

ATTACHMENT B

**SCHEDULE OF PROPOSED AMENDMENTS
TO THE FINAL MASTER PLAN**

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The amended version of the Decentralised Energy Master Plan is provided in Attachment C. Additional text is shown by an underline, and deleted text shown by a ~~strikethrough~~.

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FRONT COVER	FRONT COVER		Deleted: June 2013 Added: <u>November 2013.</u>
page 2	page 2	1 st paragraph, 1 st column	Deleted: More than half of the target can be met from renewable energy resources within the local government area. Added: <u>Also, more than enough renewable gas feedstocks can be found within 250km of the city to supply 100% of the gas needed to provide the city's trigeneration network.</u>
page 2	page 2	2 nd paragraph, 2 nd column	Deleted: Of this local electricity demand, renewable electricity generation was expected to supply 30% of the City's LGA by 2030. Added: <u>Of this local electricity demand, renewable electricity generation was expected to supply 30% and trigeneration 70% of the City's LGA by 2030</u>
page 2	page 2	3 rd paragraph, 3 rd column	Deleted: developed Added: <u>deployed</u>
page 3	page 3	1 st paragraph, 1 st column	Added: <u>if utilised as renewable electricity rather than as renewable gas.</u>
page 3	page 3	3 rd paragraph, 1 st column	Deleted: At least 40% of the renewable electricity target will need to be generated beyond the LGA in order to meet our target. Added: <u>At least 12% of the renewable electricity required to meet demand in the City's LGA will need to be generated beyond the LGA in order to meet our renewable electricity generation target.</u>

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page 3	page 3	1 st paragraph, 3 rd column	Deleted: achieving Added: <u>exceeding</u>
page 3	page 3	2 nd paragraph, 3 rd column	Deleted: adding to Added: <u>increasing</u>
page 4	page 4	Bullet point 1, 1 st column	Added: By 2030, renewable electricity <u>generation</u> can provide 30% of electricity used in the City of Sydney
page 4	page 4	Bullet point 2	Deleted: 60% of the City's 30% renewable electricity target can be met from renewable energy within the local government area. Added: <u>Up to 18% of the City's electricity demand can be met from renewable electricity generation within the local government area.</u>
page 4	page 4	Bullet point 3, 1 st column	Deleted: 40% of the City's 30% renewable electricity target can be met from renewable energy beyond the local government area within 250km. Added: <u>At least 12% of the City's electricity demand can be met from renewable electricity generation within 250km of the local government area.</u>
page 4	page 4	Bullet point 5, 1 st column	Deleted: 37% Added: 37.5%
page 4	page 4	Bullet point 6, 1 st column	Deleted: gases Added: <u>renewable gas</u>
page 4	page 4	2 nd paragraph, 5 th column,	Deleted: Of this local electricity demand, renewable electricity generation was expected to supply 30% of the City's LGA by 2030.

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			Added: <u>Of this local electricity demand, renewable electricity generation was expected to supply 30% and trigeneration 70% of the City's LGA by 2030.</u>
page 5	page 5	1 st paragraph, 1 st column	Deleted: and wind
page 5	page 5	1 st paragraph, 3 rd column	Deleted: Peak demand times in mid-afternoon Added: <u>Peak demand times in mid-afternoon and early evening</u>
page 5	page 5	2 nd paragraph, 3 rd column	Deleted: 60% of the City's renewable electricity target Added: <u>up to 18% of the City's electricity demand from renewable energy generation</u>
page 6	page 6	1 st paragraph, 3 rd column	Deleted: Solar electricity PV and solar hot water could provide more than half of the City's 30% renewable electricity target Added: <u>Solar electricity PV, solar hot water and micro or mini wind turbines could provide up to the equivalent of 15.2% of the City's electricity demand.</u>
page 6	page 6	3 rd paragraph, 3 rd column	Deleted: Micro-wind turbines Added: <u>Micro and mini turbines</u>
page 6	page 6	1 st paragraph, 4 th column	Deleted: 4% Added: <u>1.2%</u>
page 6	page 6	1 st paragraph, 5 th column	Deleted: Forty per cent of the City's renewable electricity target would need to be Added: <u>At least 12% of the City's electricity demand will need to be met from renewable electricity generation</u>

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page 7	page 7	2 nd paragraph, 1 st column	Deleted: provide back-up Added: <u>provide fossil fuel back up</u>
page 7	page 7	New 2 nd and 3 rd paragraphs, 2 nd column	Added: <u>Energy crops and native woodlands have been excluded from this Master Plan to avoid any potential land use conflicts with food crops and destruction of native woodlands. However, some forms of energy crops may be supported in this Master Plan where it can be shown that there are other beneficial environmental uses such as oil Mallee crops playing a role in long-term sustainable farming in low rainfall areas to decrease the salinity levels of the land.</u> <u>Another biomass feedstock opportunity could be the use of bushland fire hazard reduction materials, particularly where near to renewable gas collection or generation plants. Utilising these combustible materials for renewable gas production could significantly reduce the current fire hazard reduction burn-offs, with consequential air pollution and adverse health impacts, and the risk of accidental bushfires.</u>
page 7	page 7	2 nd paragraph, 2 nd column	Deleted: liquefaction and transport Added: <u>liquefaction and transport to the nearest natural gas pipe network</u>
page 8	page 8	1 st paragraph, 1 st column	Added: <u>This renewable gas resource will even supply the 34.7PJ/year, including the 2PJ/year of domestic gas used for domestic heating and cooking, needed to replace 100% of the fossil fuel natural gas in the City's LGA.</u>
page 8	page 8	2 nd paragraph, 2 nd column	Deleted: fertiliser Added: <u>high grade fertiliser</u>
page 8	page 8	2 nd paragraph, 4 th column	Deleted: develop Added: <u>create</u>

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page 9	page 9	2 nd paragraph, 1 st column	Deleted: market Added: <u>market, excluding liquefied natural gas terminals</u>
page 9	page 9	2 nd paragraph, 2 nd column	Deleted: abatement Added: <u>abatement, i.e. cheaper than coal fired electricity</u>
page 9	page 9	1 st paragraph, 3 rd column	Deleted: supply Added: <u>supply/displace</u>
page 10	page 10	1 st paragraph, 1 st column	Deleted: electricity Added: <u>electricity generation</u>
page 10	page 10	1 st paragraph, 2 nd column	Deleted: Figure 1 shows the renewable electricity contribution to the 30% target for 2030 and Figure 2 shows the reduction in greenhouse gas emissions from renewable energy proposed by the Renewable Energy Master Plan, as well as from other green infrastructure by 2030. Added: <u>Figure 1 shows the renewable electricity generation contribution to the 30% renewable electricity target by 2030, Figure 2 shows the renewable gas generation contribution to the 100% renewable gas target by 2030 and Figure 3 shows the reduction in greenhouse gas emissions from renewable energy proposed by this Renewable Energy Master Plan, as well as from other green infrastructure by 2030.</u>
page 10	page 10	below Figure 1	Added: <u>Figure 2: City of Sydney LGA Renewable Gas Contribution to 100% Target for 2030 (Source: City of Sydney)</u>
page 10	page 10	below (old) Figure 2	Added: <u>Figure 4: Solar Intensity Map in Australia (Source: eco.lodge.it)</u>

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page 11	page 11	1 st paragraph, 1 st column	Deleted: This compares with the 7,183PJ of black coal that Australia exported in 2007/08 at a value of \$24.4 billion. Added: <u>This compares with the 8,053PJ of black coal and the 1,086PJ of natural gas that Australia exported in 2010/11 at an economic value of \$31 billion.</u>
page 14	page 14	3 rd paragraph, 2 nd column	Deleted: Energy crops have been excluded from this Master Plan to avoid any potential land use conflicts with food crops Added: <u>Energy crops and native woodlands have been excluded from this Master Plan to avoid any potential land use conflicts with food crops and destruction of native woodlands. However, some forms of energy crops may be supported in this Master Plan where it can be shown that there are other beneficial environmental uses such as oil Mallee crops playing a role in long-term sustainable farming in low rainfall areas to decrease the salinity levels of the land.</u>
page 15	page 15	1 st paragraph, 3 rd column	Deleted: 40% of the renewable electricity target Added: at least 12% of renewable electricity generation
page 15	page 15	1 st paragraph, 4 th column	Deleted: delay Added: <u>delay the</u>
page 16	page 16	1 st paragraph, 1 st column	Deleted: network to Added: <u>network</u>
page 16	page 16	2 nd paragraph, 4 th column	Deleted: energy Added: <u>electricity</u>
page 17	page 17	2 nd paragraph, 2 nd column	Deleted: and 10m/s Added:

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			<u>and 10m/s</u>
page 18	page 18	2 nd paragraph, 4 th column	Deleted: repeatable form of energy Added: <u>form of non-fossil fuel energy</u>
page 18	page 18	3 rd paragraph, 4 th column	Deleted: delivery by truck Added: <u>delivery by truck to the nearest natural gas pipe network</u>
page 18	page 18	Title, 5 th column	Deleted: Mining Added: <u>Mining and Exports</u>
page 18	page 18	1 st paragraph, 5 th column	Deleted: For example, Australia has the 2nd largest offshore wind energy resource in the world after the Russian Federation and the wave energy resource from Geraldton to Tasmania alone would supply five times Australia's total energy requirements. Added: <u>For example, Australia's solar resource is 10,000 times Australia's annual energy consumption. Australia also has the 2nd largest offshore wind energy resource in the world after the Russian Federation and the wave energy resource from Geraldton to Tasmania alone would supply five times Australia's total energy requirements.</u>
page 20	page 20	3 rd paragraph, 2 nd column	Deleted: substantial Added: <u>substantial renewable</u>
page 20	page 20	3 rd paragraph, 4 th column	Deleted: As a preliminary step towards a renewable energy future the Australian Energy Market Operator (AEMO) is developing a report to the Australian Government which considers energy market and transmission planning implications of moving towards various 100% renewable electricity generation mix scenarios at 2030 and 2050. Added: <u>As a preliminary step towards a renewable energy future the Australian Energy Market Operator (AEMO) submitted a report to the Australian Government in July</u>

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			<u>2013 indicating that a 100% renewable electricity system was possible but would require much higher capacity reserves than a conventional power system. The AEMO report covered two 100% renewable electricity generation mix scenarios at 2030 and 2050. However, although the AEMO report took bioenergy into account it did so as renewable electricity generation only. AEMO did not study or take into account renewable gas grid injection which can be up to four times more energy efficient at end use than renewable electricity generation only from renewable gas or 'power to gas' technologies that can economically overcome the intermittency of solar and wind through energy storage in the existing gas grid.</u>
page 21	page 21	2 nd paragraph, 1 st column 3 rd bullet point	Deleted: energy Added: <u>energy from remote centralised energy generation</u>
page 21	page 21	3 rd paragraph, 1 st column	Deleted: Some renewable energy technologies Added: <u>Conventional renewable energy technologies such as solar and wind' in 1st line</u>
page 21	page 21	3 rd paragraph, 2 nd column	Deleted: is another option Added: <u>can also be incorporated</u>
page 21	page 21	3 rd paragraph, 3 rd column	Deleted: City's Added: <u>City's renewable electricity target</u>
page 22	page 22	3 rd paragraph, 3 rd column	Deleted: may Added: <u>may also</u>
page 22	page 22	1 st paragraph, 4 th column	Deleted: Coal-fired electricity prices will rise further partly due to the introduction of a price on carbon that penalises high carbon emitters. Renewable energy will not be subject to a price on carbon as it does not produce greenhouse gas emissions.

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			Added: <u>Coal-fired electricity prices will rise further in the future partly due to the increasing cost of fossil fuel extraction and partly due to the very high cost of grid network investment and charges. However, renewable energy prices will reduce in the future, partly due to increased economies of scale and low operating costs and partly due to the decentralised energy nature of most forms of renewable energy which can avoid the very high grid network charges.</u>
page 23	page 23	2 nd paragraph, 2 nd column	Deleted: four renewable gas resources, and baseline technologies need to be evaluated in order to compare their relative cost-effectiveness in achieving greenhouse emissions abatement Added: <u>five</u> renewable gas resources, and baseline technologies need to be evaluated in order to compare their relative cost-effectiveness in achieving greenhouse <u>gas</u> emissions abatement
page 23	page 24	New 5 th paragraph, 5 th column	Added: Should the carbon pricing mechanism be repealed by Parliament the City's renewable energy target will only be met by 2030 with higher subsidies, unless an alternative climate change mitigation policy framework provides similar benefits and incentives. This or the low scenario is covered in Technical Appendix 1. With the election of the Coalition Government it is uncertain what impact the repeal of the carbon pricing mechanism will have on electricity prices and renewable electricity prices in particular. However, it should be noted that advanced economies such as Germany, UK, Denmark, California and others have achieved far higher levels of renewable energy penetration than Australia on the back of energy policy not carbon pricing or emissions trading.
page 24	page 24	1 st paragraph, 1 st column	Deleted: Energy from centralised fossil fuel power stations receive many hidden subsidies such as discounted cost of coal, which must also be considered. Added: <u>Energy from coal fired power stations receive many hidden government subsidies such as discounted coal, coal terminal lease fees, providing infrastructure so that coal can be transported to electricity generators or to port loading facilities, rail upgrades, avoidance of the NSW waste levy for the landfill of coal ash, tax credit on diesel fuel for coal trucks and machinery and carbon pricing compensation, quite apart from the health and</u>

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			<u>environmental costs.</u>
page 24	page 24	2 nd paragraph, 2 nd column	Deleted: Some technologies such as solar photovoltaics Added: <u>Some technologies such as trigeneration fuelled by renewable gas and solar photovoltaics</u>
page 26	page 26	3 rd paragraph, 1 st column	Deleted: zero or low emissions generation Added: zero or low emissions generation (ZLEG)
page 26	page 26	New 4 th paragraph, 1 st column	Added: <u>The report sets out the technical potential of ZLEG for new and existing buildings if the Building Code of Australia was used to foster ZLEG. This breaks down into two major technologies and customer loads - solar PV primarily for the residential sector and precinct trigeneration for the commercial sector. For solar PV the technical potential is 8,126 GWh/year and for precinct scale trigeneration the technical potential is 9,300 GWh/year. This compares with the 8,465 GWh/year growth in forecast electricity consumption for the residential sector and the 6,300 GWh/year growth in forecast electricity consumption for the commercial sector, both by 2020.</u>
page 26	page 26	1 st paragraph, 2 nd column	Deleted: finance retrofitted Added: <u>enables the low cost financing for retrofitting</u>
page 26	page 26	1 st paragraph, 3 rd column	Added: <u>ARENA's \$3.2 billion in funding is legislated and extends out until 2022 providing long term funding and policy certainty for industry. Around \$2 billion of ARENA's funding is currently uncommitted and available for ARENA to invest in accordance with its functions and powers. However, with the election of the Coalition Government \$150 million from ARENA's funding will be directed to the million solar roofs program' to the end of 1st paragraph</u>
page 26	page 26	2 nd paragraph, 3 rd column	Deleted: will be Added: <u>is</u>

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page 26	page 26	2 nd paragraph, 3 rd column	Added: <u>The CEFC has so far invested \$500 million in projects worth \$2 billion. However, the Coalition Government plans to abolish the CEFC as part of its Direction Action policies' to the end of 2nd paragraph</u>
page 26	page 26	3 rd paragraph, 3 rd column	Deleted: These two initiatives may well Added: <u>At least one of these initiatives will</u>
page 26	page 26	1 st paragraph, 4 th column	Deleted: Draft Added: <u>September 2013</u>
page 26	page 26	2 nd and 3 rd paragraphs, 4 th column	Deleted: A NSW Renewable Energy Action Plan is being developed to support the achievement of the national target of 20% renewable energy by 2020. The Plan is intended to position NSW to increase the use of energy from renewable sources at least cost to NSW energy consumers and with maximum benefits to NSW. NSW Government recognises that in order to grow renewable energy generation in NSW it needs to address the higher cost of renewable energy, the current barriers to investment and community concerns. Added: <u>NSW Government has developed the Renewable Energy Action Plan to guide NSW's renewable energy development and to support the national target of 20% renewable energy by 2020. The Plan positions NSW to increase energy from renewable sources at least cost to the energy consumer and with maximum benefits to NSW. The Plan's three key goals (comprising 24 actions) are:</u> <ul style="list-style-type: none"> • <u>Attract renewable energy investment and projects</u> • <u>Build community support for renewable energy</u> • <u>Attract and grow expertise in renewable energy technology.</u> <u>Key targets include facilitating five community renewable</u>

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			<u>energy projects, promoting NSW as a leader of research and innovation in renewable energy, establishing a working group to develop an advanced bioenergy initiative and supporting research and development in advanced bioenergy applications and wave and tidal technologies.</u>
page 26	page 26	4 th paragraph, 4 th column	Deleted: This Added: <u>The Plan</u>
page 26	page 27	New sections	Added: <u>RENEWABLE ENERGY JOBS, EDUCATION AND TRAINING</u> <u>Global demand for renewable energy continued to rise during 2011 and 2012, supplying an estimated 19% of global final energy consumption. Total renewable electricity capacity worldwide exceeded 1,470GW in 2012, up by 8.5% from 2011. Renewables made up just over 50% of net additions to electric generating capacity from all sources in 2012. Top countries for renewable electricity capacity were China, USA, Germany, Japan, Spain, Italy and India.</u> <u>In the European Union, renewables accounted for almost 70% of additions to electricity generation capacity in 2012. Renewable gas has also grown significantly, especially in Europe where almost 12,000 renewable gas plants operated in 12 countries, mainly supplying cogeneration/trigeneration networks. In addition, 2,250 sewage treatment plants are also operating in Europe with a growing proportion of renewable gas grid injection for cogeneration/trigeneration and transport.</u> <u>An estimated 5.7 million people worldwide work directly or indirectly in the renewable energy sector. China is the world leader with 1.75 million people employed in the renewable energy sector followed by the European Union (1.2 million), Brazil (0.8 million), USA (0.6 million), India (0.4 million) and Germany (0.4 million).</u> <u>In Australia, there are 1,340 companies operating in the renewable and clean energy sector, employing 53,000 people. In NSW, 427 companies are operating in the renewable and clean energy sector, employing 20,600 people. However, the potential for the renewable energy</u>

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			<p><u>sector and associated jobs in both Australia and NSW is vast and the sector is currently nowhere near as big as it could be if Australia was to tap into its immense renewable energy resources.</u></p> <p><u>In order to capitalise on the growing renewable energy industry in Australia and NSW it is important that universities and TAFEs provide the courses for Australians to skill themselves for renewable energy technologies and installations, particularly with emerging new renewable energy technologies such as renewable gas grid injection, 'power to gas', geothermal and ocean renewable energy. Sydney, in particular, could become a centre of renewable energy excellence with sister cities such as Newcastle and Wollongong also taking advantage of this.</u></p> <p><u>COMMUNITY RENEWABLE ENERGY</u></p> <p><u>What can the community do to support the City's Renewable Energy Master Plan and help the City move toward a 100% renewable energy system by 2030? Much of the City's renewable energy target inside the City's LGA is solar, some 478MW out of the 534.5MW of installed capacity primarily from solar PV and solar thermal hot water displacing grid electricity. The City's renewable electricity target beyond the City's LGA is 704.5MW, primarily onshore wind energy but could also be other forms of renewable energy. In addition to that is the City's renewable gas target replacing 100% of projected natural gas consumption in the city by 2030. How can the community help the City to deliver these targets?</u></p> <p><u>The community can help the City by advocating, proselytising and lobbying governments to remove regulatory barriers to decentralised renewable energy and by installing their own renewable energy installations where they are able to do so. However, many residents and businesses in the city who want to contribute toward making Sydney a 100% renewable energy city are currently not able to do so because they do not own the buildings that they occupy, do not have unshaded roofs or do not own roofs at all in multi-occupied buildings or do not have the finance to install renewable energy generation. How can the City help its community to help the City in delivering this Renewable Energy Master</u></p>

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			<p><u>Plan?</u></p> <p><u>As part of its research into world renewable energy best practice a key component of how countries were delivering such a large proportion of renewable energy generation was community renewable energy. In Denmark, nearly 50% of domestic electricity demand and 80% of thermal energy demand (heating and cooling) is owned by the customers themselves in one form or the other. In Copenhagen, the Middlegrunden wind farm in Copenhagen Harbour is 50% owned by a community cooperative with 8,650 residential members living within 2km of the wind farm.</u></p> <p><u>In Germany, 65% renewable energy generation, some 35,000MW, is owned by the customers themselves either as individuals or as cooperatives. The rapid roll out of renewable energy in Germany is now nearly three times the installed nuclear capacity in 2010 and five times installed nuclear capacity in 2011 (after Germany's nuclear phase-out decision). Even in the UK, there has been a rapid growth in community owned self-generation from 6% in 2011 to 15% in 2013.</u></p> <p><u>WHAT IS COMMUNITY ENERGY?</u></p> <p><u>Community renewable energy generally means locally owned, locally sited renewable energy (electricity and/or heat and/or gas). Community renewable energy includes the engagement or participation by the community that reaches beyond a simple investment or shareholding relationship. It also goes beyond the community benefit model sometimes used by developers where a small percentage of the income from a private development is set aside for a community benefit such as a new community facility. Community energy also includes some form of control by community owners of the project, through a cooperative or as a landowner or groups of landowners, as small and medium enterprises, or as residents and homeowners who live and work with the installation daily.</u></p> <p><u>Community renewable energy projects provide economic, environmental and social benefits such increasing the local economy, creating local jobs, reducing dependency on fossil fuels and high grid network charges, reducing greenhouse gas emissions</u></p>

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			<p><u>and climate change impacts, reducing fossil fuel pollutant emissions and associated pollutant related illnesses, providing opportunities for local participation and capacity building in local communities, building greater acceptance and interest in renewable energy, giving voice to people’s enthusiasm and interest in renewable energy and providing a symbol of the community as a source of pride and identity.</u></p> <p><u>COMMUNITY OWNED RENEWABLE ENERGY</u></p> <p><u>Community owned renewable energy is owned or partly owned by the local community. Projects are financed by the community purchasing shares in the project as members of a cooperative for which they receive dividends for the shareholding investments. Members are normally required to be active members, which mean that they must also purchase and consume the renewable energy generated directly or indirectly by the cooperative to make the project financially viable to lenders.</u></p> <p><u>In Denmark, renewable energy developers must sell 50% of the shareholding in the project to residents living within 2km of the project by law, and it is this legislation and community owned model that has led to Denmark being a world leader in renewable energy and not because Danes are any greener than anyone else. More than 150,000 households are co-owners of local wind farm co-operatives, which have installed 86% of all wind turbines in Denmark.</u></p> <p><u>In Germany, hundreds of thousands of people have invested in citizen’s wind farms across the country representing 90% of wind farms in some states such as North Frisia. The sector employs more than 90,000 people and generates 8% of Germany’s electricity.</u></p> <p><u>The first community owned renewable energy scheme in the UK was the Baywind wind farm in Cumbria owned by 1,300 members which became operational in 1997. Today there are 43 community owned renewable energy schemes operating in the UK. The first community owned solar farm in the UK was the Westmill solar park adjoining the community owned Westmill wind farm on the Wiltshire/Oxfordshire border. The solar farm became operational in 2011 after raising £6 million from 1,650</u></p>

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			<p><u>members. The share issue was 50% over subscribed.</u></p> <p><u>Community wind is one of the fastest growing markets in the USA with 27 states having legislation that allows community renewable energy schemes. Today, there are more than 1,500 wind farms owned by farmers, ranchers, landowners, consumer-owned utilities, school districts, universities and native tribes. The largest concentration of community owned wind farms are in Minnesota (469), Washington (440), California (238), Nebraska (153), Iowa (81) and Texas (51).</u></p> <p><u>The first community owned renewable energy scheme in Australia was the Hepburn wind farm in Victoria owned by 2,300 members which became operational in 2011.</u></p> <p><u>THIRD PARTY OWNERSHIP</u></p> <p><u>Third party ownership models allow homeowners to contract with third party ownership companies, solar leasing companies or solar finance companies to have, for example, solar PV installed on their rooftops. The companies are responsible for financing, permitting, designing, installing and maintaining the system. Contracts between the homeowner and solar leasing company takes one of two forms:</u></p> <ul style="list-style-type: none"> <u>• Power Purchase Agreement (PPA) option – where the homeowner buys all of the electricity produced by the solar PV on a long term PPA (up to 20 years) at an agreed price which is normally lower than or competitive with the grid retail price of electricity.</u> <u>• Lease option – where the homeowner makes pre-established monthly payments to the solar leasing company. The payment is not tied to the solar PV actual output but is calculated to be competitive with the homeowner’s existing electricity bill.</u> <p><u>The contract models normally offer a buyout option allowing homeowners to eventually purchase their own solar PV system.</u></p> <p><u>In California, third parties own more than two thirds of residential renewable energy installations in the</u></p>

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			<p><u>California Solar Initiative.</u></p> <p><u>ENERGY SERVICES MODEL</u></p> <p><u>The energy services model works on the principle that customers do not want to purchase energy but energy services to run their heating, cooling, lighting and power. Energy services are normally provided with decentralised energy or distributed generation in conjunction with energy efficiency. The energy services model is an established model previously based on cogeneration or trigeneration and energy efficiency but in recent years has adapted to include renewable energy generation.</u></p> <p><u>Energy Services Companies (ESCOs) provide the energy services or an ESCO is established by the customers, such as a body corporate, themselves. There are three distinct types of energy services model:</u></p> <ul style="list-style-type: none"> • <u>Facilities management or energy performance contracting model for the industrial and commercial sector</u> • <u>Community energy model for groups of customers at the same location such as social housing or local authority schemes</u> • <u>Household model where ESCOs provide energy services paid for by the savings in energy consumption and costs.</u> <p><u>ESCOs normally operate under an exempt licencing regime over private wire networks or have stripped down retail electricity licences operating over local public wires on the virtual private wire principle to enable export of surplus power traded within their customer base to maintain the economic value of the renewable energy generated rather than exporting to the grid.</u></p> <p><u>The US ESCO market is the largest in the world growing at an annual growth rate of between 10-25%. US ESCOs generate \$4.1 billion of revenue a year of which on site renewable energy generation accounts for 14% (\$570 million). Germany is Europe's largest ESCO market, valued at between €1.7 and 2.4 billion a year, with approximately up to 500 ESCOs operating in Germany. France has the oldest ESCO market originally developed in the 19th century with approximately 100 ESCOs</u></p>

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			<p>operating in France today. In the UK, the ESCO market is worth about £700 million a year.</p> <p><u>LANDOWNER POOLS</u></p> <p><u>Landowner pools are distinctive renewable energy projects where several landowners with adjacent land pool their land to maximise the use of natural resources and to compensate all affected landowners. Each pool develops a formula based on the amount of land they bring to the project. For wind energy projects, this will include the number of turbines erected on their land, the length of any road, grid connection or transformer station on their land. This model has the advantage of avoiding 'turbine envy' where one landowner installs the wind turbines first, arraying them in such a way on the boundary of their land that the neighbouring landowner cannot erect their own turbines, has to view the wind turbines but received no benefit from the installation.</u></p> <p><u>Landowner pools for renewable energy projects very often make use of existing landowner pools for farming and agriculture and are popular in Germany and Canada. In Germany, the output from landowner pool renewable energy projects such as wind and solar farms and renewable gas (from farm waste) grid injection projects is normally sold, after local energy use, to the nearest city decentralised energy network and/or transport refuelling stations, not the electricity grid.</u></p> <p><u>MUNICIPAL OWNED RENEWABLE ENERGY</u></p> <p><u>Municipal owned renewable energy works on the 'show by doing' principle where the municipality or local authority invests in and owns renewable energy to reduce greenhouse gas emissions and energy bills to the benefit of local ratepayers. Municipal owned renewable energy also acts as a source of pride for local residents and businesses and acts as a beacon for others in the municipality to replicate what the municipality has done and so achieve a far higher level of investment in renewable energy in the locality than would have been possible without municipal owned renewable energy schemes. One of the first examples in the USA was the municipal owned wind turbine in Boston Harbour,</u></p>

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			<p><u>Massachusetts which became operational in 2001.</u></p> <p><u>In Germany, municipalities play a significant role in developing and promoting renewable energy as part of the '100% Renewable Energy Regions' networking project. Today, there are 120 municipalities and regions working to deliver a 100% renewable energy supply for their municipalities and regions. Taking renewable electricity, heat and gas into account 10 municipalities have already achieved or exceeded the 100% renewable energy target ranging from Emsland, Lower Saxony with 103% renewable energy to Prignitz, Brandenburg with 248% renewable energy.</u></p> <p><u>These are rural and small urban German municipalities. Major cities are more challenging. However, the recent German elections included a referendum for the City of Hamburg to buy the local electricity distribution network from the private utility and turn it into a local municipal-based public utility to develop affordable renewable energy without the barrier of high network charges. Hamburg won the referendum despite a well-funded opposition to the proposal from private utilities and state government and points the way for other major cities in Germany to follow.</u></p> <p><u>Similar municipal owned renewable energy projects have been developed around the world, including the municipal owned projects at Woking Borough Council and the Greater London Authority in the UK and at the City of Sydney, Australia.</u></p> <p><u>STATE SHARED RENEWABLE ENERGY PROGRAMS</u></p> <p><u>Shared renewable energy programs enable tenants, schools, cities and many other interested parties not able to invest in their own renewable energy projects to invest in state run renewable energy projects.</u></p> <p><u>Similar to community owned renewable energy, in addition to purchasing a share in a new nominated renewable energy project for which they receive a dividend on their investment the community shareholder must also purchase the renewable energy produced.</u></p> <p><u>In California, the State Legislature has passed Bill SB 43 which will allow millions of Californians who cannot install their own renewable energy to invest in and obtain</u></p>

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			<p><u>renewable energy through their utility. The ruling allows the investment of up to 600MW in renewable energy, of which 100MW must be made available to residential customers. Climate change and solar energy pressure group The Vote Solar Initiative estimates that the initial offering will enable more than 20,000 residential ratepayers throughout California, each purchasing an average 5kW share, will be able to participate in the program, as well as local schools, businesses, the military and government.</u></p> <p><u>State shared renewable energy programs are not the same as diffuse Green Power or green tariff schemes in that customers of shared renewable energy schemes not only purchase renewable energy from a specific new renewable energy project they also own a part of the renewable energy project. The Californian program requires state utilities to deal directly with renewable energy developers, managing the rates on behalf of customers, and provides state utilities with the ability to respond to the erosion of their share of the retail energy market by community owned renewable energy.</u></p>
page 27	page 31	2 nd paragraph, 1 st column	<p>Deleted: supplied</p> <p>Added: <u>supplied by</u></p>
page 27	page 32	New section	<p>Added: <u>INTEGRATED 100% RENEWABLE ENERGY SYSTEM</u></p> <p><u>In developing this Renewable Energy Master Plan detailed research was undertaken into world renewable energy best practice, the mix of renewable energy resources and technologies deployed and in particular, how other countries were overcoming the intermittency of renewable energy generation in their move towards a 100% renewable energy future, particularly in Europe, which is currently far ahead of Australia in terms of climate change and renewable energy targets and delivery. The European renewable energy model is also acting as a model for the US and Asian economies as countries seek to become energy independent and reduce their emissions.</u></p> <p><u>The integrated smart grid system being developed by advanced economies in Europe shows how electricity,</u></p>

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			<p><u>heat and gas can be integrated to provide a 100% non-intermittent renewable energy system. Renewable gas developed from waste converted into substitute natural gas and injected into the gas grid, the use of ‘power to gas’ technologies for surplus renewable electricity from intermittent renewable electricity generation technologies such as solar and wind converted into renewable hydrogen or renewable gas and injected into the gas grid and heat recovered from decentralised electricity generation for supplying heating and cooling are key features of such a system.</u></p> <p><u>A key reason why renewable electricity is converted into renewable hydrogen or renewable gas for injection into the gas grid is that transporting electricity is 20 times more expensive than transporting the same amount of energy via a gas pipeline¹. Existing gas grids also automatically provide low cost energy storage for renewable electricity and gas pipelines are buried underground and not exposed to high winds, storms or cyclones providing a significant contribution to security of supply and climate change adaptation.</u></p> <p>¹ Marcogaz Technical Association of the European Natural Gas Industry ‘Power2Gas’ Fact Sheet http://www.gasnaturally.eu/uploads/Modules/Publications/marcogaz_power2gas_fact_sheet.pdf</p>
page 27	page 33	New Figure 14	<p>Added: <u>Figure 14: How Electricity, Heat and Gas can be Integrated to Provide a 100% Non-Intermittent Renewable Energy System (Source: City of Sydney)</u></p>
page 29	page 35	1 st paragraph, 1 st column	<p>Deleted: Converting widely available and naturally occurring renewable energy into fuel for buildings and sourcing renewable gases from waste for trigeneration and decentralised thermal energy networks is a new model of future urban development.</p> <p>Added: <u>Converting widely available and naturally occurring renewable energy into fuel for buildings and sourcing renewable gases from waste for trigeneration and decentralised thermal energy networks is not new elsewhere around the world but is a new model for existing and new development in Australia</u></p>
page 29	page 35	5 th paragraph, 2 nd column	<p>Deleted: resources to tap into than in regional areas of NSW</p>

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			Added: <u>resources to tap into for conventional renewable energy technologies such as solar and wind than in regional areas of NSW</u>
page 29	page 35	New 2 nd paragraph, 3 rd column	Added: However, less conventional renewable energy technologies and resources such as sourcing renewable gas and renewable thermal energy in underground pipes can overcome urban environment constraints.
page 29	page 35	2 nd paragraph, 3 rd column	Deleted: energy Added: electricity
page 29	page 35	Title, 5 th column	Deleted: Energy Targets Added: <u>Gas Target'</u>
page 30	page 36	1 st paragraph, 1 st column 2 nd bullet point	Deleted: Electricity Added: <u>Electricity & Heat</u>
page 30	page 36	2 nd paragraph, 1 st column	Deleted: By 2030, building scale renewable energy using today's technologies could contribute more than half of the City of Sydney 30% renewable electricity target. Added: <u>By 2030, building scale renewable energy using today's technologies could generate or displace more than 15% of the City of Sydney LGA electricity demand.</u>
page 30	page 36	4 th paragraph, 1 st column	Deleted: the building will avoid using fossil fuel grid electricity during these times Added: <u>the building will avoid using fossil fuel grid electricity during these times and paying high electricity network charges</u>
page 30	page 36	1 st paragraph,	Deleted: master plan

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		2 nd column	Added: <u>Master Plan</u>
page 33	page 38	Figure 13	Deleted: FIGURE 13: MODELLED IMPACT OF PV ON DEMAND AND PRICE IN AUSTRALIA SUMMER 2010
page 34	page 38	2 nd paragraph, 2 nd column	Added: <u>In 2010/11, 32% of the rated capacity of solar PV installations was effective at the time of the overall peak demand seen by the electricity network between 16:30-17:00. Since then, Australia has passed the 1 million mark for solar PV installations with nearly 250,000 solar PV installations in NSW reducing NSW's residential peak electricity demand by approximately one third of the rated capacity. In Ausgrid's electricity distribution network area which also serves the City of Sydney LGA, 72,000 solar PV installations have so far been connected with Ausgrid confirming that robust urban networks, such as the City of Sydney LGA, can accept high levels of solar PV without causing significant technical problems</u>
Page 36	Page 40	Title	Deleted: Energy Added: <u>Electricity and Heat</u>
Page 36	Page 40	1 st paragraph, 1 st column	Deleted: By 2030, renewable electricity plants within the City of Sydney LGA using today's technologies could contribute a tenth of the City of Sydney 30% renewable electricity target. Added: <u>By 2030, renewable energy plants within the City of Sydney LGA using today's technologies could generate or displace up to nearly 3% of the City of Sydney LGA electricity demand</u>
page 37	Page 41	1 st paragraph, 4 th column	Deleted: 98oC Added: <u>98°C</u>
page 37	Page 41	2 nd paragraph, 4 th column	Deleted: could to Added: <u>could</u>

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page 38	Page 42	1 st paragraph, 1 st column	Deleted: By 2030, renewable electricity plants beyond the city using today's technologies could contribute 40% of the City of Sydney 30% renewable electricity target. Added: <u>By 2030, renewable electricity plants beyond the City of Sydney LGA using today's technologies could generate at least 12% of the City of Sydney LGA electricity demand.</u>
page 40	Page 43	1 st paragraph, 1 st column	Deleted: Offshore Added: <u>Fixed offshore</u>
page 41	page 44	1 st paragraph, 1 st column	Deleted: 200eC Added: <u>200°C</u>
page 43	page 45	2 nd paragraph, 1 st column	Added: <u>See map (Figure 19)</u>
page 43	page 45	1 st paragraph, 2 nd column	Deleted: costly Added: <u>currently costly</u>
page 43	page 45	2 nd paragraph, 2 nd column	Added: <u>See map (Figure 19)</u>
page 43	page 45	1 st paragraph, 3 rd column	Added: See map (Figure 19)
page 44	page 46	2 nd paragraph, 1 st column	Deleted: Any trigeneration development agreement will provide for development Added: <u>City-wide or precinct scale trigeneration networks will provide development</u>
page 44	page 46	2 nd paragraph, 2 nd column	Deleted: proposed full 477MWe of trigeneration and cogeneration Added: <u>proposed full 477MWe of trigeneration and cogeneration or even the full trigeneration/cogeneration network and</u>

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			<u>domestic gas used for domestic heating and cooking' after cogeneration in 7th line</u>
page 44	page 46	1 st paragraph, 4 th column	Deleted: production Added: <u>production for offsite use via the gas grid</u>
page 44	page 46	1 st paragraph, 4 th column	Deleted: source of Added: <u>source of renewable</u>
page 44	page 46	3 rd paragraph, 4 th column	Deleted: The two main transportation methods considered as part of the Renewable Energy Master Plan are road freight and pipeline. Added: <u>The two main transportation methods considered as part of this Renewable Energy Master Plan is directly by pipeline to the nearest gas grid pipeline or indirectly by road freight to the nearest gas grid pipeline.</u>
page 47	page 48	1 st paragraph, 2 nd column	Deleted: similar Added: <u>similar way</u>
page 47	page 48	3 rd paragraph, 2 nd column	Deleted: gas Added: <u>gas grid</u>
page 47	page 49	New section, 2 nd column	Added: <u>ANAEROBIC DIGESTION/GASIFICATION FERTILISER AND CARBON SEQUESTRATION</u> <u>Aerobic digestion or composting is the decomposition of organic matter in the presence of oxygen which produces a compost, carbon dioxide and low grade heat. Anaerobic digestion is the decomposition of organic matter in the absence of oxygen which produces a digestate and biogas. The biogas is used as a renewable gas, some of which can be used through a gas engine or boiler to heat the digestate to thermophilic temperatures</u>

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			<p><u>to increase gas yields and to kill any pathogens in the digestate which can then be used as a clean fertiliser replacement or further composted to reduce the bulk. Gasification of organic waste produces a biochar which can also be used as a clean fertiliser replacement.</u></p> <p><u>In addition to soil amelioration and crop productivity the by-products of renewable gas generation can also be used as carbon sinks. Buried in the ground or blended with topsoil, it may hold carbon for hundreds or thousands of years, locking away carbon dioxide rather than allowing it to escape into the atmosphere as methane where it would act as a greenhouse gas '21 times more powerful as a greenhouse gas than carbon dioxide over 100 years. Due to its negative carbon attributes by-products of renewable gas generation are eligible for carbon credits and is on the Carbon Farming Initiative positive list.</u></p> <p><u>For the purposes of this Master Plan renewable gas is deemed to be carbon neutral since the release of carbon dioxide on combusting the gas is equal to the uptake of carbon dioxide from the atmosphere during the growth of the biomass or organics from which the renewable gas is derived. Where biomass or organic waste would otherwise be disposed of to landfill and produce methane renewable gas will have a negative carbon content equivalent to the Global Warming Potential (GWP) of the methane avoided, ie, -56 GWP over 20 years or -21 GWP over 100 years.</u></p>
page 48	page 49	New title, 1 st column	Added: <u>RENEWABLE GAS FEEDSTOCKS</u>
page 48	page 49	3 rd paragraph, 1 st column new 10 th bullet point	Added: <u>Other beneficial biomass and waste, such as oil Mallee crops and bushland fire hazard reduction combustible materials</u>
page 52	page 52	New 3 rd paragraph, 1 st column	Added: <u>Another biomass feedstock opportunity could be the use of bushland fire hazard reduction materials, particularly where near to renewable gas collection or generation plants. Utilising these combustible materials for renewable gas production could significantly reduce the current fire hazard reduction burn-offs, with consequential air pollution and adverse health impacts, and the risk of accidental bushfires.</u>
page 52	page 52	4 th paragraph,	Deleted: existing

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		2 nd column	Added: <u>existing gas grid</u>
page 58	page 58	Note 1	Deleted: deliver Added: <u>deliver the</u>
page 58	page 58	Note 2	Deleted: Electricity Added: <u>Electricity & Heat</u>
page 58	page 58	Note 2	Deleted: July 2012 Added: <u>July 2013</u>
page 58	page 58	Note 3	Deleted: 0.88kg Added: <u>0.87kg</u>
page 58	page 58	Note 3	Deleted: July 2012 Added: <u>July 2013</u>
page 60	page 60	2 nd paragraph, 2 nd column	Deleted: electricity Added: <u>electricity and renewable gas</u>
page 60	page 60	2 nd paragraph, 3 rd column	Deleted: 3,600GWh/year or 79% Added: <u>3,700GWh/year or 81%</u>
page 60	page 60	2 nd paragraph, 3 rd column	Added: This renewable gas resource will also supply the 34.7PJ/year, including the 2PJ/year of domestic gas used for domestic heating and cooking, needed to replace 100% of the fossil fuel natural gas in the City's LGA.

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page 61	page 61	1 st paragraph, 1 st column	Deleted: diagram summarises Added: <u>diagrams summarise</u>
page 61	page 61	New Figure 41	Added: Figure 41: City of Sydney LGA Renewable Gas Contribution to 100% Target for 2030 (Source: City of Sydney)
page 62	page 62	2 nd paragraph, 3 rd column	Deleted: water and automated waste collection Added: <u>water and energy efficiency</u>
page 62	page 62	1 st paragraph, 4 th column	Deleted: City's Added: <u>City's reduction in</u>
page 64	page 64	1 st bullet point, 2 nd column	Deleted: 60% of the City's renewable electricity target Added: <u>up to 18% of the city's electricity demand from renewable electricity generation</u>
page 64	page 64	2 nd bullet point, 2 nd column	Deleted: 40% of the City's renewable electricity target Added: <u>at least 12% of the City's electricity demand from renewable electricity generation</u>
page 64	page 64	2 nd paragraph, 2 nd column	Deleted: nearly half of the total renewable electricity requirements of the City's renewable electricity target Added: <u>up to the equivalent of 15.2% of the city's electricity demand</u>
page 64	page 64	3 rd paragraph, 2 nd column	Deleted: The figure below shows the individual contribution of each renewable energy technology to achieve 30% of the city's electricity requirements from renewable energy by 2030. It shows that renewable electricity technologies within the city will contribute more than half of the City's renewable electricity target.

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			Added: <u>Figure 43 shows the individual contribution of each renewable energy technology to achieve 30% of the city's electricity requirements from renewable energy by 2030. It shows that renewable electricity and heat technologies within the city will generate or replace up to 18% of the city's electricity demand by 2030</u>
page 65	page 65	2 nd paragraph, 1 st column	Deleted: Figure 41 on the previous page indicates that building scale technology can contribute more than half of the renewable electricity to achieve the City's target.
page 65	page 65	Title	Deleted: REPLACING NATURAL GAS Added: <u>Meeting the 100% Renewable Gas Target</u>
page 65	page 65	New 4 th paragraph, 2 nd column	Added: <u>The renewable gas resource within 250km of the City's LGA can also supply the 32.7PJ/year needed to supply 477MWe of trigeneration and cogeneration across the City of Sydney's LGA or even the 34.7PJ/year needed to supply the 477MWe of trigeneration/cogeneration and domestic gas used for heating and cooking in the City's LGA.</u>
page 67	page 67	1 st paragraph, last column	Deleted: more than twice Added: <u>up</u>
page 67	page 67	New Figure 48	Added: <u>Figure 48: Greenhouse Gas Emission Savings for Renewable Gas Grid Injection (Source: City of Sydney)</u>
page 72	page 72	1 st paragraph, 1 st column	Deleted: supply Added: <u>supply/displace</u>
page 75	page 75	New Enabling Action 17, 3 rd column	Added: <u>17 DEVELOP AND IMPLEMENT COMMUNITY RENEWABLE ENERGY AND OTHER ASSOCIATED APPROPRIATE ACTIONS TO ENABLE THE CITY'S COMMUNITY TO HELP THE CITY OF SYDNEY DELIVER THE RENEWABLE ENERGY MASTER PLAN</u>

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page 76	page 76	1 st paragraph, 1 st column	Deleted: 30 Added: <u>60</u>
page 76	page 76	Title, 2 nd column	Deleted: Development Control Plan Added: <u>Planning Controls</u>
page 76	page 76	4 th paragraph, 2 nd column	Deleted: need
page 76	page 76	1 st paragraph, 3 rd column	Deleted: disclosure Added: <u>Commercial Buildings Disclosure</u>
page 76	page 76	2 nd paragraph, 3 rd column	Deleted: 2000sqm Added: <u>2000m²</u>
page 77	page 77	1 st paragraph, 3 rd column	Deleted: its draft
page 77	page 77	1 st paragraph, 3 rd column	Deleted: 2012 Added: <u>September 2013</u>
page 77	page 77		Deleted: is being Added: <u>was</u>
page 78	page 78	4 th paragraph, 3 rd column	Deleted: partial investment Added: <u>partial investment, support for community renewable schemes</u>
page 80	page 80	2 nd paragraph, 1 st column	Deleted: submission

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			Added: <u>submissions</u>
page 80	page 80	2 nd paragraph, 1 st column	Deleted: submission Added: <u>submissions</u>
page 80	page 80	2 nd paragraph, 1 st column	Deleted: 30 April 2010 Added: <u>30 April 2010 and NSW Inquiry into Cogeneration and Trigeneration on 2 September 2013</u>
page 80	page 80	New 3 rd paragraph	Added: <u>Introduce a common pricing methodology for electricity networks, which reflects the positive benefits of decentralised electricity generation. Specifically, decentralised electricity generators to be offered a positive (credit) network tariff for feeding electricity into local networks.</u> <u>The scale of this credit (which takes the form of a negative decentralised generation use of system charge) to be calculated on the level of benefit that each network receives from local generation. Non-intermittent technologies such as precinct trigeneration or renewable energy to be generally recognised as providing the highest level of benefit to networks.</u> <u>The United Kingdom introduced such a common pricing methodology for electricity networks called the 'Common Distribution Charging Methodology' on 1 April 2010 setting in place the positive (credit) network tariff for each type of distributed generator at each voltage level feeding electricity into distribution networks. The scale of credit also takes into account the scale of intermittency or non-intermittency of the distributed generator and provides a decentralised energy proponent with certainty up-front as to the tariff it will receive. As the tariff is in recognition of deferred network investment, it is equitable for existing users of the distribution system.</u>
page 80	page 80	1 st paragraph, 3 rd column	Deleted: Renewable Energy Target Added: Renewable Energy Target and implement gas regulatory

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			<u>reform to enable gas purchase agreements between renewable gas generators and customers and a national accreditation program for GreenGas similar to power purchase agreements and GreenPower for renewable electricity</u>
page 82	page 82	<i>New Enabling Action 17</i>	<p>Added: <u>17 DEVELOP AND IMPLEMENT COMMUNITY RENEWABLE ENERGY AND OTHER ASSOCIATED APPROPRIATE ACTIONS TO ENABLE THE CITY'S COMMUNITY TO HELP THE CITY OF SYDNEY DELIVER THE RENEWABLE ENERGY MASTER PLAN</u></p> <p><u>As part of the City's research into world renewable energy best practice a key component of how countries were delivering such a large proportion of renewable energy generation was community renewable energy. In Denmark, nearly 50% of domestic electricity demand and 80% of thermal energy demand (heating and cooling) is owned by the customers themselves in one form or the other.</u></p> <p><u>In Germany, 65% of renewable energy generation, some 35,000MW, is owned by the customers themselves either as individuals or as cooperatives. The rapid roll out of renewable energy in Germany is now nearly three times the installed nuclear capacity in 2010 and five times installed nuclear capacity in 2011 (after Germany's nuclear phase-out decision). Even in the UK, there has been a rapid growth in community owned self-generation from 6% in 2011 to 15% in 2013.</u></p> <p><u>To support this an implementation plan to develop and implement community renewable energy and other associated actions will need to be developed to enable the City's community to help the City of Sydney deliver the Renewable Energy Master Plan. In order to deliver the Master Plan targets the implementation plan will need to cover community renewable energy schemes both within and beyond the City's LGA.</u></p>
page 107	page 107	<i>Title</i>	<p>Deleted: BIO2G</p> <p>Added: <u>GOBIGAS BIO2G</u></p>
page 107	page 107	<i>Title</i>	<p>Deleted: Gothenburg</p> <p>Added: <u>Gothenburg and Malmo</u></p>

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page 107	page 107	5 th paragraph, 1 st column	Deleted: stream Added: steam
page 107	page 107	3 rd paragraph, 2 nd column	Deleted: one of
page 107	page 107	3 rd paragraph, 2 nd column	Deleted: companies Added: <u>company</u>
page 107	page 107	4 th paragraph, 2 nd column	Deleted: GoBiGas Added: Goteborg Energi GoBiGas
page 107	page 107	4 th paragraph, 2 nd column	Deleted: production plant Added: <u>project</u>
page 107	page 107	4 th paragraph, 2 nd column	Deleted: in cooperation with Goteborg Energi and Chalmers University of Technology
page 107	page 107	6 th paragraph, 2 nd column	Deleted: produced Added: <u>will produce</u>
page 107	page 107	6 th paragraph, 2 nd column	Deleted: 2012 Added: <u>2013</u>
page 108	page 108	1 st paragraph, 1 st column	Deleted: Bio2G Added: <u>E.ON Bio2G</u>
page 108	page 108	1 st paragraph,	Deleted: project

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		1 st column	Added: <u>project near Malmo</u>
page 108	page 108	New Figure 79	Added: Figure 79: GoBiGas Biomass gasification Renewable Gas Grid Injection – Phase 1, Gothenburg, Sweden Source: Goteburg Energi
page 108	page 108	Figure 75	Deleted: BIO2G BIOMASS GASIFICATION RENEWABLE GAS GRID INJECTION, GOTHENBURG, SWEDEN Added: <u>GOBIGAS BIOMASS GASIFICATION RENEWABLE GAS GRID INJECTION - PHASES 1 AND 2, GOTHENBURG, SWEDEN</u>
page 113	page 113	Figure 78	Deleted: FIGURE 78: E.ON INNOVATION CENTRE ENERGY STORAGE 'POWER TO GAS' PROJECT, FALKENHAGEN, GERMANY Added: <u>Figure 82: E.ON Innovation Centre Energy Storage 'Power to Gas' Project, Falkenhagen, Germany Source: E.ON</u>