native landscape/species around buildings, streets (G2: larger range of trees and shrubs throughout, trees to be located suitably) **Not sure what this means**
- Incorporate heritage items into landscape design – well, houses, travelling stock routes, **farm houses, Aboriginal artefacts**
- Overlay layers of information before making decisions
- Use WSUD – swales, broken kerbs (G2: and rain gardens with low flow diversion to street landscaping with high flows to s/w system including ponds, G3 Caution: need more detail, G6 Caution: with parking and traffic control) **Design to manage vehicular access**
- Recreational paths/lunch spots making opportunity to enjoy natural environment
- Explain/interpret signage
- Underground buildings to conserve corridors
- Natural filtration of runoff water – using landscape (G2: using bio-retention)
- Look at opportunities for incorporating old Koppers block – if decontaminated would be good spot for building
- Can use roof water for industrial purposes (G2: and other potable uses)
- Water Resources Act restricts re-use of surface water – 10% (~~G2: may be able to get changes made to Act, Not likely, G3: Increase 10% for reuse~~)

- No irrigation landscape (once established) **Based on travelling stock route ecosystems?** (~~G2: install moisture sensors for irrigation systems~~, G6 Caution: why not? If recycled water is used?)
- Areas for recreation at lunchtime
- Fitness path/walking/cycling path
- Café
- Encourage walking
- Connectivity and continuity of paths, verges
- Conflict between needs for large vehicles and pedestrians (G3: Reduce conflict)
- Double frontages to avoid backing onto spaces with low surveillance
- Pedestrian connections for recreation across Monaro Hwy near Isabella Drive (G3: Tralee)
- Light rail link to Canberra (G2 Caution: feasibility?)
- **G1: Environmental Management plan needed (site wide EMS): Need logistical way to approach hard and soft elements, need plan for how landscape assets will be managed over time**
 - Biodiversity protection/enhancement – flora and fauna
 - Visual amenity/sense of place – cultural
 - Functionality
 - Water
 - Low maintenance
- **G1 Caution: Life cycle management strategy required for this and all other elements**
- G1: Hierarchy
 4. Protection – green corridors, significant trees, fauna (management plan), surface/groundwater
 5. Rehabilitation – **Area along ridge (outside site)**
 6. Enhancement – connectivity, bioregions, functional/amenity
- G3: Question irrigation by business only – dry load landscape for common land reserves **Would like public/private landscapes to blend**
- G5: Landscape compatible with development i.e. air quality, runoff, dust etc? **Could protect landscape areas instead**
- G6: Provide low maintenance landscape **Use local ecosystems as model – will need weed control for initial establishment**
- G6: Reduce verge widths to minimum requirements for infrastructure – less to manage in terms of landscaping **Need room for street trees to establish streetscape, and size of verge is not necessarily related to the cost of maintenance**
- G6: Body Corporate/Community Title to manage landscaped areas – may not work without
- G6: Landscaping on blocks should be required – may justify higher buildings to maintain net density – but need to consider view sheds.
- Integrate natural and engineered systems – water (WSUD), waste, heating, cooling, visual, transport
- Apply consistent guidelines for sustainable landscape across the whole site
- Design to encourage many methods for moving around and in and out of the site – walking, cycling, rail, public transport, car, truck, modular transport
- Natural surveillance of recreational areas

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DAY 2 - GROUP 4: LANDSCAPING

Part 1: Control Group Original with Rotation Comments

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The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- Provide for wildlife corridors through the site, and enhance these with pocket native gardens or green roofs where applicable.
- Optimise use of land and roofs to increase area available for eco-systems, biodiversity and habitats.
- Employ garden features such as arbours, planting strips and trellises to create legible pathways and 'place markers'.
- Combine landscape features (fountains) or garden structures (gazebos, trellises or screens) to support sprays to use in case of fire.
- Select native plants, ground cover and landscape features for fuel reduction characteristics. Utilise xeriscape principles and native plants reduce need for mowers/trimmers, pesticides and irrigation.

Additional list by workshop participants:

Estate Code:

- Exclude Yellow Box/Red Gum in travelling stock route from private ownership or building sites – trade off: area used to clean water, add to public domain (passive recreation areas), circulation corridor, avoid costs in developing it (drainage, Aboriginal artefacts), increased real estate value for adjacent blocks
- Use waterways to guide placement of circulation and blocks and put into public domain
- Recognise natural corridors along ridges around western side (outside site)
- Create boulevard streetscape – apply WSUD combined with accessibility for large trucks
- Pre-designed streetscape that is friendly to use
- Only pave parts that need to be used – paths, roads, parking

Additions from discussion with other groups:

- Interface of blocks divided by open space network need to consider this further in regards to codes
- Bio-relation swales to 'treat' and collect water
- Signs that show how much water is collected or/and treated and/or re-used within estate to make people more aware (plus meter sewer out of site, there is potential for incentives if water is treated on site)
- Potential to feed energy back into the grid by using the future gas power station on the other side of Monaro Hwy
- Public art and alike can be used to generate power for street lighting or similar
- Bio-filtering system requires 2-5% of site overflow to operate properly?
- Contribute to a shuttle bus levy
- All forms of access considered (re cycles, wildlife, etc.)
- Disabled parking
- Development to accord with estate's master plan
- Areas specified for parking/deliveries etc.
- Storage for cycles
- Contribution of maintenance to public open space (re cycle ways)
- Know the demographics of people that work and shop in Hume West

Tenant Code:

- Stay with pre-determined landscape theme including planting design – style guides include lights, furniture, materials, driveway entrances
- Integrate S/W disposal systems into the estate systems, e.g. controlled release and cleaning and slowing of water
- A percentage of the whole subdivision needs to be permeable – flexible about where this will be (as part of title)
- Tradeable development rights for area of permeability (with exceptions for some protected areas)

Additions from discussion with other groups:

- Permeable surfaces considered within blocks (re. car parking areas as opposed to truck backing areas)
- Encouraging parking to be on the outer edges of the estate to encourage walking and use of open spaces - this creates areas used more which makes safer spaces
- Offices or admin can face open spaces that otherwise do not have any visual security
- Separation of walking paths from roads
- Share fill to even-out cut and fill to other blocks - this means little to no fill will be transferred into and out of the site
- Guidelines – strict/complete guidelines for the landscape should be produced and implemented for the entire estate
- Permanent access routes should be applied during construction to ensure reduced disturbances to existing and surrounding sites and future public domain

DAY 2 - GROUP 4: LANDSCAPING

Part 2: Control Group Final Alterations

Changes in water availability, temperatures and bushfires will also affect our natural environment. Aquatic ecosystems are likely to be stressed. Local land ecosystems will be affected by decreasing water availability, increased bushfires and changes in the distribution and number of pests. Species that rely on a particular habitat and climate, such as the corroboree frog and many alpine and sub-alpine species, are likely to suffer and may eventually become extinct. Soil loss from drought, floods and degradation will increase, further stressing ecosystems and making sustainable land management increasingly important ...

The CSIRO predict increases in average wind-speeds across much of NSW in summer ... a greater fire risk is predicted. By 2020 the predicted number of days with very high or extreme fire danger could average 26-29 in Canberra (now 23).

The ACT Climate Change Strategy 2007 - 2025

The urban forest is an important element of our city. Urban green areas provide corridors for species to move through and play a role in cooling the city and reducing our emissions.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- Provide for wildlife corridors through the site, and enhance these with pocket native gardens or green roofs where applicable.
- Optimise use of land and roofs to increase area available for eco-systems, biodiversity and habitats.
- Employ garden features such as arbours, planting strips and trellises to create legible pathways and 'place markers'.
- Combine landscape features (fountains) or garden structures (gazebos, trellises or screens) to support sprays to use in case of fire.
- Select native plants, ground cover and landscape features for fuel reduction characteristics. Utilise xeriscape principles and native plants reduce need for mowers/trimmers, pesticides and irrigation.

Final list by control group:

Estate Code:

- Exclude Yellow Box/Red Gum in travelling stock route from private ownership or building sites – trade off: area used to clean water, add to public domain (passive recreation areas), circulation corridor, avoid costs in developing it (drainage, Aboriginal artefacts), increased real estate value for adjacent blocks
- Use waterways to guide placement of circulation and blocks and put into public domain
- Recognise natural corridors along ridges around western side (outside site)
- Create boulevard streetscape – apply WSUD combined with accessibility for large trucks
- Pre-designed streetscape that is friendly to use
- Only pave parts that need to be used – paths, roads, parking
- [Interface of blocks divided by open space network need to consider this further in regards to codes](#)
- [Bio-relation swales to 'treat' and collect water](#)
- [Signs that show how much water is collected or/and treated and/or re-used within estate to make people more aware \(plus meter sewer out of site, there is potential for incentives if water is treated on site\)](#)
- [Potential to feed energy back into the grid by using the future gas power station on the other side of Monaro Hwy](#)
- [Public art and alike can be used to generate power for street lighting or similar](#)
- [Bio-filtering system requires 2-5% of site overflow to operate properly?](#)

- Contribute to a shuttle bus levy
- All forms of access considered (re cycles, wildlife, etc.)
- Disabled parking
- Development to accord with estate's master plan
- Areas specified for parking/deliveries etc.
- Storage for cycles
- Contribution of maintenance to public open space (re cycle ways)
- Know the demographics of people that work and shop in Hume West

Tenant Code:

- Stay with pre-determined landscape theme including planting design – **style guides include lights, furniture, materials, driveway entrances**
- Integrate S/W disposal systems into the estate systems, e.g. controlled release and cleaning and slowing of water
- A percentage of the whole subdivision needs to be permeable – flexible about where this will be (as part of title)
- Tradeable development rights for area of permeability (with exceptions for some protected areas)
- Permeable surfaces considered within blocks (re car parking areas as opposed to truck backing areas)
- Encouraging parking to be on the outer edges of the estate to encourage walking and use of open spaces - this creates areas used more which makes safer spaces
- Offices or admin can face open spaces that otherwise do not have any visual security
- Separation of walking paths from roads
- Share fill to even-out cut and fill to other blocks - this means little to no fill will be transferred into and out of the site
- Guidelines – strict/complete guidelines for the landscape should be produced and implemented for the entire estate
- Permanent access routes should be applied during construction to ensure reduced disturbances to existing and surrounding sites and future public domain
- **Tenants to look after systems include landscape through Body Corporate (take ownership of public realm through Body Corporate)**
- **Design to feel safe to be outside**
- **Tenants expected to manage vehicle access into/out of site by designated roads/driveways and prevent damage of soft landscaped areas**
- **Tenants expected to manage weeds onsite**
- **On block – adopt CTEP principles (as well as public realm)**
- **For construction:**
 - **Designate clear entry/exit places for vehicles and parking areas during construction**
 - **Designate location of stock piles (onsite/on estate)**
 - **Protecting soil and waterways**
 - **Reinstalling landscape works damaged during construction**
 - **Consider/obey exclusion zones/no go zones for protected areas**
 - **Incentives for buildings for looking after public realm landscape – or landscape bond, i.e. what to do for areas that can never be replaced/damage**
- **Use landscape to provide Summer shade**
- **Can use green roots and green walks – will help with solar panel efficiency**
- **Use green screens/wind breaks on west**
- **Look for ways landscape can reduce energy use**
- **Ensure landscape does not compromise passive and renewable options**
- **Tenants to comply with WSUD guidelines**
- **Sightlines for driveways**

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Part 2: Control Group Final Alterations

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DAY 1 - GROUP 5: AMENITY & SECURITY

Control Group Original with Rotation Comments

*Climate change will impact on all aspects of life ... The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance ... Individuals and businesses have a role in encouraging (G5 Caution: weak words) **sustainable design and planning in the buildings they buy and use.***

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- Optimise views and environmental amenity in all work places and public spaces to improve well-being, sense of place and ~~rental value~~ without forcing out or limiting
- Ensure subdivision, building, fencing and landscaping design encourages the surveillance and activity of the public realm. Design spaces to ensure surveillance cameras can survey all appropriate areas if deemed necessary. (G6 **Caution: Avoid the need for cameras by appropriate design**)
- Map and address access routes to major service, employment and retail nodes to ensure site connectivity and encourage entry to estate.
- Encourage mixed public-private activities on site such as public education events (to increase indirect surveillance).
- Incorporation of public art, i.e. providing industrial character, landmark to provide identity
- ...

Additional list by workshop participants:

- Policy formulation/review to be flexible to outcomes:
 - E.g. Territory Plan
 - (G2: Security Plan)
 - (G4: GHD will write an industrial code for site:
 - identify areas to be protected/particular uses

- replaces lease and development conditions but could be wider ranging
- e.g. building form, waste products)
- 'Neighbourhood' unit design
 - Walkable, accessible, active (G4: connections to other areas)
 - Interesting environment (G1: Create sense of arrival – pride of ownership for all stakeholders, G4: make use of natural and heritage resources)
 - Local community (G4: childcare centres (G4 Caution: What is next door? Noisy, smelly, poisonous), gym, modularity and flexibility, links to Tralee development (across railway line))
 - (G3: The principle to stay during the day, for banking, childcare, shops, recreation (passive and active) is accepted – library and internet cafe)
 - (G6: street design to manage vehicle speeds – or street racing)
- Relationship of new and existing development
 - Transition
 - Integration (G4: connectivity)
 - Compatibility between uses
 - (G1 Caution: MIBA (Mixed Industrial Business Uses) – diversity of uses with linked precincts – use of road systems/width to encourage separation)
 - (G3: Relate to North Hume and Tralee (into NSW)/Q.C.C)
 - (G4: look at opportunities from business already there (in established Hume, Recycling/Resource Centre))
- Encourage activity in public spaces
 - Land use location
 - Density (G1 Caution: to commercially justify/sustain the amenities provided, G6: plan for denser uses – e.g. offices around public open space areas to maximise use of these areas)
 - (G1: Interact with wider community – schools, sports club, social events)
 - (G2: attracting general public (after hours/weekends included), clearly defined public realm)
 - (G3: Focus on neighbourhood)
 - (G6: Encourage a mix of uses that has a broad spread of hours to keep people about for most of the time)
- Linkages
 - Movement in/out of estate
 - Developments and uses
 - (G1: Estate wide emergencies procedures, hazardous material plans/policies)
 - (G2: legible pedestrian linkages and use of open spaces to create pedestrian movement)
- Visual (G4: and physical) amenity to encourage activity, welcome entry, provide interest
 - Constructed landscape defines character and use (G4 Caution: but no big banana/pineapple etc.)
 - (G3: linked to neighbourhood make it different to Hume North, own character – it is an industrial estate, recognise heavy traffic, car movement to be balanced with bikes, wildlife corridor, green space)
 - (G6: design comfortable spaces – spaces to loiter in, not just tidy to drive through; human scale spaces)
- Provide public facilities
 - Toilets
 - Playgrounds (G4 Caution: Who will the users be?)/parks
 - Shade and outdoor eating
- G1: Amenity indices: (to meet modern workforce and employee expectation/demands)
 - child care
 - gym/fitness (indoors, outdoors)

- *retail (convenience – 7/11, newsagent, bank, PO, hairdressers, medical centre, chemist, choice of eateries)*
- *accessibility of site (internal/external)*
- *outside park recreational activities/learning opportunities*
- *community activities*
- *universal access (safe paths, conference centre network meetings, services offices)*
- *G1: Security – cameras, panic buttons, 24 security device on site staff, CPTED*
- *G2: Provide services on site such as – childcare, convenience store/pharmacy, conferencing centre/community centre*
- *G2: Security – suitable crime prevention through environmental design*
- *G2: Transport – car parks, bus stop location, wide/open streets, car pooling via internet website shared bike pool (on-site travel)*
- *G2: Sufficient infrastructure to support business – high speed internet connection, third pipe provision*
- *G3 Caution: Security – impact on evening workers.*
- *G3: Security issues not addressed – isolated site, people working late at night/vandalism*
- *G3: Incorporate Hill Station, Tralee homestead, Canberra's first airport, the history of the area, into the site to complement the community and neighbourhood*
- *G4: Waste management – how to set up collection and storage of materials:*
 - *(G4 Caution: storage of materials/disposal of leftovers and leaving stuff behind causes problems)*
 - *G4: needs to be controlled uses on site and how manage waste products*
- *G4: Look for opportunities for weekend use (perhaps related to light rail, recreational paths)*
- *G4: Design for public surveillance, maybe include in code – double fronted blocks or triple, use views from Monaro Highway into site to increase surveillance' look for uses outside office hours.*
- *G6: Adequate (environmentally friendly) lighting of public areas*
- *G6: Encourage through traffic links to Tralee – railway link*
- *G6: Retain existing landscape vegetation – trees*
- *G6 Caution: If there is no activity then any amenity (play grounds, toilets etc.) become poor quality spaces and detract from the estate.*

DAY 1 - GROUP 5: AMENITY & SECURITY

Part 2: Control Group Final Alterations

Climate change will impact on all aspects of life ... The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance ... Individuals and businesses have a role in encouraging (G5: Caution: weak words) sustainable design and planning in the buildings they buy and use.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- Optimise views and environmental amenity in all work places and public spaces to improve well-being, sense of place and rental-value-without forcing out or limiting
- Ensure subdivision, building, fencing and landscaping design encourages the surveillance and activity of the public realm. Design spaces to ensure surveillance cameras can survey all appropriate areas if deemed necessary. (G6 Caution: Avoid the need for cameras by appropriate design)
- Map and address access routes to major service, employment and retail nodes to ensure site connectivity and encourage entry to estate.
- Encourage mixed public-private activities on site such as public education events (to increase indirect surveillance).
- Incorporation of public art, i.e. providing industrial character, landmark to provide identity
- ...

Additional list by workshop participants:

(Bold text below designates alterations made by the control group in the final session)

- Policy formulation/review to be flexible to outcomes (**Depends upon how estate is released. Body Corporate?; TP outcomes**), for example:
 - **Planning system – Territory Plan Codes to allow for delivery, monitoring and updating**
 - **Territory Plan Variation requirement**
 - **A new Code/s – precinct, and general code (template)**
 - **ACT Government Interagency agreements opportunity to allow innovations, and allocate management/custodianship responsibilities**
 - **Commercial/Corporate responsibility – continuity between stages and developers responses, and targeted at real estate marketing sourcing of potential client fitness**
 - ~~(G2: Security Plan) consider embedding with existing documentation ‘e.g.’~~
 - ~~(G4: GHD will write an industrial code for site~~
 - Identify areas to be protected/particular uses
 - Replaces lease and development conditions but could be wider ranging
 - E.g. building form, waste products)
- ‘Neighbourhood’ unit design **framework**
 - Walkable, accessible, active (~~G4: connections to other areas~~)
 - Interesting environment – **creating a sense of arrival, interest in spaces** (~~G4: make use of natural and heritage resources~~)

- Local community – **plus community uses, commercial support functioning (shops, chemist, child care, banking, offices, shopfront, and the like)** (G4: childcare centres [G4 Caution: What is next door? Noisy, smelly, poisonous], gym, modularity and flexibility, links to Tralee development (across railway line)) **Plus environmental and heritage character reference points**
- (G3: The principle to stay during the day, for banking, childcare, shops, recreation (passive and active) is accepted – library and internet cafe)
- **Uses outside of ‘business’ hours**
- ~~(G6: street design to manage vehicle speeds—or street racing)~~
- Relationship of new and existing development
 - **Transition and sense of arrival, road/rail network, and extension of HWIE outcomes into adjoining areas – tendrils, e.g. street furniture**
 - Integration (G4: connectivity, G3: Relate to North Hume and Tralee (into NSW)/Q.C.C) and connecting with **north Hume, Queanbeyan trade, Mugga Way Industrial areas, and accessibility to existing nodes – residential, commercial (Fyshwick) and industries outside ACT (rail network)**
 - Compatibility between uses:
 - **Waste to product relationships**
 - **Different streetscapes for precinct identification within overall area, street hierarchy distinguishes between use areas**
 - (G1 Caution: MIBA (Mixed Industrial Business Uses) – diversity of uses with linked precincts – use of road systems/width to encourage separation, G1: Interact with wider community – schools, sports club, social events) **Town square principles that are relevant with regards to open space, commercial centre, residential core zones, mixed use diversity**
 - (G4: look at opportunities from business already there (in established Hume, Recycling/Resource Centre))
- Encourage activity in public spaces
 - Land use location – **mix of uses framework zoning within precinct within estate, density around spaces, co-location of uses both active and passive**
 - **Density to commercially justify/sustain the amenity provided** (G1 Caution: to commercially justify/sustain the amenities provided, G6: plan for denser uses – e.g. offices around public open space areas to maximise use of these areas)
 - (G2: attracting general public (after hours/weekends included), clearly defined public realm) **Identify the public realm within the estate**
 - ~~(G3: Focus on neighbourhood)~~
 - ~~(G6: Encourage a mix of uses that has a broad spread of hours to keep people about for most of the time)~~
- Linkages
 - Movement in/out of estate
 - Developments and uses
 - **Focal points - art spaces, active and passive recreation opportunities**
 - **Links to external recreation/connectivity adjoining areas (outside estate boundary)**
 - ~~(G1: Estate wide emergencies procedures, hazardous material plans/policies)~~
 - (G2: legible pedestrian linkages and use of open spaces to create pedestrian movement) **Open space corridors allowing pedestrian and cycle movement**
 - **Through traffic to Tralee**
- Visual (G4: and physical)
 - amenity to encourage activity, welcome entry, provide interest **points, challenge perceptions, activate interest, educate**
 - **Reduce the sterility in industrial areas**

- Constructed landscape defines character and use (**G4 Caution: but no big banana/pineapple etc**), **themes (but no big banana)**
- **Iconic art, buildings, spaces, architecture**
- **Storage areas screened and removed from the streetscape (including Monaro and internal streets)**
- **Architectural design input – recycled materials to encourage different materials in construction – avoid single materials like concrete or tin**
- (**G6: design comfortable spaces – spaces to loiter in, not just tidy to drive through; human scale spaces**) **Tourist destination for building design, integrated landscape and art, also attracting people (general public) to the area additional to the local workforce – potential weekend use**
- **Landscape to exotics to distinguish from adjoining rural landscape**
- (**G3: linked to neighbourhood make it different to Hume North, own character—it is an industrial estate, recognise heavy traffic, car movement to be balanced with bikes, wildlife corridor, green space**) **old thought process**
- Provide public facilities
 - Toilets – **enviro-type, incorporated into complexes, connections for sewer mining – multi functional**
 - Playgrounds (**G4 Caution: Who will the users be?**)/parks – **spaces to loiter in, not just tidy, human scale spaces (G6 Caution: If there is no activity then any amenity (play grounds, toilets etc.) become poor quality spaces and detract from the estate)**
 - Shade and outdoor eating **opportunities**
 - (**G6: Adequate (environmentally friendly) lighting of public areas**) **Lighting/security**
 - **Cameras hidden, private purpose for individual sites (self serve) – not passive surveillance opportunity**
 - **Public realm street-front surveillance included in design**
- **G1: Amenity indices: (to meet modern workforce and employee expectation/demands)**
 - *child care*
 - *gym/fitness (indoors, outdoors)*
 - *retail (convenience – 7/11, newsagent, bank, PO, hairdressers, medical centre, chemist, choice of eateries)*
 - *accessibility of site (internal/external)*
 - *outside park recreational activities/learning opportunities*
 - *community activities*
 - *universal access (safe paths, conference centre network meetings, services offices)*
- **G1: Security – cameras, panic buttons, 24 security device on site staff, CPTED**
- **G2: Provide services on site such as – childcare, convenience store/pharmacy, conferencing centre/community centre**
- **G2: Security – suitable crime prevention through environmental design**
- **G2: Transport – car parks, bus stop location, wide/open streets, car pooling via internet website level of internet use low for this demographic? effective, shared bike pool (on-site travel)**
- **G2: Sufficient infrastructure to support business – high speed internet connection, third pipe provision**
- **G3 Caution: Security – impact on evening workers.**
- **G3: Security issues not addressed— isolated site, people working late at night/vandalism And the solution is?**
- **G3: Incorporate Hill Station, Tralee homestead, Canberra's first airport, the history of the area, into the site to complement the community and neighbourhood Put in a book, design a new concept**
- **G4: Waste management – how to set up collection and storage of materials:**
 - (**G4 Caution: storage of materials/disposal of leftovers and leaving stuff behind causes problems**)
 - **G4: needs to be controlled uses on site and how manage waste products**
- **G4: Look for opportunities for weekend use (perhaps related to light rail, recreational paths)**

- *G4: Design for public surveillance, maybe include in code – double fronted blocks or triple, use views from Monaro Highway into site to increase surveillance’ look for uses outside office hours.*
- *G6: Encourage through traffic links to Tralee – railway link*
- *G6: Retain existing landscape vegetation – trees*

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Part 2: Control Group Final Alterations

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DAY 2 - GROUP 5: AMENITY & SECURITY

Part 1: Control Group Original with Rotation Comments

Part 2: Final Alterations blended

Climate change will impact on all aspects of life ... The ACT Government will ensure that its own operations are a model against which other sectors of the community can measure their own performance ... Individuals and businesses have a role in encouraging sustainable design and planning in the buildings they buy and use.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List: (The 'Starter List' does not capture design initiatives to deliver the estate's objectives)

- ~~— Optimise views and environmental amenity in all work places and public spaces to improve well-being, sense of place and rental value.~~
- ~~— Ensure subdivision, building, fencing and landscaping design encourages the surveillance of the public realm. Design spaces to ensure surveillance cameras can survey all appropriate areas if deemed necessary.~~
- ~~— Map and address access routes to major service, employment and retail nodes to ensure site connectivity.~~
- ~~— Encourage mixed public-private activities on-site such as public education events (to increase indirect surveillance).~~
- ~~— Incorporation of public art.~~
- ~~— ...~~

List by workshop participants:

- 1) **Ensure that urban design elements reflect the essential qualities of the site's natural, cultural and built environment heritage, and establish means to implement them.**
- 2) **Provide open space for combined public and private functions to increase interaction with the community and utilise land efficiently.**
- 3) **Consider internal semi-open spaces such as atriums or sunspaces to reduce building costs, increase amenity and generate health benefits.**
- 4) **Allocate a percentage of the development budget to the provision of public art. (Already set at 1% by CMD)**
- 5) **Establish semi-outdoor work areas (eg meeting and eating spaces) to optimise site use and sense of place, and semi indoor areas that provide the benefits of contact with nature.**
- 6) **Minimize excessive or incompatible impacts of noise, light, traffic and visual character.**

- 7) **Ensure subdivision, building, fencing and landscaping design encourages the surveillance of the public realm. Design spaces to ensure surveillance cameras can survey all appropriate areas if deemed necessary.**

Additional list by workshop participants:

- Identify local activity centre – village sequence?
- Estate development code – guideline to deliver amenities in the public realm
 - Lights, playgrounds, parks, street furniture, paving style
 - Set a theme
 - Material use, selection
 - On block lighting
- LDA has to be joint developer to ensure outcomes
- Community title – will only work where in concert with a structure plan being broken down into precinct codes – e.g. Canberra Central Masterplan and code
- Lease conditions will only work with initial purchase!
- Precinct codes will deliver long term management and delivery of amenity through policies objectives and notes embedded – allow enforcement and monitoring of performance

Additions from discussion with other groups:

(Black numbers refer to the numbers from the Starter List)

- Easy connections corridors – cycle ways to heavy vehicle access link into estate corridor (ecosystem)
- Landscaping must not provide 'hiding' areas – provide lighting to 'discrete' areas and panic buttons linked to on site security private area with public access (5)
- Sympathetic to view corridors connected to focal points (2)
- Adequate lux lighting exterior – night vision security (7)
- Cameras hidden but present (7)
- WSUD (1)
 - Management plan for BC
 - Staging continuity – design/infrastructure/construction
 - Internal to connect to external using existing links
 - Irrigation private BC
 - Swales, ponds – management plan framework
 - Code response to requiring it with lease
- Hierarchy of roads – grid pattern – NU design response
- Body corporate roads
- Major road connection on public land
- Car parking locations – visitor and disable requirements
- Centralised car park/system – basement parking investigation? – car parking structure utilising generation (solar/wind) opportunities and underground
- Connectivity – continuity of landscape/planting (1)
- Walkable and secure/safe (2) (7)
- Green space behind buildings (2) (5) (7)
- Visitor parking separated from heavy vehicle uses
- Separation of walking paths from roads (through greenbelts) in conjunction with cycle-paths (2) (7)
- Foot paths interesting places to walk (continuing journey points/destination markers) (1) (5)

- Enhanced/preservation of eco areas and linked to paths (1)
- Allocating areas with precinct for land uses
- landscaping in car parking areas, streetscape/public realm (7)
- Noise management between uses office/manufacturing – separation by precincts, RCA principles, office/walkable access (1) (6)
- Boundary of estate buffering from main transport routes view sheds across the site (1) (6)
- Service areas – attributes to open/wire fences (7)
- Public realm reduction – opportunities to transfer maintenance to leaseholds – easements within block utility controls (5)
- Stormwater site management plan requirement – covering reuse and landscape
- Construction management plan/requirement – linking implementation timing and objectives to flow through project

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DAY 1 - GROUP 6: SUBDIVISION CONSTRUCTION

Part 1: Control Group Original with Rotation Comments

Part of the challenge of reducing our emissions and adapting to climate change is to be smarter in how we design our offices, homes, roads and infrastructure ... Being sustainable in how we design our suburbs and infrastructure can help reduce the costs of buildings and maintaining our energy, water, communications and transportation infrastructure.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- G1: Construction Management Plan to incorporate all of below
- Ensure construction waste is minimised to reduce pressure on natural environments, resource consumption and costs (specifically diversion of construction waste to landfill, and elimination of organic waste to landfill).
- Encouraging the use of recycled content in products (such as recycled aggregate).
- [Ecological damage] Ensure materials are selected to reduce embodied energy and ecological damage in extraction, production and end of life.
- Ensure sediment control measures are in place to minimise waterway pollution.
- Minimise air pollution from dust during construction phase (from operations by backhoes, graders and plant).
- Ensure recycling and site management to avoid waste and site damage during the construction process.
- G1: Green Star Rating

Additional list by workshop participants:

- Key Issue – Design to achieve these construction objectives:
 - Minimise earthworks volumes (G2 Caution: consider contamination of soils, G4: balance out and fill, subdivide to minimise fall across site, responsive design)

- Maximise use of on-site materials – stabilise or modify soils (G4: work with existing soil)
 - Co-location of industries – with view to recycle waste (G5: Compatibility of land use guidelines – compatible waste/product opportunities)
 - Economies of scale – better environmental controls if blocks shaped to make them useable as part of initial subdivision works (G3 Caution: Economies of scale needs explanation, G4: define who we are designing for – who are the end users)
 - Linkages? Public transport/servicing (G4: see light rail comments in Landscape)
 - Appropriate widths of roads – consider truck turning paths, on street carp parking, embodied energy (G4: allows room for trees, G5 Caution: need to understand the types of use and their traffic generation types e.g. BTrain vs von/car, and connectivity to existing infrastructure including cross border - make use of road, rail, waste, employment lands)
 - Contaminated soil issues? – identification, management (G3: Maximise onsite soils in respect of contaminated soils could be an issue, G4: and ground water)
 - New technologies – low energy materials – specify for consistent tender
 - Use reclaimed water for construction (G2 Caution: needs treatment, G3 Caution: clarification required, how will stormwater be used during construction?, G4 Caution: in accordance with Water Resources Act)
 - Stage the development to minimise impacts (G3: staged development must be balanced with economies of scale and transportation scale of service, G4: start from top of hill and work down, G5 Caution: needs to be coordinated to enable continuance of development between developers/sites)
 - Effective sediment control pondage at outlets from stormwater system (G2: need erosion and sediment control from all areas of works prior to reaching S/W system, keep clean and dirty water separated and divert catchment flows away from disturbed areas, G4: look at sediment control for construction that becomes WSUD for finished estate, see Environmental Protection Act)
- Subdivision Construction:
- Stockpiles
 - location, stabilise
 - topsoil for reuse in verges, open space
 - (G2: Erosion and sediment control required)
 - (G4: try not to disturb soil except where it has to be removed for construction)
 - Contractor (G4: Contract with LDA)
 - timing – season – endangered wildlife, dust, run-off (G2: plus use of water carts)
 - education
 - (G2: undertake GHG emission assessment)
 - environmental accreditation
 - bonus/penalty to contractor for environmental performance (G4 Caution: prefer construction of roads and infrastructure all in one stage and forward planting/establishment of landscape)
 - Consider visual impacts of construction – smaller segments
 - Try to reduce impact of transport – materials coming onto the site for construction
 - Brief contractor on environmental sensitivities (G2: for knowledge of desired outcomes)
 - Collection of Aboriginal sensitivities (G2 Caution: Can't touch! Go through appropriate procedures if found, G3 Caution: not necessarily collect more leave some onsite as required – may need to protect/retain heritage onsite, G4 Caution: in accordance with heritage legislation and RAOs and any special requirements)
 - Enforcement/policing of controls
 - Bio-fuels for construction plant? (G3: promote but not enforce/regulate – support – difficult to arrange bio-fuel station)
 - Land managers need to operate environmental controls in perpetuity – leaseholders, TAMS for public roads and spaces (G3: Land management – use of stormwater runoff, help new tenants to take on environment

- controls, G4: plus ongoing management of site by lease holders, G4 Caution: how to police managed natural areas? Who maintains reserves?, G4 Caution: Community title? – value of reserves tied to land value)
- Public information display: (G3: Add tenant operation info – tenancy awareness/rights, orientation of building operations. Add solar orientation)
 - Promote construction features
 - New technologies
 - Public image of estate (G5: Art)
 - Online feeds – satellite photography, website access
 - Sales conditions for erosion and sediment control (G4 Caution: already covered in authorisation for construction)
- G1: Specify use of recycling required – optimise use of recyclable plant over the road
 - G1: Long term relation with resource recovery – formal relationship
 - G1: Map downstream markets for resource recovery – melting point
 - G1: onsite concrete batching plant
 - G1: Main activity first 10 years construction – examine lifecycle relation construction vs recycle plant
 - G2: Construction compound to be 'secured' to reduce loss through theft
 - G2: Staging of works to consider access to all lots and connectivity to external roads (minimum of two access points)
 - G2: Staging to consider provision of infrastructure to provide all services until the next stage is constructed
 - G2: Service trenches to include extra conduits for future services
 - G2: constructed 'Sealed' sewer system to reduce infiltration/inflow – needs to be done by an accredited plumber
 - G2: retention of vegetation where possible
 - G2: where trees are felled, chip and use for mulch in landscaping
 - G4: Better road/block orientation for solar access to provide natural lighting opportunities for buildings, alleys, streets etc.
 - G4: Visibility and legibility important in road design – easier to find your way around
 - G4: Use of landmarks to help with way finding town
 - G4: Modular town block size so multiple blocks can be combined or subdivided and can respond to different demands
 - G4: Start planning for sustainable construction before construction begins and protection of areas to be retained/protected
 - G4: Allow for potential future infrastructure e.g. transport corridors in subdivision design
 - G5: Services
 - Reticulation for regarding water delivering self sufficiency
 - Stormwater treatment
 - Detention ponds will draw down for landscaping
 - Blackwater reuse
 - G5: Clearing planning outcomes (vision) common theme throughout delivery process e.g. street furniture, urban design, built form
 - G5: Balancing individuality (without stifling) with consistent character
 - G5: Flexible block design enabling growth and contraction of blocks on land uses change avoiding service easement constraining expansion of sites. Services in public realm

GROUP 6: SUBDIVISION CONSTRUCTION

Part 2: Control Group final alterations to Original

Part of the challenge of reducing our emissions and adapting to climate change is to be smarter in how we design our offices, homes, roads and infrastructure ... Being sustainable in how we design our suburbs and infrastructure can help reduce the costs of buildings and maintaining our energy, water, communications and transportation infrastructure.

The ACT Climate Change Strategy – Action Plan 2007 - 2011

Starter List:

- G1: Construction Management Plan to incorporate all of below
- Ensure construction waste is minimised to reduce pressure on natural environments, resource consumption and costs (specifically diversion of construction waste to landfill, and elimination of organic waste to landfill).
- Encouraging the use of recycled content in products (such as recycled aggregate).
- [Ecological damage] Ensure materials are selected to reduce embodied energy and ecological damage in extraction, production and end of life.
- Ensure sediment control measures are in place to minimise waterway pollution.
- Minimise air pollution from dust during construction phase (from operations by backhoes, graders and plant).
- Ensure recycling and site management to avoid waste and site damage during the construction process.
- G1: Green Star Rating

Additional list by workshop participants:

(Bold text below designates alterations made by the control group in the final session)

- Key Issue – Design to achieve these construction objectives:
 - Minimise earthworks volumes (**G2 Caution: consider contamination of soils**, G4: balance out and fill, subdivide to minimise fall across site, responsive design)
 - Maximise use of on-site materials – stabilise or modify soils (G4: work with existing soil)
 - Co-location of industries – with view to recycle waste (G5: Compatibility of land use guidelines – compatible waste/product opportunities)
 - Economies of scale – better environmental controls if blocks shaped to make them useable as part of initial subdivision works (~~G3 Caution: Economies of scale needs explanation~~ **Covered**, G4: define who we are designing for – who are the end users)
 - Linkages? Public transport/servicing (G4: see light rail comments in Landscape)
 - Appropriate widths of roads – consider truck turning paths, on street carp parking, embodied energy (G4: allows room for trees, G5 Caution: need to understand the types of use and their traffic generation types e.g. BTrain vs von/car, and connectivity to existing infrastructure including cross border - make use of road, rail, waste, employment lands **Design issues**)
 - Contaminated soil issues? – identification, management (~~G3: Maximise onsite soils in respect of contaminated soils could be an issue~~ **Covered**, G4: and ground water **Consider**)
 - New technologies – low energy materials – specify for consistent tender

- Use reclaimed water for construction (G2 Caution: needs treatment, G3 Caution: clarification required, how will stormwater be used during construction?, G4 Caution: in accordance with Water Resources Act)
 - Stage the development to minimise impacts (G3: staged development must be balanced with economies of scale and transportation scale of service, ~~G4: start from top of hill and work down~~, G5 Caution: needs to be coordinated to enable continuance of development between developers/sites)
 - Effective sediment control pondage at outlets from stormwater system (G2: need erosion and sediment control from all areas of works prior to reaching S/W system, keep clean and dirty water separated and divert catchment flows away from disturbed areas **Normal practice**, G4: look at sediment control for construction that becomes WSUD for finished estate, see Environmental Protection Act)
- Subdivision Construction:
- Stockpiles
 - location, stabilise
 - topsoil for reuse in verges, open space
 - (G2: Erosion and sediment control required)
 - (G4: try not to disturb soil except where it has to be removed for construction)
 - Contractor (G4: Contract with LDA)
 - timing – season – endangered wildlife, dust, run-off (G2: plus use of water carts)
 - education
 - (G2: undertake GHG emission assessment)
 - environmental accreditation
 - bonus/penalty to contractor for environmental performance (G4 Caution: prefer construction of roads and infrastructure all in one stage and forward planting/establishment of landscape **LDA to consider economics**)
 - Consider visual impacts of construction – smaller segments
 - Try to reduce impact of transport – materials coming onto the site for construction
 - Brief contractor on environmental sensitivities (G2: for knowledge of desired outcomes)
 - Collection of Aboriginal sensitivities (G2 Caution: Can't touch! Go through appropriate procedures if found, G3 Caution: not necessarily collect more leave some onsite as required – may need to protect/retain heritage onsite **Subject to heritage approval**, G4 Caution: in accordance with heritage legislation and RAOs and any special requirements)
 - Enforcement/policing of controls
 - Bio-fuels for construction plant? (G3: promote but not enforce/regulate – support – difficult to arrange bio-fuel station **Option for consideration**)
 - Land managers need to operate environmental controls in perpetuity – leaseholders, TAMS for public roads and spaces (G3: Land management – use of stormwater runoff, help new tenants to take on environment controls, G4: plus ongoing management of site by lease holders, G4 Caution: how to police managed natural areas? Who maintains reserves?, G4 Caution: Community title? – value of reserves tied to land value)
 - Public information display: (G3: Add tenant operation info – tenancy awareness/rights, orientation of building operations. Add solar orientation **Difficult to design issue when ultimate uses are not known**)
 - Promote construction features
 - New technologies
 - Public image of estate (G5: ~~Art~~ **Not a construction issue**)
 - Online feeds – satellite photography, website access
 - Sales conditions for erosion and sediment control (G4 Caution: already covered in authorisation for construction) **Builders**
- G1: Specify use of recycling required – optimise use of recyclable plant over the road **Relevant to some materials**

- G1: Long term relation with resource recovery – formal relationship
- G1: Map downstream markets for resource recovery – melting point
- G1: onsite concrete batching plant **Consider**
- G1: Main activity first 10 years construction – examine lifecycle relation construction vs recycle plant **Also consider asphalt recycling – may affect mix of other lot users**
- ~~G2: Construction compound to be ‘secured’ to reduce loss through theft~~ **Constructor’s problem**
- G2: Staging of works to consider access to all lots and connectivity to external roads (minimum of two access points) **Normal practice**
- G2: Staging to consider provision of infrastructure to provide all services until the next stage is constructed **Normal practice**
- G2: Service trenches to include extra conduits for future services **Cost, embodied energy – design standards**
- G2: constructed ‘Sealed’ sewer system to reduce infiltration/inflow – needs to be done by an accredited plumber refer to **ACTEW standards**
- G2: retention of vegetation where possible
- G2: where trees are felled, chip and use for mulch in landscaping **Or other uses**
- G4: Better road/block orientation for solar access to provide natural lighting opportunities for buildings, alleys, streets etc. **Enforcement issue??**
- G4: Visibility and legibility important in road design – easier to find your way around **Design issue**
- G4: Use of landmarks to help with way finding town
- G4: Modular town block size so multiple blocks can be combined or subdivided and can respond to different demands **Do not market research before finalise estate design**
- G4: Start planning for sustainable construction before construction begins and protection of areas to be retained/protected
- G4: Allow for potential future infrastructure e.g. transport corridors in subdivision design **Design issue**
- G5: Services
 - Reticulation for regarding water delivering self sufficiency
 - Stormwater treatment
 - Detention ponds will draw down for landscaping
 - Blackwater reuse **Economics**
- G5: Clearing planning outcomes (vision) common theme throughout delivery process e.g. street furniture, urban design, built form
- G5: Balancing individuality (without stifling) with consistent character **Not a construction issue**
- G5: Flexible block design enabling growth and contraction of blocks on land uses change avoiding service easement constraining expansion of sites. Services in public realm **Good design point**

Control Group Summary

- **Environmental outcomes in construction are largely set in design phase**
- **Design issues:**
 - **Flexible lot layout ideal to accommodate ultimate uses that are not known at subdivision design phase**
 - **Stormwater system design to suit construction phase outcomes (erosion and sediment control) as well as long term environmental outcomes**
 - **Specify construction materials with small environmental footprint (embodied energy, travel distances)**
 - **Aim to minimise earthworks volumes – cut/fill**
 - **Road designs depend on traffic, depends on lot usage**

- **Construction Management Plan:**
 - **Credibility of environmental outcomes influenced by construction contractor performance and commitment**
 - **Construction contract to require environmental performance including – environmental site induction for workers, sub-contractors, environmental accreditation (contractor and materials), biofuels, greenhouse gas emission assessment**
 - **Consider timing of works – wildlife impacts, seasonal weather**
 - **Erosion and sediment control essential**
 - **Staging of construction to limit physical and visual impacts**
 - **Use reclaimed water (treated sewage) for construction (or captured stormwater runoff)**
 - **Plan for materials handling – topsoil stockpiles, deliveries to works**
- **Subdivision Construction:**
 - **Public Information Strategy – objectives:**
 - **Promote development**
 - **Inform development industry – model site**
 - **Public accountability for performance**
 - **Use onsite display and website**
 - **Clear Vision of project objectives - to inform estate design, then to inform civil engineering design, to inform construction method, planning and contract administration – follow the whole chain through**
 - **Investigate using onsite materials and/or producing materials onsite to reduce transport impacts – e.g. consider concrete batching plant within estate to supply subdivision works, industrial/commercial building works. Also use of stabilised local soils for road pavements.**
 - **Investigate Green Star rating systems for industrial subdivisions and construction**

Section 3:
Workshop Program

Hume West Industrial Estate – Subdivision Design

Scoping Workshop A: Sustainability Options

11 - 12 March 2008, Canberra

Aim: To identify potential sustainability options for the development site, using a broad cross section of participants from Government agencies, key partners and representatives from professional bodies.

Deliverable: A list of potential sustainability options to be considered in the project, under a set of key themes.

Agenda:

Day 1: Tuesday 11 March

Time	Activities
9.00 – 10.30am	Session 1: Introductions & Workshop Context, and Control Group Session
10.30 – 10.45am	Morning Tea
10.45 – 12.45pm	Session 2: Rotations (3) – Contribution
12.45 – 1.30pm	Lunch
1.30 – 3.00pm	Session 3: Rotations (2) – Contribution
3.00 – 3.15pm	Afternoon Tea
3.15 – 4.00pm	Session 4a: Control Group Review

Day 2: Wednesday 12 March

Time	Activities
9.00 – 10.30am	Session 4b: Control Group Review
10.30 – 10.45am	Morning Tea
10.45 – 12.30pm	Session 5: Lease & Development Agreement – Part 1
12.30 – 1.30pm	Lunch
1.30 – 3.00pm	Session 6: Lease & Development Agreement – Part 2
3.00 – 3.15pm	Afternoon Tea
3.15 – 4.00pm	Session 7: Workshop Wrap Up

Facilitators:

These workshops will be facilitated by [The Natural Edge Project](#) (TNEP), an independent Sustainability Think-Tank based in Australia. TNEP operates as a partnership for education, research and policy development on innovation for sustainable development. Our mission is to contribute to and succinctly communicate leading research, case studies, tools, policies and strategies for achieving sustainable development across government, business and civil society.

Workshop Context - Development:

The Land Development Agency (LDA) has recently awarded GHD Pty Ltd a Planning and Engineering Consultancy for a project known as Hume West Industrial Estate (HWIE). HWIE is a site of approximately 73.4 hectares located adjacent to the south-west of the existing predominantly developed area of the suburb of Hume. The LDA sees the opportunity of developing this estate in conjunction with the ACT Government's 'Weathering the Change' policy and setting benchmarks for future industrial estates. The Agency is conducting a series of early design workshops to facilitate this outcome.

The design of the estate will capitalise on relevant technologies & methodologies consistent with the principles of Environmentally Sustainable Development, including considerations across the thematic areas of energy, water, transport, landscaping, amenity and security, and subdivision construction.

Workshop Context - Process:

The aim of the workshop is to facilitate a structured but innovative scoping space around the future Industrial Estate site. Participants will gain first hand experience in using the Scoping Design Charette process as a tool to bring about improved outcomes in sustainable development. The workshop will involve two facilitation techniques that have been developed to ensure a participant led, participant owned process and outcome: The *Rotating Control Group Facilitation Method*, and the *Passive Facilitation Method*.

This two-day workshop will be a combination of very brief contextual presentations and facilitated sessions. It will encourage interdisciplinary discussion and concept planning between participants. It will be of relevance to participants involved in the planning of subdivisions, from technical design experts (eg engineering, architecture, planning etc), to community representatives, local government and business.

Workshop Facilitators Short Biographies:

Mr Charlie Hargroves is the Project Director for The Natural Edge Project (TNEP) and a Research Fellow in the Centre for Environmental Systems Research at Griffith University. He was recently appointed as an Associate Member to the Club of Rome. A 2000 graduate of the University of Adelaide, Charlie practised as a Civil and Structural Engineer before co-founding TNEP as a special project initiative within the Institution of Engineers Australia. Charlie co-edited 'The Natural Advantage of Nations' (Earthscan 2005) and is now working with the team on two publications: a 20 year response to 'Our Common Future' (1987) titled ['Cents and Sustainability'](#) (the topic of Charlie's National Press Club Address on 29 October 2008), and an update to 'Factor 4' (1997), titled ['Factor 5'](#).

Ms Cheryl Desha is the Education Director for The Natural Edge Project and a Lecturer in the School of Engineering, on sustainable development. A graduate of Environmental Engineering (Griffith University, university medal) Cheryl was the 2005 Australian Young Engineer of the Year. Her teaching and research role includes developing course material and delivering training to embed sustainability critical literacy skills into curriculum for undergraduate, and postgraduate students. Prior to joining TNEP she worked for 4 years in a multi-national engineering consultancy in their sustainability team. She is currently undertaking her PhD on developing a curriculum renewal framework for transitioning to engineering education for Sustainable Development and is on the International Advisory Panel for the 'International Journal of Sustainability in Higher Education'.

Section 4:
Participant Feedback

FEEDBACK RESPONSES: WORKSHOP A

10-11 March 2008, Canberra

Aspects of the workshop that were done well:

<p>Approach</p> <p>'hats off' => open frank exploration of topics</p> <p>Organisation of groups</p> <p>Groups worked well</p> <p>Timing was really good. I felt that we had the right amount of time to discuss each area. This shows a great deal of pre-thinking</p> <p>Structure</p> <p>Segmentation of issues</p> <p>Peer analysis</p> <p>Feedback procedure</p> <p>Cross pollination of ideas through circulation around tables</p> <p>Opportunity to hear views from others with quite different perspectives. Informal discussion with stakeholders</p> <p>Good with the "transferring around between tables". Clarity with 1 subject/table at all times and you clear your head with a leg stretch</p> <p>Fruit good initiative</p> <p>Explanation of the problem is new approach for me</p> <p>Facilitation has been good</p> <p>Subject a little vague but needed to be</p> <p>The emphasis "leave the hat outside"</p>	<p>Interesting manner of achieving feedback/process. Positive feedback drawn out through the workshop process</p> <p>Targeting expertises from groups worked well</p> <p>Time and flexibility for discussion good</p> <p>Ensuring all stakeholders leave their "hats" outside the door to facilitate good discussion</p> <p>That each group was able to assess all the topics provided</p> <p>Presentation of material and timely</p> <p>Materials and process</p> <p>Explaining the context without constraining the thinking</p> <p>(none – blank)</p> <p>Scoping and methodology, given the time frame and issues to be covered</p> <p>The workshop was fun and ideas were shared, people got involved</p> <p>Review of each topic (water, energy, transportation et.) helpful – in particular, review of comments on base topic made by other groups</p> <p>Overall workshop organisation</p> <p>In general, all done well. Outlined well and kept on time</p> <p>Structure of movement between tables</p> <p>Breaks and food</p>
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Aspects of the workshop that could be improved:

<p>Lead into workshop => for participants – we missed the initial instruction – talking to introduce each other</p> <p>Lack of clarity of desires outcomes for best part of morning</p> <p>Vision from client was “wooly” – this set the tone for the day</p> <p>Introductions => knowing who’s who up front would be better</p> <p>Pre-attendance information packs that give a clear understanding of what is required, timing and assisting relevant information</p> <p>Better <u>coffee!!!</u> and <u>more</u> coffee</p> <p>Visualisations – eye candy to stimulate the urban design brain</p> <p>(none – blank)</p> <p>Introduction to participants, ie. who was in attendance</p> <p>Basic facts about the site for those not familiar with it</p> <p>Very limited x broader context. Site adjoins state/territory boundary</p> <p>Not interrupting good discussion</p> <p>Sorry, back to the food, fruit should have been served or an alternative to cookies on the morning as well</p> <p>Sometimes trouble making out what people say because of the background buzz. A lot of people in the same room</p> <p>Explanation could be enhance with a site visit or more details of the site</p> <p>Possibly little clearer on the outcomes</p> <p>More site specific information would have been helpful. Some multi-disciplinary discussion would have been useful (between “Control Group” members <- not necessarily a lot to bring to the table on all subjects)</p>	<p>Site understanding for some participants</p> <p>Discussions became disjointed and off-topic at times within the groups – facilitators in groups as scribes and discussion leaders?</p> <p>Maybe an agenda to be sent out prior to the event to provide some more information for participants caught up with limited available time</p> <p>(none – blank)</p> <p>Greater input of material</p> <p>Context setting, eg.</p> <ul style="list-style-type: none"> • World’s best practice case studies • Guidance from int’l practice • The vision for the development <p>Understanding of <u>major</u> social and environmental impacts arising from industrial activity</p> <p>A little more physical space</p> <p>Outline of policies driving existing and future development other than just climate change. eg. Spatial plan, cross border development</p> <p>Letting participants know about format prior to meeting issues, concepts not covered eg people impacts. Links between social and economic drivers and the subdivision</p> <p>Materials at each table eg. Map, clear definition of land under review</p> <p>Relationships to adjoining land needed greater clarity</p> <p>Missing the new cutting edge ideas</p> <p>Need for more of an introduction to project – eg. site in context; work already done etc.</p> <p>(none – blank)</p>
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How did the workshop improve your understanding of the opportunities for sustainability options in industrial subdivision developments?

<p>Improved awareness and knowledge of complexity at integration on all levels</p> <p>Sharing information</p> <p>Assumptions of base level knowledge across group and across topics – integrating into 'foreign' areas</p> <p>Confirmed existing knowledge only</p> <p>By bringing together differing views and expertise => very revealing. Also => good way to promote self-assessment of my own opinions.</p> <p>Minimal opportunity to think outside the square box</p> <p>Underutilised intellectual firepower of the resources in the room was a missed opportunity given the limited duration and format of the workshops</p> <p>Multi-disciplines approach</p> <p>Overview structure</p> <p>Participants attending</p> <p>Basically through exposure to some ideas</p> <p>(none – blank)</p> <p>I have always been of the opinion that the opportunities for sustainable solutions in and industrial are not any different than the ones for residential or another development. It is simply a question of will and innovation. I have learnt a lot <u>overall</u> today though. Thank you</p> <p>A lot. Understand of the new way of reducing the waste and reuse</p> <p>Not sure</p> <p>Provided good overview of project as a whole and the impact of all issues on each discipline</p>	<p>Understanding of other perspectives when viewed from sic directions</p> <p>Other input from range of stakeholders</p> <p>Good to see what ideas are collectively expressed – many are on the same page</p> <p>Incorporated a number of aspects to sustainability in one workshop – encourage us to think outside the square</p> <p>I was able to gain different perspectives from others in different fields and workplaces</p> <p>Gave other input from other avenue. Different views and ideas from different backgrounds and priorities.</p> <p>(none – blank)</p> <p>Yes – but I am still concerned that we are still running with a “normal” vision of this type of development</p> <p>Identified areas where it is already occurring – working examples</p> <p>Interesting to understand the views of various “players” within various roles</p> <p>My general understanding has remain at about the same level as it was before</p> <p>Understanding improved greatly – group work excellent.</p> <p>Perhaps more need for visual examples of other industrial estates – eg. best practice landscaping and amenity</p> <p>Great to get to talk to professionals experience in the matters</p>
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How helpful were the 'Starter Lists' in considering opportunities for improvement?

<p>Varied – but on the whole a useful starting point. Knowledge of various participants conflicted with list => scrap list and restart approach</p> <p>Good</p> <p>Not very helpful for me but I can see that they may help more generally. Sorry I take that back. Very helpful for me in areas outside my area of expertise</p> <p>Useful, but limiting to the situation mapping</p> <p>Good grounding</p> <p>Started discussions early – focus</p> <p>Useful if not aspirational and of only limited application</p> <p>Not useful – disturbed the flow of conversation. We mostly ignored them. Would like to read them later</p> <p>I found them helpful. It is always foot to give a group something constructive to start with – harder to start on a clean sheet (here anyway)</p> <p>Yes. However, it is prefer to cover everything</p> <p>Good idea – workshop may have been more different without them</p> <p>Good</p> <p>Starter lists helpful – opportunity to utilise, expand on ideas, generate new ideas</p>	<p>Good beginning point for discussion. Though discussion ranged over broad aspects/inputs to the issues</p> <p>Good to start discussion but some 'scope notes' for each topic would be helpful to direct discussion</p> <p>Helpful to start thoughts flowing</p> <p>They worked well to get people talking and thinking about the issues. Some of the Starter List options were not always appropriate, but this made members of my group think outside the square</p> <p>A good base in which to start</p> <p>Good for development – scale opps</p> <p>Not so useful for indentifying "big-picture" opportunities</p> <p>Useful starter – not limiting</p> <p>Helpful but lacked and ACT perspective of policy regulation, and guidelines – New Territory Plan</p> <p>Quite helpful, the areas covered were generally already within the research parameters. There is a possibility too many pointers with too much detail will limit debate to the issues raised</p> <p>Good for a starter</p> <p>Useful as example for general direction of workshop</p>
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Do you have any comments/ feedback/ advice for the Workshop Facilitators?

<p>Very helpful / kept momentum</p> <p>Could have worked more closely with groups to spark comment and to keep on 'track'</p> <p>Minties!</p> <p>Tomorrow presents an opportunity to recover lost ground and go forward</p> <p>Understanding the limitations of the brief and not being constrained by it</p> <p>Have courage to go into detail early, capture it and then move on with the program!</p> <p>Will there be a "call back session"</p> <p>No</p> <p>(none – blank)</p> <p>(none – blank)</p> <p>They spoke clearly and held the timetables – good work. Hopeful and interacting – good to move around the different teams</p> <p>No</p> <p>Well done – first intro a little too long</p> <p>(none – blank)</p>	<p>Approach and process was appropriate to the workshop. Positive was to draw out input the range of issues affecting site and the development</p> <p>(none – blank)</p> <p>(none – blank)</p> <p>(none – blank)</p> <p>(none – blank)</p> <p>Address "improvement" comments</p> <p>Put industrial activity into "big-picture" context, ie. Unsustainable patterns of production and consumption (see UK SDC)</p> <p>All well done</p> <p>Speakers needed to be up front – leading edge examples shown to extend thinking outside the box</p> <p>Well done; long day, but worth the time to set priorities for a development that will be there for a long time, at quite a large scale for Canberra</p> <p>Some additional info on leading edge to start wider thinking</p> <p>(none – blank)</p> <p>(none – blank)</p>
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Thank you for your participation in the workshop, and for your time in providing feedback!