

# **GREEN PUBLIC PROCUREMENT & INVESTING IN CLIMATE CHANGE**

**A GUIDANCE DOCUMENT FOR DUBLIN FIRE BRIGADE**



**FIRE FIGHTER NEIL MCCABE**

**JUNE 2012**

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# Green Public Procurement & Investing in Climate Change



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## Foreword by Chief Fire Officer Dublin Fire Brigade Mr. Stephen Brady



Leading from the front to reduce our Fire Brigades carbon is fully dependent upon our stakeholders and in the preparation of this document clear vision and understanding has been demonstrated. We have an opportunity to achieve our goals without compromising our service to the citizens of Dublin. I am delighted to see a strategy for Green Public Procurement and renewable energy.

These are new times to our 150 year old organisation. We are now asking ourselves if it's feasible to use wind energy to run fire stations or can we use Biofuel to power frontline emergency vehicles. Are heat pumps the way forward or should we focus on solar energy? Dublin bay is right beside us therefore is hydro power available or the pioneering waste water and rain water systems in Kilbarrack Fire Station could be a source of anaerobic digestion. Should we use electric vehicles that are powered by on shore wind generation from the roof tops of our Fire Stations?

This document breaks down the many different governing factors and principals for Public Procurement and Supply Chain Management with Climate Change and Behavioural Change at its core. Our engagement with the local communities we serve is now newly defined by our commitment to nature and the environment being as important as energy reduction. The Dublin Fire Brigade Biodiversity Action Plan is also a first of its kind by any Fire Service.

## Foreword by Executive Manager Dublin Fire Brigade Mr. Gerry Geraghty



Dublin Fire Brigade (DFB) is currently adhering to the strategies of Dublin City Councils, (DCC) City Development Plan; with particular regard to sustainability we have been named the flagship for the Dublin City Council Sustainability Report 2010; the first of its kind in Ireland by a City / County Council. We are reducing carbon production, saving energy and money at the same time and this is just the start at our flagship location in Kilbarrack Fire Station.

All our green actions are fully backed by senior management of both DFB and DCC respectively; in our business plan and involving our PMDS system we have identified a strategy for implementing our Green Plan© across DFB using aims and targets. The Green Plan© has 7 themes to bring us to our overall goal of becoming an exemplar-low carbon production Fire Brigade. Indeed other Fire Brigades in Europe are now becoming partners with DFB to help lower their energy spend and carbon production. The completed proven actions of the Green Plan© have clearly shown DFB and DCC how to achieve results and we have already fully rolled out the Green Plan© template to Phibsborough Fire Station using ring fenced savings produced in Kilbarrack Fire Station. Year on year as the savings grow, the more projects we will take on.

We are developing our own DFB renewable energy strategy. This will include reducing energy consumption with implementation of best technologies first then producing energy second. Various ground breaking trials have been taking place inside DFB and we are soon to launch a public consultation process to help us get closer to our goals. All officers, crew and staff of DFB are stakeholders in the future of DFB and are supported and encouraged to use this guidance document as an aid to Green Public Procurement and the impacts we make on our environment while continuing to provide a frontline emergency service.



## Introduction by Fire Fighter Neil McCabe



Nationally the former Irish Government have set a challenging target of 20% energy reduction by the year 2020. However the Public Sector has been obliged to reduce by a further 13%, totalling 33%. With non reduction and breach of obliged targets, Ireland will have to face up to looming repercussions. Dublin City Council has signed up to these ambitious targets across all its departments. As one of these departments, Dublin Fire Brigade has been regularly contributing to lowering its carbon emission production through monitoring and verification (M&V) and energy reduction projects over the last few years. Namely Dublin Fire Brigades' Flagship Project Kilbarrack Fire Station, the first Carbon Neutral Fire Station in the world.

The Environmental Protection Agency of Ireland (EPA) has only recently announced that *"Ireland cannot rely on recession to meet our long-term carbon reduction requirements and needs to develop as a low carbon economy. In order to ensure that our future economic growth is sustainable, it must be more resource-efficient and decoupled from increases in emissions"*.

Changing the way DFB procures products, equipment, services and technologies will impact on the environment and the production of Green House Gases, thus lowering energy consumption and saving money at the same time. In this challenging financial climate today the Public Service are to meet the Carbon Targets set yet, there is little financial support to do this. Recently the Irish Government announced Better Energy in the Workplace scheme (BEW,) Third Party Financing (TPF) and Energy Service Companies (ESco.) This is to offer some support to the Public Service at a time when departments are getting smaller and output is increasing, including embargos and the Croke Park Agreement.

Green Tendering is central to the Europe 2020 Strategy, whereby Sustainable growth is to be at the heart of a resource efficient future for Europe. Irish Public Sector Gross Domestic Product (GDP) accounts for 12% of all GDP nationally- €15B per annum. This document should clarify the direction that DFB must take to responsibly procure new products, services, equipment and technologies and I hope will demonstrate how both the market and DFB can mutually benefit from Green Public Procurement and Investing in Climate Change. To be specific, DFB can influence environmental criteria into its procurement processes and can encourage the spread of environmental impacts, through technologies products and projects across Dublin. This is legally backed by the strict procurement rules in situ including: **EU Directives 17 and 18** in accordance with **Article 11** of the *Treaty on the Functioning of the European Union*. This brings together value for money and protection of the environment by contracting bodies with the over arching aim of lessening our impacts on Environment and Climate Change. Using the Green Plan© DFB as stakeholders in Sustainable Development are demonstrating true leadership now by preparing for when recovery does come.

Fire Fighter Neil McCabe

June 2012



## Executive summary



For a tender process to be effective, the cost benefit usually out ways any other pointing criteria. Economy factors the highest marking and is accordingly deemed the most important unit of a successful procurement process.

Sustainability and its many practices are regularly overlooked by the tenderer and are not seen for their true worth to an organisation. These factors are non economic factors yet they are now as important as cost benefit and over a payback period they offer a better return on investment.

Sustainable development meets the needs of this generation without trapping future generations trying to meet their own needs. Greening the Supply Chain and using Green Public Procurement are demonstrations of Sustainable Development. There is already an existing well known framework for Public Procurement governed by revised EU Directives and regulations including the Public Procurement Directives.

Implementing change at this level reflects the Three Pillars and two core principals of Dublin Fire Brigades Green Plan©, they are:

Three Pillars: 1) Low capital out lay; 2) Quick payback period 3) Replicability.

Core Principals: 1) Behavioural change and 2) Carbon emission reduction.

Dublin Fire Brigade (DFB) can take account of our impact on the environment and production of Carbon Dioxide and its equivalents using purchasing power at the procurement phase to secure services, technology and products. This can lower the running costs and energy consumption across DFB's Estate at the same time, thus lessening our environmental impacts and offering viable financial benefits to the organisation. This action takes note of the Public Service obligation to meet its 2020 Carbon emission and Energy reduction targets of 33% set by the Irish Government.

Looking to gain "green" benefits from the starting blocks will not drive results. The Green Plan© is written into the Business Plan of DFB as strategic goals and actions to help DFB meet its Carbon targets. Green Procurement by DFB will only be only as successful as a procurement that strived to achieve its original task first. Otherwise the financial savings and benefits will be lost while chasing the "Greenest" technology or product, such as lowering the amount of carbon associated with the production of a product, while the running costs of that product are high and the product is a contributor to fossil fuel Carbon production by increased energy consumption. Holistically including embedded energy in the manufacture of products and determining life cycle analysis are just as important as the Green Credentials that a product, service, equipment or technology allegedly carry.

It is therefore imperative that DFB's Green Procurement and greening of its supply chain is properly handled, interacts with the legal framework of the Procurement system and has a clear understanding of Green Public Procurement as an investment in Climate Change. There will be challanges travelling the low carbon, low energy road and there are oportunities for DFB to evolve accordingly. Some sections of this document carry a case study, demonstarting market engagement, supply chain relationship management and trial testing of new technologies and products as an aid to a larger scale roll out of, the Green Plan© across the DFB estate.



## Section 1: Green Plan Dublin Fire Brigade

**Green Plan ©Vision and Mission**

**What is the DFB Green Plan©?**

**Approach**

**Core Principals**

**Flagship Location**

**Sustainability in DFB**

**Sustainability Report**

**The Dublin City Development Plan**



## Green Plan ©Vision

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In the changing future Dublin Fire Brigade will be world leaders of sustainability, recognised for their championing of energy and water consumption reduction, waste prevention, biodiversity protection and impacts on society. Dublin Fire Brigade will be the exemplar, running its fleet of frontline emergency vehicles with greater fuel efficiency and will insist on Green Procurement for the services it provides.

## Green Plan © Mission

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Dublin Fire Brigade has now reached 150 years in service to the citizens of Dublin City and County providing safety and protection to all, we are now using the model of the Green Plan© to become leaders of sustainable energy, to maximise our low carbon future and to empower people to effect change in our Fire Service and the local community.



## What is the DFB Green Plan©?

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Dublin Fire Brigade has created a Green Plan©. This Green Plan© is a means to secure a better understanding of sustainability and the production of green house gases. As we look forward to future energy consumption we need to reduce our use of and dependence on costly fossil fuels such as oil and gas. The concept of the Green Plan© is to use a genuinely sustainable approach and practice that will use world's best practices, forward collective thinking and new technologies to:

1. Significantly reduce energy and water consumption
2. Prevent and reduce the volume of domestic waste created
3. Save money by reducing the energy running costs of each Fire Station
4. Deliver services differently engaging local community within DFB and in our surrounding community
5. To create Fire Stations that produce less Carbon and meet the 2020 Energy and Carbon obligations.

## Approach

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The Green Plan© is a comprehensive Plan outlining the problems identified, the actual actions taken and to be undertaken and the achievements attained to date under the seven themes below and in all locations the work is spread out over three phases:

1. **Energy**
2. **Water**
3. **Waste**
4. **Biodiversity**
5. **Transport**
6. **Society**
7. **Procurement**

### **There are three governing pillars of the Green Plan©**

- 1) Low Capital outlay
- 2) Quick payback period
- 3) Replicability

If a technology or project does not fall in with the above criteria then it is not considered. This includes Research and Development, Testing and Life Cycle Cost and analysis. DFB backs up these ambitious criteria by engaging the market in the pursuit of new technologies. A greater emphasis is placed on stakeholders and peers to look within, using the skills already available. Local businesses have also been engaged in the pre-manufacture as part of DFB supplier Relationship Management, thus assisting in both parties meeting strategic objectives.

### **Core principles:**

There are two core Principals to the Green Plan©:

- 1) **Behavioural Change**
- 2) **Carbon Emission reduction.**

#### **1) Behavioural Change:**

Behavioural change has no upfront cost and staff are part of the solution. Behavioural change is free and is the fundamental unit driving the success of Green Plan©. In Kilbarrack Fire Station, Fire fighters and Officers alike bought into the idea of a shared responsibility for their Fire Station. This is reflected in each theme mentioned above. Their commitment is reflected in the numerous easy to win gains both financially and physiologically, that have been used to set the bench mark for all others to follow.

#### **2) Carbon emission reduction**

One of the main features of the Green Plan© has been the highlighting and reduction of unnecessary carbon emissions produced effecting our environment. There is transparency in that CO<sub>2</sub> emissions are measured and compared to the original base line readings and provide evidence that the project is achieving its goals and targets.

Verifying and monitoring are the criteria for managing and reporting emission reductions in accordance with ISO standards so that each location will be in a position if possible to trade carbon credits on the Irish Voluntary Domestic Offset Market (IVDOM). So far we have reduced over 300 tonnes of CO<sub>2</sub> in only two years in Kilbarrack Fire Station.

## Flagship Location

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DFB was honoured to have the Green Plan© officially launched in September 2010 by the Lord Mayor of Dublin, Cllr G. Breen and the Dublin City Council Manager Mr. John Tierney. Kilbarrack Fire Station has been named as the Flagship for all of DFB as a test bed for ideas, research and development, innovation and Replicability. The Green Plan© and the exemplar work carried out in Kilbarrack Fire Station has been recognised both nationally and internationally with the awards below to date:

***Lord Mayor of Dublin Award 2011***

***International Green Awards Winner 2011***

***Green Awards – The Green Leader Award Winner 2011***

***International Green Apple Award Winner 2011***

***International Green Hero – Helping Others To Help The Environment Winner 2011***

***Chambers Ireland Local Government Award Winner 2011***

***National LAMA Awards 2012 Winner***

***Innovation Dublin Award 2011***

### **Sustainability in DFB**

The definition on sustainability for the Green Plan © DFB is in keeping with the four pillars of The Natural Step © listed below:



Resources like fossil fuels, metals and minerals are finite and can damage our environment if allowed to accumulate. Therefore, we will minimise the consumption of materials extracted from the Earth's crust.



The accumulation of persistent chemicals (pesticides, fertilizers etc.), and unnaturally high nutrient concentrations are harmful to people and the environment. Therefore, we will reduce our dependence on man-made chemicals.



Ecosystems take a long time to recover from physical destruction (if they can at all), we will mitigate our impact through wise land use policies, low impact maintenance practices and environmentally friendly design.



Our community will not be truly sustainable unless our residents are healthy, safe and prospering. Therefore, we will continue to pursue policies and actions that minimise the barriers that impede stakeholder's ability to meet their basic needs.



Kilbarrack Fire Station has also been named as the Flagship for the Sustainability Report 2010 for Dublin City Council. The Sustainability Report will be an annual report that sets out visions and actions for increasing the economic, social and environmental sustainability of Dublin. The Sustainability Report 2010 is the first of its kind in Ireland and DFB's Neil McCabe is co author of same. The Sustainability Report mirrors the Seven Themes of the Green Plan© and demonstrates how actions taken in Kilbarrack Fire Station can be replicated across the City, starting with DCC's own estate and then the City of Dublin itself. One of the actions documented in the Sustainability Report 2010 for Dublin City was to set up Sustainable Dublin. This year this action has now started and Dublin City Council in keeping with the National Covenant of Mayors is now bringing actual sustainable support to business in the City and County of Dublin.

### The Dublin City Development Plan

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The Dublin City Development Plan provides the strategic framework and policy context for the sustainable development of the city. It focuses on the creation of a compact, well-connected city at the heart of the region, combined with an enhanced quality of life for existing and future residents.



## Section 2: Green Public Procurement Introduction

**Public Procurement (PP)**

**PP Common goals**

**Green Public Procurement (GPP)**

**National Action Plan for GPP**

**National GPP Conference and initial GPP Public Consultation, May 2010**

**Green Tenders: *An Action Plan on Green Public Procurement***

**EU Developments on GPP**

**Objectives of GPP**

**Where does this leave DFB?**

**Case Study DFB Ambulance Equipment Suppliers Contract**



## Public Procurement

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Public Procurement\* is defined as the acquisition, whether under formal contract or otherwise, of works, supplies and services by public bodies. It ranges from the purchase of routine supplies or services to formal tendering and placing contracts for large infrastructural projects by a wide and diverse range of contracting authorities. Public procurement policy aims to achieve value for money. It is underpinned by a number of core principles, in particular the need to maximise competition in the market for the goods and services purchased by the State. Where practical and legally possible the policy should also seek to promote whole of Government objectives.

*\*This definition is taken directly from the National Public Procurement Policy Framework (NPPPF) document prepared by the Dept of Finance*

### PP Common goals, what are our needs?

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The common goals of any good practice Procurement policy are:

- 1) Economy: Resources used by an organization for the performing of its activities are available at the right time, under appropriate quantities and quality, and at best prices.
- 2) Efficiency: Is measured by the best proportion between used investment outlays and effects achieved.
- 3) Effectiveness: Is measured by the attainment of specific determined goals and foreseen results. Effectiveness is also determined as a ratio between investments and results.

### Green Public Procurement (GPP)

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Ireland is now committed to new policies that promote Green Public Procurement as objectives that will help continuously improve the environmental performance of the Procurement system and demonstrate Leadership in a cost effective way.

*“The annual procurement budget of the Irish public sector is of the order of €15 billion. If buyers in the public sector consistently took environmental factors into account in their procurement decisions, it would provide huge leverage to “move the market” towards providing environmentally superior goods, services and works in a cost-effective way. This would enable Government and the wider public sector to continuously improve the environmental performance of their procurement activities, leading over time to significant benefits to the environment and to public health. It would also boost Ireland’s competitiveness and job-creation by fostering eco-innovation among SMEs and the wider business community.*

*In line with the Government’s ‘Green Economy’ objectives, Ireland is therefore committed to policies that promote Green Public Procurement (GPP)”*

*DOE GPP explanation 2012*

## National Action Plan for GPP

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The Sustainable Development Unit has the lead role in developing Ireland’s National Action Plan on GPP, thereby stimulating the “greening” of procurement across the Irish public sector.

Overall responsibility for public procurement policy lies with the National Public Procurement Policy Unit (based in the Department of Finance) while the National Procurement Service (based in the Office of Public Works) is tasked with centralising procurement arrangements for goods and services common to most public bodies. The National Procurement Service will also provide procurement advice to the wider public sector.

### National GPP Conference and initial GPP Public Consultation, May 2010

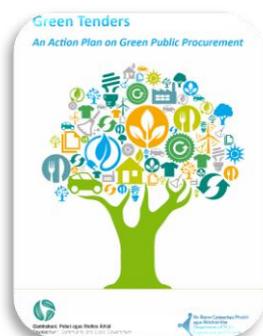
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Sustainable Development Unit and the National Procurement Service jointly held a GPP National Conference in May 2010 at the Royal Hospital, Kilmainham, Dublin. The Conference aimed to enhance understanding of how GPP can contribute to a better environment and stimulate investment in innovative, cost-effective and eco-efficient solutions to our public procurement needs.

The Conference also served as the launch of an initial public consultation on the proposed content and structure of the National Action Plan on GPP. This public consultation was open from May to December, 2010. A total of 74 written submissions were received and DFB took part in this public consultation process.

### Green Tenders: *An Action Plan on Green Public Procurement*

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The result of this public consultation process and proposed content of the new National Plan on Green Tendering lead to the eventual publishing of “Green Tenders, an Action Plan on Green Public Procurement” and is the first such Action Plan to be introduced in Ireland. There are eight priority product / service groups identified and they are documented below in Section 5.

**“Its overall objective is to assist public authorities to successfully plan and implement green public procurement (GPP) by highlighting existing best-practice and outlining further actions to boost green public procurement.”**

*Phil Hogan TD and Brendan Howlin TD introduction to Green Tenders Publication.*

“For suppliers and other private sector stakeholders, the business case for green procurement is really quite simple. Suppliers to public sector clients who subscribe to sustainability – and most do at this stage – will need to be able to demonstrate the suppliers’ own sustainability credentials. Many Irish companies have realised how strategically important this is for their competitiveness into the future. They clearly understand the role to be played by green procurement policies here at home in preparing them to compete successfully in our export markets.”

*Phil Hogan TD and Brendan Howlin TD introduction to Green Tenders Publication.*

## EU Developments on GPP

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The EU's *Renewed Sustainable Development Strategy* commits to "aiming to achieve by 2010 and EU average level of Green Public Procurement equal to that currently achieved by the best performing Member States". On this basis, in 2008 the EU Commission's *Communication on Public Procurement for a Better Environment* proposed a target of 50% of all the EU's public procurement tendering procedures to be "green" by 2010 – "where green means compliant with endorsed common GPP criteria". The European Commission has asked all EU Member States to publish National Action Plans for GPP. The Commission maintains a dedicated GPP website.

### Where does that leave DFB?

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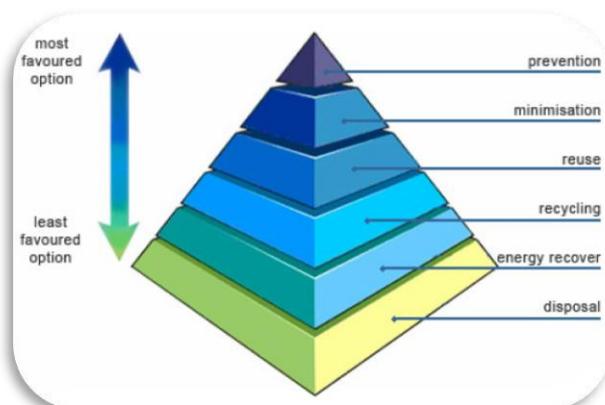
DFB is now committed to sign up and take part in these new policies that promote Green Public Procurement. DFB must improve the environmental performance of the procurement system and supply chain.

DFB is already allocated a proportion of the €15B from central funding to Public Service. This comes from DCC for the supply of services, products and equipment to help DFB maintain and effectively run the Frontline Emergency service that we provide to the citizens and the city of Dublin.

However already existing contracts and previous tenders including supplier relationship (with or without proper supplier relationship management) have left DFB both receiving and newly procuring supplies and equipment without considering the seven themes of the Green Plan©. Formerly the domestic waste bins being collected each week from Fire Stations were collected but a lot of the time the majority of the domestic bins, were not actually full. Or through prevention of waste build up using recycling as a tool, the collections could have been completely avoided in the first instance.

In these financially difficult times Ireland is obviously facing tough challenges yet the above scenario highlights effective low cost opportunities that are available to DFB, low hanging fruit – so to speak. In May 2012 DFB reduced its domestic waste collections by 58%. This has involved a new contract being awarded and does not include any recycling figures. The first recycle bay was constructed in Kilbarrack Fire Station and is now being rolled out across all the Fire Stations in DFB as part of the Waste Theme of the Green Plan©. This one example demonstrates how DFB can change already existing agreements. DFB could replicate this action across its whole supply chain. Obviously this is another behavioural change whereby the Fire Brigades Crew are taking part in a shared responsibility for waste process and it costs nothing.

The Public Service is expected to play an exemplary role in GPP. Apart from satisfying the national environmental procurement laws they must also encourage others to follow, namely their existing and potential suppliers. The Irish government has agreed to a 50% target of incorporating GPP. As mentioned in this Sections case study below; DFB as a Public Service Department have set a Green Agenda with their supply chain. In an exemplary role Neil McCabe has met with suppliers of goods and services, equipment and technology. Neil has spent time educating most of the supply chain on the methodology and benefits of the Green Plan© to our organisation. In the role out of the Green Plan© across DFB, all potential Suppliers will have to have applied to tender applications in the knowledge that points will be awarded for their own green activity as much as the product or service that they provide. This is backed up further in the case studies contained in this guidance Document with particular reference to *Pre-Competition testing*.



Previously necessary Lifesaving, Fire and Ambulance equipment was packaged and delivered to each Fire Station in DFB. This was standard practice. On site this equipment was then de-wrapped by the Fire Stations Crew and the consumables were bagged and put in the domestic waste bin for collection. This included one piece of equipment having several bundles of wrapping and finally a cardboard container for transport. In all cases it was the individual Fire Stations that had to have the consumable rubbish removed.

### Waste Prevention and the National Waste Prevention Programme

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Any action that reduces the use of material resources increases the efficiency of production/service processes, decreases water and energy consumption, or causes a reduction in the gross generation of waste (for disposal plus recycling) can be classified as waste prevention. In general, prevention may be achieved either by reducing the overall demand for goods and services, or by using less (or less harmful) resources to provide for reasonable needs. Prevention also seeks to reduce emissions, to reduce harmful substances in material streams and their dissipation, and to improve resource efficiency throughout the life cycle of a product or service. Such actions and activities are considered to be within the scope of the National Waste Prevention Programme.

Following the Waste Framework Directive, the Green Plan© flagship location, Kilbarrack Fire Station has taken the following definition of waste prevention:

***“Prevention is the elimination or reduction at source of material, water and energy consumption,***

***Waste arisings (solid, liquid, gaseous and heat) and harmful substances\*.”***

*\*The above definition of waste prevention is based on one originally proposed in an EPA research report prepared in 2003:*

This definition has been embraced at local level in Kilbarrack Fire Station and should be used by DFB in the same regard in the Procurement process as an aid to the Life Cycle Cost (LCC) and environmental ramifications after awarding.

“Prevention” means measures taken before a substance, material or product has become waste, which reduces:

- 1) The quantity of waste, including through the re-use of products or the extension of life span of products
- 2) The adverse impacts of the generated waste on the environment and human health
- 3) The content of harmful substances in materials and products.

## Waste generation on site and by Suppliers

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The Green Plan flagship in Kilbarrack Fire Station began showcasing how Fire Stations are functioning effectively but beyond their environmental means. This led to the developing of the idea of building a recycling bay for the consumables produced on site. This recycle bay would help with general Station recycling and follow the three “R”s of the *Waste Hierarchy*; Reduce, Reuse and Recycle.

However as identified in the Green Plan©, the most important principle of waste reduction is to Prevent waste in the first place. It became apparent then, that the only real way to reduce the consumable waste due to packaging across DFB was, to have the process changed from the suppliers of the various equipment through to DFB. The challenge now facing DFB was to achieve a balance between reducing the volume of packaging used while still providing an exemplar emergency service to our surrounding communities. Waste Prevention is to be preferred to any waste management option. By not generating waste, we can eliminate the need to handle, transport, treat and dispose of waste. We can also avoid having to pay for these services.

## Waste Reduction on site

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Dublin Fire Brigade’s mission as an organisation that has the power to influence suppliers in this instance forced our suppliers to recognize the need to review the following:

- **Reducing greenhouse gases** – notably methane from landfill sites but also carbon dioxide emissions (through re-use and recycling)
- **Improving resource efficiency** – saving energy and reducing material use through waste prevention, re-use, recycling and renewable energy recovery
- **Protecting public health** through safe management of potentially hazardous substances
- **Protecting ecosystems** (soils, groundwater, emissions to air)

This would lead to a change in existing contracts to facilitate the Green Plan© for DFB. We are committed to ensuring that all our actions in service delivery are implemented with a sustainable approach and consideration of knock on consequences to our greater environment. With this in mind DFB began a new tender process for Ambulance equipment and supplies with a Green Agenda.

## Waste Prevention helped by our Suppliers

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It is important to note that less packaging is not necessarily more environmentally friendly. Products need to be protected at various stages of the production chain, particularly during storage and shipping. The shelf life of perishable products is also highly important. Many products have a limited shelf life. If poor packaging results in a product becoming unusable, the overall impact on the environment can be negative. Supplier Relationship Management and a new Tender were now at the forefront of the Procurement Process. The new tender had an achievable goal that benefitted DFB financially (by not having to send and pay for waste to go to landfill) and morally (because DFB would be responsible for lowering our impact on the Environment at the same time.) The most important factor however was that if the tender was geared towards the Green Agenda first, DFB would undoubtedly have been tunnelled in on the Green Elements of the tender rather than the same equipment being supplied but with a better waste production emphasis and understanding.

## Waste Prevention helped by our Suppliers

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In this case DFB secured the new Tender for the necessary emergency products first and then achieved the realisation of our Green Agenda. Our supply chain now incorporates the following Environmental Considerations:

### Waste Prevention helped by our Suppliers

- The supplier accepts they must comply with current environmental considerations.
- Comply with all reasonable stipulations to minimize packing.
- Provide such data regarding to weight and type of packing.
- Comply with all obligations imposed relation to packing waste 2005 and packing waste directive 94/62/EC.
- Label all products supplied to the DFB and the packing of those products to highlight environmental and safety information as required by EU legislation.
- Unless otherwise agreed with the DFB insofar as products supplied under the contract include electrical equipment, manage the said equipment at end of life facility recovery.
- Promptly supply all such information regarding environmental impact of any product supplied under the contract as may reasonably be required by the DFB.
- Where goods are imported, for the purpose of the packing waste regulations 2005 the contractor shall resume the roll up obligation for activities performed outside Ireland in relation to the goods and packing which is used for containment, protection, handling delivery and presentation of the goods.

## Achievements

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The tender process has delivered on waste Prevention and reduction at source. The knock on effects have directly reduced our volume of waste to land fill, behavioural change at Station level and financial running costs for the service. The Replicability of this strategy is explained below.

The implementation of the Recycle Bay in Kilbarrack Fire Station helped reduce Station waste and saved money. Prevention of waste was the key factor. The money saved created a budget to be used on small scale changes for energy efficiency in the Fire Station. This gives the opportunity for the Station Officer and the District Officer to make financial decisions about the running of the Station. The other Fire Stations have already followed and indeed the total volume of waste June 2012 has now been reduced by 55% across DFB.

This included the awarding of a new tender, less domestic waste collections and more recycling availability. Recycling through the introduction of Recycling Bins and small scale recycling bays in each Fire Station have created a fund of €20,000 that was formerly spent on waste.

During the retro fit process in Kilbarrack Fire Station, all materials and equipment were scrutinized for LCC and all waste had to be removed from site and recycled by the contractors, including recycling certification. Timber was recycled also and used to make Bird boxes and Bat Roosts for the Biodiversity and Society Themes of the Green Plan© . This included the setting up and continual running of Biodiversity Action Days with local schools.

## Recycling Bay Kilbarrack Fire Station

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- Compost bay 6m<sup>2</sup> including a pig recycler for meats and organic waste produced on site
- No. 2 x WEEE waste bank:
- No. 2 x bottle banks:
- Florescent lights bank:
- Used cooking oil (UCO) collector:
- Green Collection Bin for glass, paper, plastic, and tin produced on site
- Battery collection bank
- Lead acid Battery Bank
- Fluorescent Tubing Bank
- Paint collection Bank
- Oxfam clothing receptacle for old uniforms and civilian clothing
- Oxfam receptacle for DVDs, Books, CDs and Videos.
- Irish Breast Cancer Clothing Bank



## Section 3: Sustainable Development and Climate Change

**Sustainable Development**

**Kyoto Protocol**

**European Climate Change Programme (ECCP)**

**2020 Targets for carbon emission reduction**

**2020 Targets for renewable energy production**

**EU Ecolable**

**Life Cycle Cost**

**Waste directives**

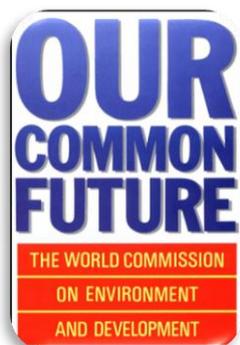
**Case Study Kilbarrack Fire Station**



## Sustainable Development

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Sustainable Development is Environmental, economic and social well-being for today and tomorrow. Sustainable development has been defined in many ways, but the most frequently quoted definition is from **Our Common Future**, also known as the **Brundtland Report**.



*"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:*

- *the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and*
- *the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."*

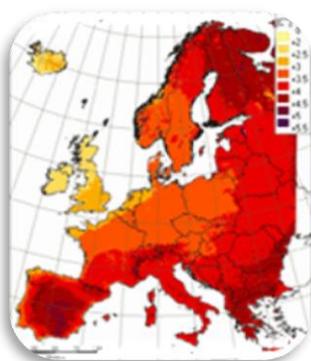
"Sustainable development is a great challenge for our societies; it is a primary goal of the EU, enshrined in its treaties since 1997. The EU sustainable development strategy brings together the many strands of economic, social and environmental policy under one overarching objective - to continually improve the quality of life and well-being on Earth for present and future generations. At this point in time, when the world is facing a financial crisis and a global recession, as well as a food crisis, a looming energy crisis, and climate change, it is more than ever important to have a coherent and long-term vision for our future development."

*Walter Radermacher Director General, Eurostat*

## European Climate Change Programme (ECCP)

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A Programme to Identify and develop all the necessary elements to implement the Kyoto Protocol.



The EU Commission responded in June 2000 by launching the European Climate Change Programme (ECCP). The goal of the ECCP is to identify and develop all the necessary elements of an EU strategy to implement the Kyoto Protocol.

The development of the first ECCP (2000-2004) involved all the relevant groups of stakeholders working together, including representatives from the Commission's different departments (DGs), the Member States, industry and environmental groups. The second European Climate Change Programme (ECCP II) was launched in October 2005.

## Kyoto Protocol

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The Kyoto Protocol was an agreement negotiated by many countries in December 1997 and came into force with Russia's ratification on February 16, 2005. The reason for the lengthy time span between the terms of agreement being settled upon and the protocol being engaged was due to terms of Kyoto requiring at least 55 parties to ratify the agreement and for the total of those parties emissions to be at least 55% of global production of greenhouse gases.

The protocol was developed under the **UNFCCC** - the United Nations Framework Convention on Climate Change 1992.

Participating countries that have ratified the Kyoto Protocol have committed to cut emissions of Carbon Dioxide (Co2) and the following Green House Gases (GHG)

- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF<sub>6</sub>)



If participant countries continue with emissions above the targets, then they are required to engage in emissions trading; i.e. buying "credits" from other participant countries that are able to exceed their reduction targets in order to offset.

The goals of Kyoto were to see participants collectively reducing emissions of greenhouse gases by 5.2% below the emission levels of 1990 by 2012.

### 2020 Targets for carbon emission reduction

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The European Union has long been a driving force in international negotiations that led to agreement on the two United Nations climate treaties, the UN Framework Convention on Climate Change (UNFCCC) in 1992 and the Kyoto Protocol in 1997. The Kyoto Protocol as above requires the 15 countries that were EU members at the time ('EU-15') to reduce their collective emissions in the 2008-2012 period to 8% below 1990 levels.

In 2007 EU leaders endorsed an integrated approach to climate and energy policy and committed to transforming Europe into a highly energy-efficient, low carbon economy. They made a unilateral commitment that Europe would cut its emissions by at least 20% of 1990 levels by 2020. This commitment is being implemented through a package of binding legislation. Please see Section 5.

The EU has also offered to increase its emissions reduction to 30% by 2020, on condition that other major emitting countries in the developed and developing worlds commit to do their fair share under a future global climate agreement. This agreement should take effect at the start of 2013 when the Kyoto Protocol's first commitment period will have expired.

## The Cancún Agreement

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The Cancún Agreement, a balanced and substantive package of decisions adopted at the end of the UN Climate Conference in Mexico (December 2010), represents an important step on the road to building a comprehensive and legally binding framework for climate action for the period after 2012.

### 2020 Targets for renewable energy production

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**The Directive 2009/28/EC** on renewable energy, implemented by Member States by December 2010, sets ambitious targets for all Member States, such that the EU will reach a 20% share of energy from renewable sources by 2020 and a 10% share of renewable energy specifically in the transport sector.

It also improves the legal framework for promoting renewable electricity, requires national action plans that establish pathways for the development of renewable energy sources including bio-energy, creates cooperation mechanisms to help achieve the targets cost effectively and establishes the sustainability criteria for bio-fuels.

The Irish Government have insisted on 40% renewable Electricity by 2020, with the majority coming from “on Shore Wind. This is part of the Strategy for Renewable Energy 2012 - 2020\*”

*\*Please see Section 4 case study.*

### Strategy for Renewable Energy 2012 – 2020

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*The development of renewables is at the heart of this Government’s energy policy. The availability of indigenous, sustainable power is a valuable national asset and it is essential that in developing it, we maximise its return to the State. This strategy outlines how we plan to do that. It has been agreed by Government after consideration by the Cabinet Committee on Climate Change and the Green Economy.*

Pat Rabbitte T.D. Minister for Communications, Energy & Natural Resources May 2012

### Life Cycle Cost (LCC)

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The LCC puts a value on the total assessment of a all recurring and non-recurring costs over the full life span or a specified period of a product , service, structure, or system. In includes purchase price, installation cost, operating costs, maintenance and upgrade costs, and remaining (residual or salvage) value at the end of ownership or its useful life. In the past LCC procurement techniques have always be tailored to the individual tender, this has now influenced a wide range of LCC techniques that pass over the operating and supporting costs to the principal contractor as well.

However it is as mentioned above imperative to differentiate between a LCC saving and a product, service, system that is less expensive initially or more “Green” at the outset. The Contractor must remove the LCC concerns as part of the competition by demonstrating how Green the LCC’s are. This is further explained in Chapter 4 Case Study.

## Eurocities

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Eurocities is the network of major European cities. It brings together the local governments of over 130 large cities in 34 European countries. The Declaration highlights the essential role played by cities in combating climate change. The signatories to the Declaration are committed to developing energy action plans and implementing measures to tackle climate change. Dublin City Council has already made significant progress in these areas by its adoption of a Climate Change Strategy, higher energy standards in our current City Development Plan and major progress in developing an Action Plan on Energy for Dublin.

## EU emissions trading scheme (EU ETS)

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The EU Emissions Trading System\* is a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively. Being the first and biggest international scheme for the trading of greenhouse gas emission allowances, the EU ETS covers some 11,000 power stations and industrial plants in 30 countries. Launched in 2005, the EU ETS is a system based on the "cap and trade" principle.

This means there is a "cap", or limit, on the total amount of certain greenhouse gases that can be emitted by the factories, power plants and other installations in the system. Within this cap, companies receive emission allowances which they can sell to or buy from one another as needed. The limit on the total number of allowances available ensures that they have a value. At the end of each year each the company must surrender enough allowances to cover all its emissions, otherwise heavy fines are imposed. If a company reduces its emissions, it can keep the spare allowances to cover its future needs or else sell them to another company that is short of allowances. The flexibility that trading brings ensures that emissions are cut where it costs least to do so. The number of allowances is reduced over time so that total emissions fall. In 2020 emissions will be 21% lower than in 2005.

*\* This is taken from the EU ETS Climate Action Strategy*

## COP 15

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The 15th session of the Conference of the Parties to the UNFCCC and the 5th session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol took place in Copenhagen and was hosted by the Government of Denmark. Also sitting were the thirty-first sessions of the Subsidiary Body for Implementation (SBI) and the Subsidiary Body for Scientific and Technological Advice (SBSTA), the tenth session of the Ad hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP), and the eighth session of the Ad hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA).

## EU Ecolable

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The EU Ecolable is a voluntary award scheme for the most environmentally friendly products on the market and was first introduced in 1992 under Regulation 880/92 (later amended by Regulation 1980/2000) to encourage businesses across Europe to market products and services which are kinder to the environment and in turn allow consumers to make the choice on what kind of products and services they want to buy.

The Ecolable criteria is not based on one single factor, but on studies which evaluate the impact of the product and service on the environment throughout its life cycle; from the raw materials through to the production and disposal. The new Regulation aims to streamline the rules and procedures for awarding the label.

The new Regulation 66/2010 aims to improve the use and operation of the Ecolable while avoiding previous pitfalls in awarding it to the wrong products. Under Article 6 of the new Regulation there is a list of general requirements for establishing an Ecolable criterion, which must:

1. Be based on environmental performance of products, taking into consideration EU environmental objectives.
2. Clearly set out the environmental requirements
3. Be determined on a scientific basis and consider the whole life cycle of products.
4. Include requirements to ensure that products using the Ecolable actually fulfill their function adequately
5. Not award the Ecolable to goods containing substances which are classified as 'toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction' as defined by Regulation 1272/2008. Unless it can be shown that products with such substances have a higher overall environmental performance than those without.

## Energy Roadmap 2050

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The EU policies and measures to achieve the Energy 2020 goals and the Energy 2020 strategy are ambitious. They will continue to deliver beyond 2020 helping to reduce emissions by about 40% by 2050. They will however still be insufficient to achieve the EU's 2050 decarbonisation objective as only less than half of the decarbonisation goal will be achieved in 2050. This gives an indication of the level of effort and change, both structural and social, which will be required to make the necessary emissions reduction, while keeping a competitive and secure energy sector.

Today, there is inadequate direction as to what should follow the 2020 agenda. This creates uncertainty among investors, governments and citizens. Scenarios in the "Roadmap for moving to a competitive low-carbon economy in 2050" suggest that if investments are postponed, they will cost more from 2011 to 2050 and create greater disruption in the longer term.

The task of developing post-2020 strategies is urgent. Energy investments take time to produce results. In this decade, a new investment cycle is taking place, as infrastructure built 30-40 years ago needs to be replaced. Acting now can avoid costly changes in later decades and reduces lock-in effects. The International Energy Agency (IEA) has shown the critical role of governments and underlined the need for urgent action; with the scenarios of the Energy Roadmap 2050 different possible pathways for Europe are analysed more in depth.

## Case Study: Kilbarrack Fire Station Dublin 5. World's First Carbon Neutral Fire Station

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In 2010 Dublin City Council launched the Green Plan© for Kilbarrack Fire Station, the **Worlds First Carbon Neutral Fire Station**. Thanks to the exemplar actual actions that have been completed Kilbarrack is now a hub of sustainability to the surrounding community and proof of how real leadership can be demonstrated in green public buildings.



### Concept

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The concept of the Green Plan© is to embrace a sustainable approach that will use Worlds' best practice, forward collective thinking and new technologies to:

- Significantly reduce energy and water consumption
- Prevent and reduce the volume of domestic waste created
- Save money by reducing the energy running costs of each Fire Station by up to 80%
- Deliver community focused services that engage staff and our local community
- To Create Fire Stations that produce less Carbon and meet the 2020 obligations.

### **Kilbarrack Fire Station is the Worlds first Carbon Neutral Fire Station.**

- The Energy Demand (Gas and Electricity) of the Fire Station has decreased by 90%. 80% of the Stations hot water is produced daily by the thermodynamic panels
- The new boilers are 98% efficient and Electrical Appliances have a reduced output of over 50%. The Station is permanently at one temperature reducing boiler work load and creating a better healthier working environment for the staff.
- By retro fitting new technologies, the water consumption of the Station has been reduced by 1,500,000 litres. The cost of water to and from the station has dropped by 90%
- All water collected from the roof space is treated and returned with all the wastewater from the showers, wash hand basins and kitchen to the holding tank for use on the Stations Emergency Appliance. Removing the Space Heaters has made savings of one Tonne of CO2 and over €1,200. We have reduced the return of fats and oils to the main drains by over 90%
- The stations retro fit has prevented 10 Tonne of CO2 from leaking out through the fabric and is directly impacting on the running costs of the station.
- Glass recycling in the station has resulted in 1,200 tons of CO2 and over 1,900 kWhr of energy being saved so far. 60% of all station waste is now recycled. 100% of the glass, paper, plastic, and tin produced on site are recycled. We are now composting 100% of all organic waste created in the station.
- There is a comprehensive Biodiversity Action Plan written for Kilbarrack Fire Station. There are two working Beehives on site and a 60 m2 vegetable allotment is now yielding crops and a 20m2 extension is in construction
- Many local communities out reach projects implemented such as: respite days with the local Hospice for the terminally ill patients. These patients now come to the Fire Stations Commemorative Garden to relax.
- The successful engagement and interaction between Station Staff and Retired Members.
- The tender process for Ambulance equipment and supplies has finished and a clear Green Agenda has been achieved. Only Environmentally Friendly products are used to maintain the water less urinals
- A Green Agenda has been achieved with all the contractors involved the retro fit of the station. To date only three medium skips have been filled with waste and all other materials have been recycled. Old uniforms and old civilian clothes removed from Kilbarrack Fire Station have been sent directly to aid world aid relief. Eight Public Private Partnerships have been set up to create the recycle bay.
- DFB's first Commemorative Garden for deceased members and present members completed. This garden is an area of reflection. We now have four dedicated gardens on site protecting the eco systems we have helped create and nurture. 100% of the water for our gardens is harvested on site. 100% of the water for our gardens is harvested on site



Energy Usage & Savings for last 3 calendar years due to the implementation of the Green Plan©  
in Kilbarrack Fire Station

	Usage (kWh)	Cost
Annual Thermal Usage for 2010	13,000	€600
Annual Electricity Usage for 2010	58,435	<b>€5,757</b>
<b>Total Annual Energy Spend at site for 2010</b>	<b>71,435</b>	<b>€6,357</b>
Annual Thermal Usage for 2009	549,265	€26,000
Annual Electricity Usage for 2009	101,603	€14,000
<b>Total Annual Energy Spend at site for 2009</b>	<b>650,868</b>	<b>€40,000</b>
Annual Thermal Usage for 2008	563,333	€27,000
Annual Electricity Usage for 2008	142,800	€17,000
<b>Total Annual Energy Spend at site for 2008</b>	<b>706,133</b>	<b>€44,000</b>



The Green Plan© Ring Fenced Savings Fund for Kilbarrack Fire Station balance sheet.

These figures have been verified by DCC accounts dept and DFB accounts dept.

Phase (I)	Budget	Spent	Difference	Balance
Opening balance				€0
Phase (I)	€100,000			€100,000
Project Cost		€91,260		€8,740
Funding from S&S Club	€14,000			€22,740
Total	€114,000	€91,260	€22,740	€22,740

Phase (II)	Budget	Spent	Difference	Balance
Opening balance	€22,740			€22,740
Actual Savings from Phase (I)	€34,000			€56,740
Funding:				
DFB Sports & Social Club	€3,000			€59,740
LANPAG	€15,000			€74,740
Dubco Credit Union	€500			€75,240
Phase (II)		€71,955		€3,285
Total	€75,240	€71,955	€3,285	€3,285

Phase (III)	Budget	Spent	Difference	Balance
Opening balance				€3,285
Actual Savings from Phase (I)	€34,000			€37,285
Actual Savings from Phase (II)	€15,000			€52,285*

\*This fund is now ring-fenced and available to spend on the next Fire Station implementing its Green Plan. Year on year the savings contribute to the fund until the end of the life cycle of the different technologies.

### Annual Targeted Energy Demand

Annual energy demands targeted by the Green Plan©	Annual Demand (kWh)	Annual Targeted Reduction of Usage (kWh)	Targeted Percentage Reduction (%)
Gas and Electricity 2008	706,133	50,000	7%
Gas and Electricity 2009	650,868	550,000	80%
Gas and Electricity 2010	71,435	33,307	42%
<b>Total Targeted Usage Reduction</b>		<b>633,307</b>	<b>90%</b>

### Period of Demonstrated Savings

From	To	Total number of months
Nov 2009	May 2011	18 months

### Total Demonstrated Savings to May 2011

	Thermal	Electrical	Total
Total demonstrated savings to date (kWh)	550,333	84,365	634,698
Total demonstrated savings to date (€)	€26,400	€11,234	€37,634
Total demonstrated savings to date (CO <sub>2</sub> )	100 Tonnes	45 Tonnes	145 tonnes

### Projected Annual Savings

	Thermal	Electrical	Total
Projected annual savings (kWh)		33,307	33,307
Projected annual savings (€)		€3,322	€3,322
Projected annual savings (CO <sub>2</sub> )		20 Tonnes	20 Tonnes

## Section 4: The legal context underpinning GPP

### The legal context underpinning Green Public Procurement

#### Legislation

#### EU Directives: Objectives & Targets

#### EU Directives: What the directives say

#### Green Tenders 8 priority groups for GPP:

#### Display Energy Certificates

#### Covenant of mayors

#### TGL Part L of the Building regulations

#### Case Study DEC Kilbarrack Fire Station



### Policy and Legal context



Public bodies are required by certain Irish and EU regulations to achieve energy savings and purchase energy efficient products and services.

The European Communities (Energy End-use Efficiency and Energy Services) Regulations 2009 (**SI No. 542 of 2009**) set out obligations on public bodies to fulfil an “exemplary role” in managing energy, including implementing energy efficient procurement practices and considering alternative financing, in particular energy performance contracting.

Under SI No. 542 of 2009:

- *Public bodies shall fulfil an exemplary role with regard to energy efficiency, with the aim of achieving the energy savings target established...*
- *... Public bodies shall fulfil their exemplary role through their use of ... financial instruments for energy savings, and other energy services ...*

SI 151 of 2011 (Energy Efficient Public Procurement) obliges public bodies to only purchase energy efficient equipment and vehicles. Energy efficiency should be a key requirement for defining the need, evaluating options, designing, specifying, supplier selection, and tender evaluation

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### Legislation

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“Public body” is a wide definition and the Public service namely DFB is tasked with leading by an exemplary role in both reducing energy spend and carbon production. The Gwh figures are to change from 5000 Gwh 2010 to 1500 Gwh by 2016 to achieve the 20% Energy reduction targets. It is imperative to also abide by the *Guidelines for the appraisal and management of capital expenditure proposals in the public sector*. These guidelines are referenced in Appendix A; including *Working rules for cost benefit analysis*.

The Public Service in Ireland is also expected to “develop model Contracts” taking the lead from the National Procurement Service (NPS), the Sustainable Energy Authority of Ireland (SEAI) and the Department of Education and Skills (DoES).

I have listed the main energy regulations below:

- Directive 2000/28/EU Regulation 1272 / 2008 Regulation 880 / 92 + 1980 / 2000
- Energy Efficient Procurement (Reg 14)
- Energy Audits (Reg 13)
- Equipment & Vehicles Reg (15A)

### Objectives

- Assist public authorities plan and implement GPP
- Stimulate the marketplace
- Drive innovation and competitiveness
- Reduce energy consumption and associated costs

### Targets

- Adopts EU target of 50% of GPP
- Half of public procurement contracts to include core GPP
- Public sector must keep abreast of EU/international developments
- Methodology uses market-based pricing valuations
- Investment expenses
- Operational expenses
- Maintenance expenses
- End-of-life/ disposal expenses
- Environmental costs
- Need to account for the cost of carbon

**Directive 2004/18/EC**

Article 2

- “Contracting Authorities shall treat economic operators equally and non-discriminatorily and shall act in an transparent way”

Article 23 – Technical Specifications

- “Technical specifications shall afford equal access for tenderers and not have the effect of creating unjustified obstacles to the opening up of public procurement to competition”

**Directive 2004/17/EC (Utilities)**

- Art. 34(3)(b) and Art. 34(6): technical specifications may incorporate environmental characteristics
- Art. 38: contract performance conditions may relate to environmental considerations
- Art. 52(3): assessment of technical ability may include tenderer’s environmental management measures (e.g. EMAS or equivalent)
- Art. 55(1): contract award criteria - MEAT may include assessment of environmental characteristics

**Recital 8 to Directive 2004/18/EC**

“Before launching a procedure for the award of the contract, contracting authorities may, using a technical dialogue, seek or accept advice which may be used in the preparation of the specifications provided, however, that such advice does not have the effect of precluding competition”

- Article 11 TFEU (ex Art. 6 EC):

“Environmental protection requirements must be integrated into the definition and implementation of the Union policies and activities, in particular with a view to promoting sustainable development.”

**Energy End-Use Efficiency & Energy Services Directive**

(2006/32/EC)

- Public sector should endeavour to use energy efficiency criteria in tendering procedures (Rec. 7).
- Member States shall adopt and aim to achieve overall national indicative energy savings target of 9% by 2016
- Member States Action Plan (Art 14(2))
- Member States shall ensure (Art 5)

### **Public Procurement Directives\***

Directive 2004/17/EC (Utilities) - Directive 2004/18/EC (Classics)

Non-discrimination on grounds of nationality – Equal treatment – Transparency – Proportionality

*\*I have included this directive to demonstrate the importance of already existing Procurement Directives. Green Public Procurement should always involve the above directives.*

### **Green Tenders 8 priority groups for GPP**

Green Tenders was launched in April 2012 and is explained in Section 2. Using the “Green Tenders” to evaluate the targeted priority areas to show leadership in Public Sector Green Procurement, the 8 priority groups\* for GPP are:

**1. Construction**

**5. Cleaning products and services**

**2. Energy**

**6. Paper**

**3. Transport**

**7. Uniforms and other textiles**

**4. Food and catering services**

**8. ICT**

### **Approach**

- When tendering for equipment/services, public bodies should:
- Maximise use of eProcurement
- Seek most energy efficient solutions
- Consult the Triple E register
- Procure(ICT) equipment meeting the Energy Star criteria, or equivalent
- Allocate marks for EPEAT or EU Ecolable certification, or equivalent
- Require tenderers to supply details of power management features
- Ensure tenderers are compliant with WEEE Regulations

### **Action**

- Establishment of GPP Action Plan Implementation Group
- Action plan to be reviewed every 5 years
- Public bodies to progressively integrate green criteria into public sector tendering
- Public bodies to indicate a commitment to GPP in Corporate Procurement Plan
- Where applicable, public bodies must clearly specify environmental and energy efficiency criteria.

*\*Please note that the 8 groups are broken down in the Green Tenders and explained in great detail. It would not be appropriate to review or replicate the context and framework of all 8 groups in this Guidance Document. It is of significance though that DFB was involved in the public consultation process ahead of the Green Tenders and in the City Manager, Mr John Tierney’s address on the original discussion document issued by the Dept. of the Environment on an Action Plan for Green Public Procurement. ICT and Transport were not originally included in the finalised grouping.*

## Display Energy Certificates

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A Display Energy Certificate shows the energy performance of a building based on actual energy consumption as recorded annually over periods up to the last three years. DEC's need to be updated each year. Property managers affected by this law will need to have annual energy meter readings.

Only buildings occupied or part occupied either by a public authority or an institution, that provides a public service, and expect to be visited by the public to a large number of persons and who are therefore frequently visited by those persons and with a total useful floor area 1 greater than 1,000m<sup>2</sup> are affected by this legislation. The Total useful floor area is

defined as the total area of all enclosed spaces measured to the internal face of the external walls. Included are areas of sloping surfaces such as staircases, galleries, raked auditoria, and tiered terraces where the area taken is from the area on the plan. Excluded are areas that are not enclosed such as open floors, covered ways and balconies.

DFB has had a complete analysis taken of the energy spend of all its Fire Stations in 2011. This certification process was performed in Partnership with Codema, DCC Energy Consultancy Service. During that time a Display Energy Certificate (DEC) accreditation took place.

As above; DEC's were only necessary on public buildings larger than 1,000m<sup>2</sup>. A lot of the DFB Estate is smaller than 1,000m<sup>2</sup> and it seemed premature to DEC test the Fire Stations at that time. However I anticipated that this legislation would change and continued with the DEC testing of DFB. This has paid dividends as a benchmark collectively for DCC and DFB. DFB was one of the first DCC Departments to openly go for assessment in its usual transparent fashion and under new legislation soon to be introduced, the measurable floor space of public buildings is about to change dramatically to 500m<sup>2</sup>. Significantly the Green Plan© retro fit work carried out on the 40 year old Fire Station, produced an exemplar rating for a building of its construction. This has subsequently lead Codema to publish a case study and report on Kilbarrack Fire Station as a best practise example of DEC criteria.

Please find below the headings used in the creation of a Display Energy Certificate\*.

- Boiler Type
- Space Heating System
- Water heating System: Controls
- Ventilation
- Windows
- Water Conservation
- Insulation
- Passive Gains
- Renewable Technologies

*\*please see case study below for the breakdown of the DEC in Kilbarrack Fire Station.*



80% of energy consumption and CO<sub>2</sub> emissions is associated with urban activity. Local governments such as DCC and its Fire Department DFB, play a crucial role in mitigating the effects of climate change. The EU Climate Change and Energy Package was adopted in 2008. Soon after the EU launched the Covenant of Mayors to endorse and support the efforts deployed by local authorities in the implementation of sustainable energy policies. The Covenant of Mayors is generally accepted and recognised across the EU-27 as vehicle for multi level governance in local authorities.

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### TGD Part L of the Building Regulations

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Conservation of Fuel and Energy has been integrated into the Building Regs. Under part L of the Regs the following guidelines must be followed. However if works are performed and have not followed the guidelines but have achieved the goal, there shall be no repercussion unless they are in breach of the Regulations. These factors as demonstrated in the Case Study below show the importance of including Part L of the Building Regs into DFB's future Green procurement criteria, especially for an EScO tender.

- A building shall be designed and constructed so as to ensure that the energy performance of the building is such as to limit the amount of energy required for the operation of the building and the amount of CO<sub>2</sub> emissions associated with this energy use insofar as is reasonably practicable.

**For existing dwellings, the requirements of L1 shall be met by:**

- Limiting heat loss and, where appropriate, maximising heat gain through the fabric of the building;(b) controlling, as appropriate, the output of the space heating and hot water systems; (c) limiting the heat loss from pipes, ducts and vessels used for the transport or storage of heated water or air; (d) providing that all oil and gas fired boilers installed in existing dwellings shall meet a minimum seasonal efficiency of 86% where practicable.

**For new dwellings, the requirements of L1 shall be met by:**

- Providing that the energy performance is such as to limit the calculated primary energy consumption and related CO<sub>2</sub> emissions insofar as is reasonably practicable, when both energy consumption and CO<sub>2</sub> emissions are calculated using the Dwelling Energy Assessment Procedure (DEAP) published by Sustainable Energy Ireland;
- Providing that a reasonable proportion of the energy consumption to meet the energy performance of a dwelling is provided by renewable energy sources; (c) limiting heat loss and, where appropriate, availing of heat gain through the fabric of the dwelling;
- Providing and commissioning energy efficient space and water heating systems with efficient heat sources and effective controls;
- Providing to the dwelling owner sufficient information about the dwelling, the fixed building services and their maintenance requirements so that the dwelling can be operated in such a manner as to use no more fuel and energy than is reasonable;
- Providing that all oil and gas fired boilers shall meet a minimum seasonal efficiency of 86%.

### **Boiler Type**

- I have replaced a 40 year old non condensing, 14 x element boiler (68% inefficient) with Nr 2 x Rehema Quintra Gas condensing boilers, both operating at 98% efficiency.
- One boiler is now used to heat the space of the Kilbarrack Fire Station (KFS) and the other is a back up boiler for the water heating system.

### **Space Heating System**

- I have completely removed the old Engine bay space heating system. This system used to consume over €1,200 worth of electricity and created more than one ton of CO<sub>2</sub>.
- I have replaced all of the triple panel high water content radiators that were in the KFS.
- Formerly the KFS radiators were directly mounted to single glazed aluminium alloy windows and were turned permanently on 24 hours per day.
- Now the radiators are low water content radiators and are single and double panel radiators. They are so efficient that I have replaced 100% of the old radiators with 30% less new radiators.
- As a comparator for fuel burned to make heat, the new radiators have been assessed and have reduced the energy costs to the station by over €3,500 per annum independently.
- The insulation of Kilbarrack Fire Station is one of the highest reasons for the new heat and u value calculations. I have dropped the U Value from a figure higher than 10, to a figure of 1.2 for the entire Fire Station.
- The entire pipe work of the whole station has been retro fit and heavily insulated to prevent distribution heat losses in the heating circuits and to prevent carbon emissions as a by product of same.
- I have constructed and installed an A rated triple glazed, wooden framed, handmade window, for the gable wall at the first floor of the station. This new window floods the first floor corridor with natural south facing sunlight for most of the day. The solar gain from the sun then heats the concrete floor which in turn then releases its heat at night. As the window has such high insulation properties the heat is not wasted through the buildings envelope.

### **Water Heating System**

- I have installed Nr 4 x Thermodynamic Solar Collectors and a heat exchanger to produce the hot water in the station. These panels use wind and rain to make hot water. This water is then stored in the new 1000litre water storage tank at 55°C. An input from the gas condensing boiler then increases this temperature to 60 °C, to combat legionella disease.
- The water system has also been pressurised and helps the new water waste prevention fittings in the station perform better. This pressurised system also helps deliver the hot water quicker around the station.

### **Controls**

- I have used Thermostatic Radiator Valves in the Station Dormitories where formerly there were none.
- I have a control management system for the heating of the station this includes indoor and outdoor sensors and stats. The system also has a setback temperature which under Health and Safety has created a better working environment and helps prevent Sick Building Syndrome.

### Ventilation

- Previously KFS failed its air tightness tests. This was also contributing to the heating being on the whole time. The by-product was over production of moisture and condensation. This moisture eventually tarnished the aluminium window panels and frames and caused mould growth through out the Fire Station. Also the window frames were broken and remained in the open position permanently.
- Now all the new windows (please see insulation) open and close properly. KFS is now properly vented. I am completing a study on heat ventilation air conditioning (HVAC) for the Fire Station. My first research re: installing this system has shown that as a retro fit, the core walls of the Fire Station are too thick and this would lead to a higher financial cost and a lower payback period.
- I am now studying a HVAC system using boiler house heat, to be ducted to the ground floor and ground floor heat ducted to the first floor. Fresh air will be brought into the Fire Station and heated to the temperature of the Stale air leaving the Fire Station.

### Windows

- Previously the windows in KFS as mentioned above were of a single glaze aluminium frame, using un-insulated aluminium panelling. The windows were almost 40 years old, had tarnished and almost all window seals had blown. A lot of the windows were damaged and broken, contributing to a leaky building envelope.
- The new windows are A rated, wooden framed windows with wooden panelling. The panelling and frames are twice higher than the highest building regs for 2008. The windows were hand and machine made in Dublin by the Dublin City Joinery Dept. The timber used is certified sustainably sourced Irish Timber. The radiators are no longer mounted directly on these new windows and as below; this has contributed to a CO2 reduction from the building fabric of over 10ton per annum.
- As per the same construction I have installed new doors, door frame, and door panels in the Fire Station. I have also constructed an inner door at the stairwell to reduce heat loss.

### Water Conservation

A number of water saving measures and projects has taken place over the last two years.

- A comprehensive Rain water harvesting system is installed. This system takes all rain water from the entire roof space of the Fire Station. This water is diverted to a holding tank and passes through sieves and pumping chambers before it is eventually ready for use by the Fire Appliance in the Fire Station. This is the system that has been used for the last year, to put out fires in the local district.
- The rain water system is backed up by the Waste- water Treatment System. This system collects and treats to EU Certified Standards, the Kitchen water, Shower water and Wash hand basin water from the Fire Station. The treated Grey water is then sent across to the rain water holding tank in the Fire Stations Yard.
- The Fire Stations water circuits have been pressurised with a large pump and all the taps and shower heads have been replaced with water saving devises and sensors.
- The urinals have been replaced with waterless urinals that use Green Chemicals to prevent sulphate build up in the waste pipes. The WCs have water Hippos to reduce the volume of each flush.
- For hygiene reasons I have also installed sparge works and push button controls for the urinals, incorporating a duty flush.
- A secondary Rain water collection system is under construction. This system will collect and treat rainwater as, grey water and be used to provide non drinking water for the showers, toilets and wash hand basins in the Fire Station.

### **Insulation**

The insulation of the station is one of the highest reasons for the new heat and u value calculations. The Fire Station's U Value has dropped from a figure higher than 10, to a figure of 1.2 for the entire station. This is due to several insulation projects. Listed below:

### **Building fabric:**

- New windows, window frames, window panels, doors and door frames.
- Cavity wall insulation using closed beads system, injection moulded into cavity spaces.

### **Roof insulation:**

- The loft has been insulated using 400mm closed bead insulation
- The roof has recently been replaced using 400mm PIR insulation sandwiched between a bed of 75mm marine plywood. On top of this is a layer of shingle.

### **Heating Circuits:**

- All existing Pipe work, all new Pipe work
- All heating circuits and ducting throughout Fire station.
- Pipe work to Radiators is heavily insulated and buried in the internal, purposely created cavities of the wooden windows.

### **Personal Protection Equipment Units (PPEU)**

- The new heating circuit to the PPEU is very well insulated and has gate valves and motorised three way valves to save heat loss and still maintain H&S standards for Fire Fighting Clothing

### **Building Structure:**

- Murfill Paint has been applied in layers to the Building Envelope. This paint is made from recycled materials and will improve the building structure integrity for a further 30 years.
- Sealant has been used on whole Station Envelope including, all reveals, window sills and opes.
- Beading has been used on installation of the new windows and doors.

### **Passive gains**

- The New windows and doors and the window in the South facing gable wall are A rated. They take Solar gain but the insulation is so high that heat loss does not occur. This has the effect of using the sun's heat for free to heat the majority of the Fire Station a lot of the time.
- The Station is benefiting from the other insulation projects as a combined effect on heat loss. This is causing the boilers to be turned on a lot less than what is deemed normal. The Fire Station is almost constantly at 18-20°C.
- A Biodiversity / Woodland Garden has been constructed at the east facing plot of land beside the dormitories of the Fire Station. This new Woodland garden offers shading and is in keeping with the Passive system of preventing solar heat and build up during the day in an area need to be kept cool and fresh.

- A recreational garden has been constructed by the Fire Fighters underneath the new South Facing Gable Wall Window. This area is an almost year round sun trap and is proving quite popular with the Fire Crews.
- This garden includes many of the Biodiversity Projects that have taken place and incorporates some of the new Renewable Technologies also. A peaceful atmosphere has been achieved which contributes to a better working environment.

### **Renewable technologies**

- I have installed nr 4 x Thermodynamic Solar Collectors on the roof of an out building in the Fire Stations ground. As mentioned above these Panels use wind and rain, 24 x hours per day to create hot water. I have also used the highest standard insulated, District heating pipe work to bring the water from the panels to the boiler house.
- LED Lumisaver technology is installed throughout the interior and exterior of the Fire Station. These new lights have advanced fittings whereby they turn on only in the evening and then only stay on when the microwave sensor is activated. They then dim down when a Crew Member walks away. This prevents a surge in power when the lights power back up.
- I have installed Sava flow technology on the different electrical appliances around the Fire Station including the fridge freezers and coke cola machine. This has produced a decrease of over 50% in electricity demand.
- Urban Wind Turbines: these turbines are non gear ratio orientated and can produce enough electricity to run the Fire Station and satisfy its energy demands. This is because all projects to date have reduced the electricity consumption of the Fire Station by over 80%, leaving only 20% electricity demand. Wind is obviously not fully reliable but the purpose of this project is to best demonstrate the potential for on shore wind energy as an aid to Fire Station energy consumption.
- Water butts have been installed around the stations four x new gardens. This water is used on the allotment area as well.
- A magnetic fuel saving device is being trailed on the frontline emergency vehicle in Kilbarrack Fire Station, including other Fire Stations around Dublin. This trial is to test the feasibility for the devices to show fuel efficiencies. If successful the magnet device could have a reducing effect on the environment by over 175 tons of CO2 per annum.
- A 60 meter Allotment that has successfully grown two seasons worth of vegetables. The allotment is set in the newly built commemorative garden for fallen DFB Members and has been installed almost completely by the retired members of the Fire Brigade. This allotment is the focal point of the work regularly undertaken by the serving and retired Crews. This allotment is reducing food miles and carbon production and for that reason should be considered as a support to the renewable efforts of the Fire Station.
- A Recycle Bay has been constructed in the Fire Station. This bay involves eight public private partnerships and has reduced waste from going to land fill by over 50%. This waste saving also has a monetary value.
- Waste water treatment works: as mentioned above.
- Rainwater Harvesting System: as mentioned above.



Project cost and annual savings

**Total Phase (I)**

Total estimated cost	Estimated Saving Per Annum*	CO <sub>2</sub> estimated annual reduction	Pay Back Period
€91,260	€33,450	76.5 Tons	2.7 years

**Total Phase (II)**

Total estimated cost	Estimated Saving Per Annum*	CO <sub>2</sub> estimated annual reduction	Pay Back Period
€71,955	€15,111	51 Tons	4.7 years

**Overall Total 2010**

Total estimated cost	Estimated Saving Per Annum*	CO <sub>2</sub> estimated annual reduction	Pay Back Period
€163,215	€48,561	127.5 Tons	3.3 years

**Actual Savings for 2010 based on 2008 figures**

Gas 2008: €26,861	Electricity 2008: €17,590	Carbon 2008: 145 tons CO <sub>2</sub>
Gas 2010: €600	Electricity 2010: €5,737	Carbon 2010: 12 tons CO <sub>2</sub>
Actual saving €26,261	Actual saving €11,853	Actual Saving 133 Tons CO <sub>2</sub>

**Total actual energy spend / usage at Kilbarrack Fire Station**

2008	706,133 kWh	€44,000
2010	71,435 kWh	€6,357

The above figures show a demand reduction of **90%** and **633,307kWh** respectively.

## Project cost and annual savings

### Actual Water reduction for 2010 based on 2008 figures

2008: 5.2 m3 consumed per day: 1,898,000 litres consumed per annum.

2010: .6m3 per day: 219,000 litres consumed per annum

1,679,000 litres of water prevented from being consumed from the mains per annum.

**Saving of €4,000 per annum**

### Actual Savings for 2010 based on 2008 figures

Gas 2008: €26,861	Electricity 2008: €17,590	Carbon 2008: 145 tons CO2
Gas 2010: €600	Electricity 2010: €5,737	Carbon 2010: 12tons CO2
Actual saving €26,261	Actual saving €11,853	Actual Saving 133 Tons CO2

### Total actual energy spend / usage at Kilbarrack Fire Station

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## Section 5: Green Public Procurement Strategy and DFB

**Engaging the market**

**Market Research**

**Criteria affecting DFB**

**Green Procurement Programme**

**Source Selection Criteria (SSC)**

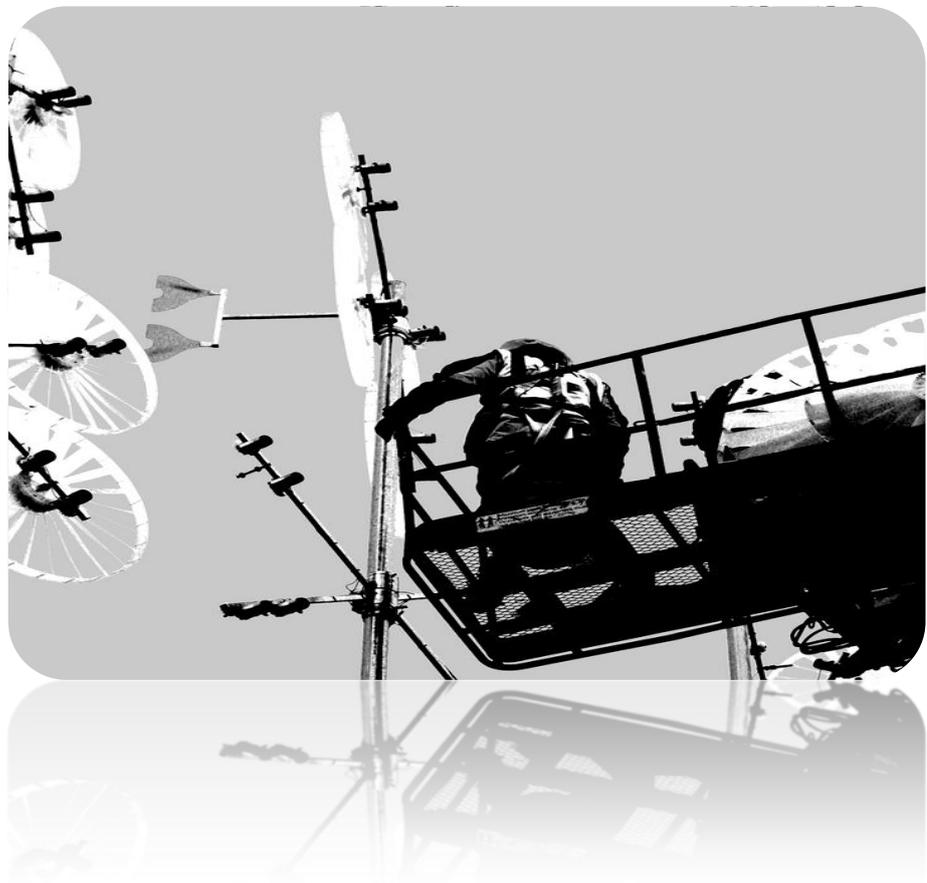
**Pre-Competition Testing**

**Technical specifications**

**International Performance Measurement and Verification Protocol (IPMVP)**

**DFB GPP Common goals, what are our needs for establishing a pointing system?**

**Case study Kilbarrack Fire Station Grid Tie Project**



## Engaging the market

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Can DFB talk to suppliers?

It is okay for the tenderer (DFB) to openly talk to and engage the market. This does not have to be a formal arrangement at all. DFB is not setting a prequel. There is no obligation in this scenario. The outcome is that the DFB has up to date best practice knowledge or a wide range of Green Products, Technologies, Equipment, and Services etc. DFB can learn from these documented meetings and base our specs around what's out there and on offer. The Market and Industry can demonstrate their market research and by talking to them we can demonstrate ours. This is further described in pre competition testing below.

It is okay to discuss Pre-Competition Testing and our long term goals and visions of lowering DFB's carbon footprint, with the market, by implementing the Green Plan©. Procurement is one of the Seven Themes of the Green Plan©. The Market and Industry wants to help and support DFB because this will also help them including: raising company profiles. If DFB has a better understanding of how LCC affects the Green side of things then DFB can openly write Tender Documents that offer opportunities to other sections of the Market to apply for.

## Market Research & Supplier relationship management

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Demanding Market Research has been key in DFB and the implementation of its Green Plan©. In these cases DFB have had to **Rationalise Needs with Policy and Supply Options**, identifying the Our Needs and Supplier relationship management. DFB may have limited funds for developing and testing and is allowed to work closely with existing contractors who can be a source of new processes for:

- Supply Market Research
- Products available
- Supply Chain
- Innovation
- Cost Drivers
- Policy Research

## Criteria affecting DFB

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Green Public Procurement should not be separate or different to interpret compared to Public Procurement and should Support Government Policies, identifying all relevant Policies and Mandatory Requirements such as:

- Sustainability /Green Procurement
- Social Responsibility
- Support for protected workshops
- Reducing carbon emissions
- Reducing energy requirements
- Encouraging innovation including Design to Cost Incentive and acquisition goals
- Industrial and commercial development including training and quality control efficiency
- E Government

Yet it is all too easy to revert to a tried and working procurement system, from past experiences. By demanding market research and engaging with the market DFB can ascertain a new scoring system for GPP. This will include a new Green Procurement Programme Development that will moderate and review the following criteria:

- Analyse Supply, Policy and Demand Research including research results
- Identify Green Requirements but emphasis the focus on competition not green issues
- Specify the Requirement and Service Delivery Conditions including product production
- Identify the Objectives of the Procurement Outcome
- Identify Key Performance Indicators – specific to tender and tight development schedule
- Balance LCC Factor V Price and end of life waste strategy
- Marking Schemes revised to meet tender
- Monitor Contract and Measure outcome using Monitoring and Verification
- LCC source selection criteria can be rewarded with extra points
- Location of Ecolable and other signs of Sustainable transparency including Technical Dossiers and test reports.
- Source Selection Criteria

### Source Selection Criteria (SSC)

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Life cycle costing objectives may be achieved by making life cycle cost an important source selection criterion in Green Procurements for DFB, which may or may not use life cycle cost procurement incentive provisions. These two approaches are complementary in that use of life cycle cost as a source selection criterion motivates a contractor to consider life cycle costs prior to source selection, and use of incentive provisions motivates a contractor to consider life cycle costs after contract award. The joint use of these two techniques also motivates contractors to submit realistic O&S cost estimates at source selection because incentives will be tied to them.

### Pre-Competition Testing

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This is a procurement approach to reducing life cycle costs and verification of a technology or Product, Service or Equipment, primarily characterized by testing to assess important life cycle cost related characteristics prior to source selection and to ascertain real time demonstrated savings. DFB is obliged to reduce its Carbon Footprint as described in Chapter 3. It is imperative therefore that after DFB market engagement, SSC and best practice knowledge, a test period should commence. This will involve monitoring and verification to SEAI standards and IPVMP. The test will clearly demonstrate Carbon Production Reduction and Energy Consumption Reduction. Pre-Competition tests are conducted to assess the LCC related equipment characteristics of each contractor's equipments, and the results of these assessments expressed in terms of life cycle costs, are use as the primary basis for source selection.

In both cases financial savings will be clearly visible and will set the tone for a competition with actual base line figures. The Tender can then be awarded based on demonstrated LCC and Organisational Running Cost Savings related performance in Pre-Competition testing. This removes promises from contractors that may not have been fulfilled and makes for accurate source selection. Too many times in the past contractors have let themselves down by not fully demonstrating alleged services, products and equipment. Using pre-competition testing the results do the talking.

## Technical specifications

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A description of the subject matter of the contract – the technical specification – can either be formulated as performance or functional requirements or formulated with reference to various standards. When they are not formulated as performance or functional requirements, the technical specifications should be formulated as accurately and precisely as possible. This often makes the procurement process easier and provides greater clarity and an increased understanding of the technical requirements.

Specifically in the case study below the technical requirements were dynamic and thanks to built in DTC and RIW, the parameters changed but the project was not compromised. There were times when I could not describe the subject matter of the project with sufficient precision and unambiguously without such a reference, I included the words ‘or equivalent’.

## International Performance Measurement and Verification Protocol (IPMVP)

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Energy solutions, trials and product testing using new technologies are put through the certified IPMVP system established this year in DFB. This provides further professional credibility and external validation of our energy efficiency

valuation expertise. IPMVP verification is a feature of SEAI's better energy workplaces grant scheme. Energy Credits can be achieved also and can feed into Community Energy Schemes. DFB would be well placed using this system to help bring Energy efficiencies to the local communities of the Fire Stations due to the 6<sup>th</sup> Theme of the Green Plan© “Society”. The trials in this document have been monitored and verified using the IPMVP standard. It is our intention to develop Energy Credits for the good work to be completed. These credits will be a considerable aid to the setting up of an Energy Performance Contract (EPC) or an Energy Supply company (ESco). This is further explained in Section 6.

## DFB GPP Green Plan © Common goals

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- 1) Upgrade our stock using world’s best renewable technologies
- 2) Redesign our consumption of Fossil Fuel energy and use of the National Grid
- 3) Lessen the demand for fuel in the frontline emergency fleet
- 4) Offset embedded energy in all our stock with genuine green actions
- 5) Commence training and skills to deal with sustainable development and climate change
- 6) Introduce the position of Green Facilitator & Energy Manager for DFB

## DFB GPP, what are our needs for establishing a pointing system?

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- To use the three pillar system of the Green Plan©.
  - I. Low capital Outlay
  - II. Quick payback period
  - III. Replicability
- Organising: logistically incorporating GPP of Common Goods, Equipment, Supplies and Services throughout the Fire Service to specifically help reduce our Carbon Emissions and Energy spend.
- Training and Development: of Green Procurement Techniques to Improve Green Procurement Compliance, to use e-Tenders while maintaining transparency, equal treatment and a non discriminatory approach. Renewable requirements are continually changing and DFB must stay updated to adapt to technological development in the market.
- Resources used by DFB including management of our Supply Chain for the performing of its activities are available at the right time, under appropriate quantities and quality, and at best prices, but with a Green Agenda explained above and are used in accordance with intended purposes. This reduces the risk of corrupt bidding.
- Efficiency: the proportion between used investment outlays and results achieved, have to be Monitored and Verified (M&V.)
- Proven Supply Market Research before and during the tender application
- Products available must be triple E register compliant and carry an Ecolable where available
- Supply Chain must have certified waste compliance and green business approach
- Cost Drivers determine that the resources we need (in this case the Greenest Technology) may actually not be efficient, effective or compliant with the ethos of the Green Plan©. Effectiveness is measured by the attainment of specific determined **agreed** goals and foreseen **results**. The Green Issues are much more effective when they are broken down individually and get run across the whole tender.
- To ensure that LCC and product end of life had been at the forefront Sustainable tendering. Cost (v) Price = quality, however extra points are to be awarded for:
  - a. Design to Cost (DTC)
  - b. Value Engineering Incentive (VEI)
  - c. Reliability Demonstration Initiative(RDI)
  - d. Source Selection Criteria (SSC)
  - e. Operations and Support (O&S)
  - f. Reliability Improvement Warranty (RIW)
- Policy Research & change needs to be established within DFB. This includes the scope for appointing a Green Facilitator / Officer in our Organisation including support for protected workshops with a focus on Industrial and commercial development including training of individuals and quality control efficiency. This would also help with the post evaluation de-briefings with the interested suppliers.
- Sustainability /Green Procurement are in keeping with the definition on sustainability by the Natural Step in the DFB Green Plan©.

## DFB GPP, what are our needs for establishing a pointing system?

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- Social Responsibility inclusion is governed by the Society Theme of the Green Plan©. This involves the effects on the Local Community surrounding each Fire Station and the internal affects to the welfare of current and future Fire Brigade Staff. Guaranteeing systems are in place to challenge public procurement decisions, ensuring accountability for non GPP actions and promoting public scrutiny.
- Playing our part in the ambitious targets set by the Irish Government of 33% Carbon reduction by 2010 and 16% Energy from renewables including 40% wind electrical energy production. This is with a special emphasis on reducing carbon emissions in keeping with ISO 14064 standard and the SEAI IPMVP. Our main intention is to reduce energy requirements first and produce energy where available second.
- Encouraging innovation including Design to Cost Incentive and acquisition goals with current and future suppliers including supply chain relationship management and market engagement. DFB will be calling on suppliers to be prepared to move traditional barriers. Developing a public consultation process ahead of upcoming eTendering.
- Genuinely reducing impacts on the environment by enforcing change on our supply chain.
  1. Making a requirement to have access to the new products energy and water consumption data
  2. Insisting on the Supplier removing packaging and consumerable waste created for the product or equipment
  3. Ensuring the Supplier is following the WEEE directive
  4. Simply banning the following materials in the manufacturing and production stage:
    - a) Incandescent lighting and fittings that require ballast
    - b) Hazardous products
    - c) Use of Ozone depleting chemicals
    - d) Banning of volatile products or products containing volatile products
    - e) Non Rohs compliant products
    - f) Use of threatened species and non FSC compliant sourcing.



### **Contract documents**

The contract documents will hold the information base for an eTender that DFB provides to suppliers prior to procurement. Well-prepared contract documents with a clear structure are important for successful efficiency in the Green Public Procurement process within DFB.

Contract documents should contain:

#### **1. Requirements for the supplier to also include:**

- a) The Project, Product, Equipment or supply of Services Environmental specifications and The Suppliers design for disassembly. Also the new products energy and water consumption data.
- b) The Supplier's Sustainable understanding and approach backed up with certification. This include the TGL's of part 'L' in the Building Regs 2011
- c) The Suppliers proven Market Research before and during the tender application
- d) The Supplier's economic standing and technical and professional ability including previous completed projects and supply schedules.
- e) The Suppliers Supply Chain must have certified waste compliance and green business approach. Also their use of favourable materials / products such as non-toxic, non volatile, biodegradable or organic materials.

#### **2. Technical specifications and special recommendations for how the tender pointing criteria will be imposed including the awarding of extra points for:**

- a) Design to Cost
- b) Value Engineering Incentive
- c) Reliability Demonstration Initiative
- d) Source Selection Criteria with extra emphasis on Part L of the Building Regulations *(please refer to Section 5)*
- e) Operations and Support
- f) Reliability Improvement Warranty
- g) The Suppliers fault control measures for waste and water
- h) The Suppliers adherence to minimum packaging and using recyclables
- i) The Suppliers minimum use of pollutants and toxic chemicals

**3. The grounds for evaluation**

- a) Including proof of compliance with technical specifications
- b) Including all relevant Health and Safety Standards

**4. The commercial conditions**

- a) To use the three pillar system of the Green Plan©.
  - Low capital Outlay
  - Quick payback period
  - Replicability

**5. The governance of the tender by DFB administration**



## Case study Kilbarrack Fire Station Grid Tie Project

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The first assessment for this project was in Kilbarrack Fire Station and my brief on this project was:

2. To ascertain costs.
3. Lessen the Energy Spend and Carbon Production of Kilbarrack Fire Station. I had already significantly lowered the Energy Spend during the Green Plan© Retro-fit of the Station over the past two years. This project if successful would reduce even further the domestic charges for importing energy from the grid and at times return energy to the Grid. This project could also demonstrate the Replicability for renewable electrical energy to be produced using on shore wind availability as per the Governments ambitious 2020 targets.
4. Conduct a study and Survey the potential / feasibility for a Micro Wind Generation Project from the roof top of Kilbarrack Fire Station. This involved world's best technologies and practices for monitoring and verification; including data logging with live feeds to the internet through remote SIM access. This concept is to reduce electrical demand by 80% by 2013 for Kilbarrack Fire Station as a bench mark for the other DFB Stations to follow.
5. To insist on Design to Cost (DTC), Operation and Support (OS) and Life Cycle Cost (LCC.). This involved sitting down with the initial company and educating them on the principals and themes of the Green Plan© for DFB. They must show a clear and adequate understanding of the journey that DFB is now on. They must plan ahead on this project while considering the LCC.
6. To secure a budget for this project using the proven Three Pillar system of the Green Plan©. (1)Low Capital Outlay, (2) Quick Payback Period and (3) Replicability. I aimed to receive 10% of the yearly Energy Budget for DFB 2012. This amounted to €45,000. Total energy spend for 2012 €450,000.
7. To ensure that LCC and product end of life had been at the forefront of the trial. This would include the following:
  - a. Design to Cost (DTC)
  - b. Value Engineering Incentive (VEI)
  - c. Reliability Demonstration Initiative(RDI)
  - d. Source Selection Criteria (SSC)
  - e. Operations and Support (O&S)
  - f. Reliability Improvement Warranty (RIW)
8. If this proved successful I would then use my budget to tie Kilbarrack Fire Station to the National Grid in a safe and risk free manner. This would include Grid Tie Inversion and battery packs for voltage regulation.

### Plan:

1. My plan is to use Micro Wind Generation to produce wind energy for domestic use in Kilbarrack Fire Station
2. After the Fire Stations needs had been attained I would then export the remaining energy to the National Grid.

## Case study Kilbarrack Fire Station Grid Tie Project

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3. As a bench mark for all to follow the Wind Generation project in Kilbarrack Fire Station would pave the way for a Micro Wind Generation Project across all of DFBs Estate in Dublin.
4. At this time I also started monitoring and verifying all wind speeds and analysis studies on all the roof tops of DFBs Estate.

*Using the above headings of this chapter as indicators, I can demonstrate the successful measurement of this project below:*

### **Design to Cost (DTC)**

It became apparent that previously wind generation on offer in Ireland generally involved pedestal based Wind Turbines. They were being offered in a variety of sizes between 5kWhrs and 60kWhrs. These turbines were very expensive and did not meet the Three Pillar System of the Green Plan©. The civil ground excavation works were large and costly and the benefit of going large was not going to affect DFB. This would be very different at sea, where large turbines could function without disrupting neighbours and communities. This was because the Fire Station in Kilbarrack is viewed by ESBI as a commercial Public Service Site. For that reason Kilbarrack Fire Station could not benefit from the *Renewable Energy Feed In Tariff* (REFIT) by connecting to the grid because there would be no payment from the grid to the Station.

A different type of Wind Generating Technology would have to be sourced. At the discussion stages with the company selected for this trial it became clear that with Micro Wind Generation, the Capital costs would be significantly lower. It was also at this stage that it was suggested, the Micro Wind Generation Turbines could be manufactured using recycled plastic because it was less costly to purchase, lessened the amount of waste going to land fill and helped DFB with our natural Step definition of Sustainability and the implementation of the Green Plan.

This change to recycled plastic was outside the normal remits for the company and they were clearly demonstrating a dedication on their part to help DFB yet: there was still no public service obligation. The main Design to Cost incentive that DFB was offering was: that this Micro Wind Generation Project is actually the first of its kind in Ireland. The Trial Company would then be in a position after the trial to have a tested product and results backed by DFB. Points for DTC need to be more focused on LCC results and to include VEI. This will create a change from financial focus only. In this Case Study the savings generated by changing to recycled plastic components and Turbine location proved beneficial to both DFB and the Trail Company. There was no technology / product degradation to achieve these results.

The Trial Company has also had to be transparent that all waste created in the manufacture and installation of the Turbines be demonstrably recycled with certification. In future eTenders Points need to be scored for the waste prevented from going to landfill. The aims of the Green Plan© for DFB include prevention of waste as one of the highest priorities.

Businesses need to clearly show how much waste can be prevented and of the waste that is created; how much they will take back and send to be recycled themselves, at no cost to DFB. Also considered here is the end of life worth and costs to DFB.

It was agreed to start the study with all capital funding being paid by the selected company. And no cost to DFB. Most importantly at this stage, it was agreed that DFB would permanently own the results of our Micro Wind Generation Study and Project.

### Implementation:



DFB is now in a position to go to eTender after the trial with the results and not have an obligation to the company that helped DFB with its trial. The company came back with a final proposal cost of €31,500. This represented just 7% of the 2010 yearly Energy Spend for DFB. The reasons for the Low Capital Outlay are explained below:

1. The Micro Wind Generation Turbines could now be mounted directly to the Fire Stations handball alley roof top that was already in situ. This demonstrates Value Engineering Incentive (VEI) because the company suggested the handball alley to lower the civil costs of attaching to the Stations roof. In future e-Tenders the points attributed to VEI should reflect a company's dynamism.
2. Due to a Brigade Order for a different purpose the Fire Stations Compressor was now isolated and to be removed from the Station. The Compressor Room could now be used to house the Grid Tie Inverters.
3. There was already a Steel Wired Armoured (SWA) Cable running from the Fire stations Compressor Room back to the Stations power supply junction below ground in the Fire Stations Basement.
4. Battery packs could be used in conjunction to the grid Tie inverters to regulate the energy produced on site.
5. Innovative design was the key feature and the need for green procurement did not hamper the need for actual product with LCC taken into account as discussed above. This included the Micro Turbines having a diameter of .96cm to remove the need for Gear Boxes and Gear Ratios.
6. Galvanized pipe work as an innovation demonstrated that in the future eTendering of Micro Wind Generation for DFB Estate, non pedestal based high Capital Outlay Civil Works would not be necessary. Obviously limited roof space on each different Fire Station would be an issue and galvanized frames and polls showed due innovation.
7. It was agreed to monitor and audit the project using ISO 14064 Certification.

### First testing and Implementation:

Although Micro Wind Generation Project costs had been agreed, the Trial Company came forward with the idea of hiring plant equipment and training their staff to use it; involving company up skilling and certification. This would remove the need for the costly erecting and removal of scaffolding and provide whole job satisfaction, thus lowering the capital cost to DFB.

In this Case Study the Trial Company are not the Facilities Management or Mechanical and Electrical Consultants of DFB, yet they must not put DFB in a costly environment while helping DFB plan for Life Cycle Cost and Operations and Support. In this design to Cost environment DFB is testing the Reliability and Maintainability (RM) as a negotiating Factor for the actual trial.

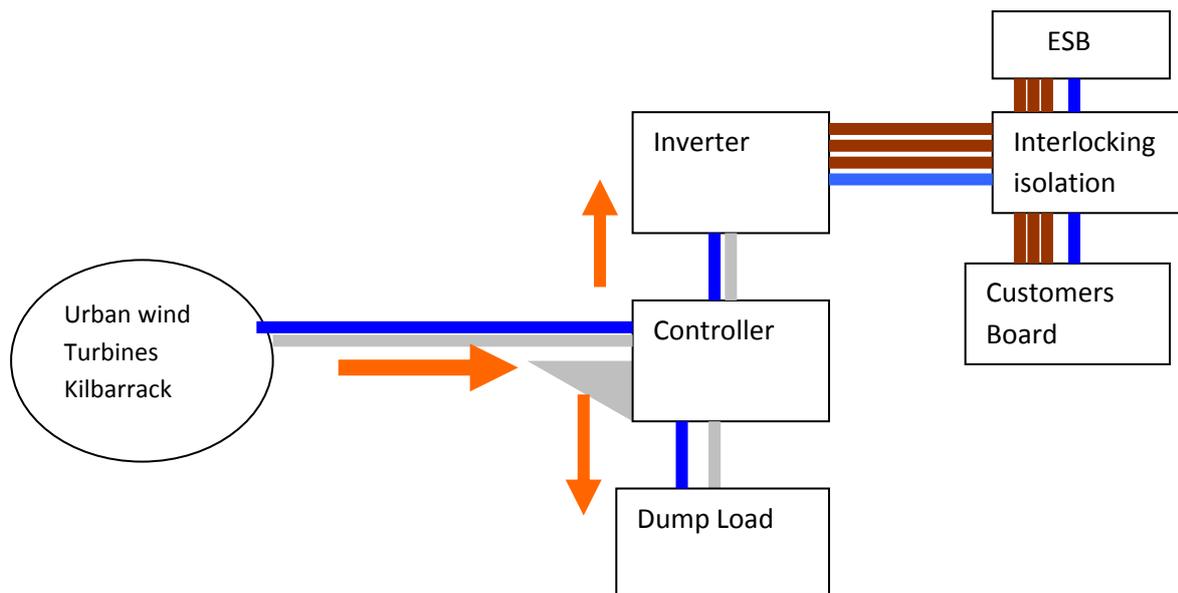


The first test involved mounting Nr 4 Micro Wind Turbines as Prototype A and B being trialled concurrently in two locations and different situations within Kilbarrack Fire Station. This was the prelude to prototype C being agreed upon. Prototype C was then mounted in a new and permanent location, on the hand ball alley in Kilbarrack Fire Stations drill yard. The Trial Company then also incurred the cost of monitoring the wind analysis for DFB.

When the initial trial dictated a change of Prototype to Prototype C, the Trial Company incurred new costs that were not originally in the first proposal. DFB did not incur these costs. This was due to Reliability Improvement Warranty (RIW). Thankfully at the trial stage RIW left DFB covered and makes the preparation work for the e-Tender easier to work towards. This incurred trial cost accrued by the Trial Company, lets DFB allow for the correct

estimated proposal cost at the e-Tender stage and the proper points can be appropriately scored then. Normally a Reliability Demonstration Initiative (RDI) is used regularly in Tendering. However with the above criteria accepted – there is now no need for RDI because the trial achieved its goals.

**Turbine Configuration for load reduction and Grid tie**



**Productivity**

The plan is to reduce the energy spend first and then produce energy second. This transparently demonstrates anti green washing and leadership within DFB. Energy Supply companies (ESco’s) are defined above in Section 4. If DFB uses the ESco approach as a GPP strategy, we could potentially reduce the Energy spend and Carbon production in all DFB locations. Therefore the urban wind turbines in this project could be tendered for and would produce the renewable electrical energy required by DFB.

Ireland is expected to produce renewable energy of 16% by 2020 this includes 40% for electricity. The actual “live” figure so far (2012) is 3.3%. The innovative pioneering approach in Kilbarrack Fire Station is to ascertain the worth of the grid tie project using its results and to collectively show a potential for renewable growth and to stimulate new Green employment, with sustainable development values to the front. This project appears to be on its own and has been taken on by DFB in the knowledge that under current legislation DFB cannot avail of REFIT by connecting to the Grid.

### Note on Scalability



Conventional Megawatt (MW) turbines are a very well defined product designed for very specific locations. They need clear, smooth laminar wind flow and a high average wind speed (>8 m/s) from a single direction. The UWT being trialled in Kilbarrack Fire Station is a modular technology designed, for areas where conventional wind turbines are not suitable or will have long payback times. This modular technology means that the power generated is always proportional to the number of turbines installed.

This unique flexibility means that once the civil work and infrastructure is in place it is extremely inexpensive to add more turbines to increase power production. Urban Wind Turbines function in winds with a capture angle of 240°, and will operate in gusty and turbulent winds. This unique production capacity means that this style of wind farm can be built anywhere even areas with low wind speed and still have an attractive payback. In Kilbarrack the aim is to reduce the Fire Stations existing demand by 70% of electrical energy demand. That would represent a further energy reduction of almost 42,000 kWh. It is not suggested that erecting Urban Wind Turbines is the answer to Dublin Fire Brigades energy consumption, this is a trial that best demonstrates how in Kilbarrack Fire Station energy has been reduced first and produced second. Please see the case study in Section 3 for the up to date kWh reduction figures and the appendix for *Green Washing*.



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## Section 6: Reducing Dublin Fire Brigade's dependence on Fossil Fuels through "Green" planning

**Global Green Deal**

**Renewable Energy and Technology**

**National Energy Efficiency Action Plan**

**BEW**

**Alternative Models to Fund Energy Sustainability**

**ESco**

**EU EN EFFF Public Procurement Regulations 2011**

**Graph of DFB energy spend**

**Global Green Deal**

**Kilbarrack Fire Station running cost comparator**

**Case Study 1 DFB Energy Trial**





Economic recovery packages have been designed internationally to help reduce financial ramifications for fossil fuel dependency and Energy spend. This incorporates sustainability and Green actions together through Public Investment. The four main areas for this stimulus funding are: Conservation; Quality of Life; Infrastructure and Environmental Protection.

By increasing energy consumption and remaining to *Not* invest in long term Carbon Emission lessening and renewable technologies, each country in the EU, will lose 5% of its GDP per annum\*.

*\*Sir Nicholas Stern on record talking about financial impacts of climate change, please see appendix.*

In an opposing shift to other nations Ireland has increased taxes and made spending cuts. The bailing out of our Banks, Re-capitalisation and the implementation of NAMA has left Ireland in this situation. However in the document “*Building Irelands Smart Economy*” Ireland has listed several measures to offer stimulus such as:

- 40% of Electrical energy will come from on shore wind production
- Completion of the East West interconnector
- Bord Gáis and the ESB has set out investment strategies
- The Travel Action Plan has been published

However international best practice and guidelines\* suggest that each EU State should spend 1% of its GDP on becoming “Greener,” per annum. In Northern Ireland there is a Green Stimulus Package with re-investment of 2% GDP. In France this is 21% and in the UK the figure is 6%. There is an EU wide understanding of this concept. In Ireland to date that figure is 0.37%.

Yet if 1% of the €15 Billion that goes to the Irish Public Service was invested that figure would equate to €150M. The energy bill for the Irish Public Service is €600M. The current DFB organisational running costs for 2011 totalled €112M. Therefore if DFB was to invest only 1% of its running costs on being Greener we would need to raise €1,120,000 Capital funding. This is unfortunately a very difficult journey for DFB. Since 2008 DFB has incurred running cost budget cuts of 6%. Retirement from 2008 has totalled as compared to the four years previous. Recruitment has dropped by more than 50% in the last four years as compared to the four years previous.

The DFB Station Stock was mostly built circa 1980 and thermal insulation is below today’s standards. Therefore our stock is high fossil fuel dependant. By investing in DFB Estate using this document DFB can provide security to help continue to provide an effective emergency service to the City of Dublin. DFB can also help develop business opportunities for Irish Companies to help then expand into the Global market with Green Technologies.

The Green Plan has been ring-fencing financial savings from energy efficiency projects for the past number of years. This proven strategy should now more than ever be effectively implemented across DFB. DFB should seriously consider an ESco or Public Private partnership to reduce the increasing energy consumption and invest in long term Carbon Emission lessening and renewable technologies, that will prevent further losses of National GDP that impart back on our capital allowances per annum.

*\* The United Nations Development Programme (UNDP) announced that countries such as Ireland in the Organisation for Economic Co-operation and Development (OECD,) should spend at least 1% GDP on lowering carbon dependency. The Grantham Research Institute in the UK has suggested a target and target system of at least 20% GDP in Green Strategies. Please see appendix*

## Renewable Energy and Technology

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Renewable technology gives DFB the potential to break away from the burning of standard Fossil fuels to power electricity and gas. Renewable Energy is energy which comes from natural resources such as sunlight, wind, rain, tides, and geothermal heat, which are renewable (naturally replenished). Renewable Energy “improves security of supply, and reduces greenhouse gas emissions creating environmental benefits while delivering green jobs to the economy, thus contributing to national competitiveness and the jobs and growth agenda\*”. Climate change, energy security and competitiveness are inter-related challenges that will be addressed through the transforming of Ireland's economy

from one based on a predominantly import based fossil fuel dependence to a more indigenous low carbon economy based around energy efficiency, renewable energy and smart networks. About 16% of global final energy consumption comes from renewables, with 10% coming from traditional biomass, which is mainly used for heating, and 3.4% from hydroelectricity. The Green Plan© for DFB has Seven Themes and it is with these themes that genuine Sustainability using renewables and behavioural change can be incorporated into DFB. DFB has been using worlds best practice renewable technologies to achieve the Zero Carbon Status in Kilbarrack Fire Station as mentioned in the Case Study Section 3.

*\*taken from the Irish Government document Strategy for Renewable Energy 2012 – 2020*

### National Energy Efficiency Action Plan (NEEAP)

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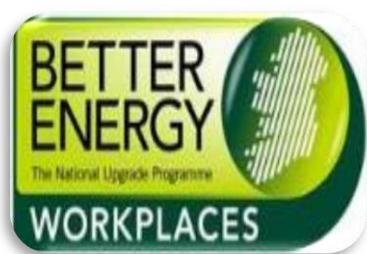
The Irish Government has produced a National Energy Efficiency Action Plan intending to maximize Irelands Energy Efficiency. This policy document sets out Government plans and actions to achieve its target of 20% energy efficiency savings across the economy in 2020. Improving Ireland's energy efficiency is an essential part of Ireland's sustainable energy policy, and will play a vital role in reducing our dependence of fossil fuels and the production of Carbon (CO<sub>2</sub>) and Green House Gas (GHG) emissions. Lowering energy inefficiencies produces more certainty and security of energy supply sustainable transport, affordable energy, competitiveness and environmental sustainability. The Irish Government has set out an energy policy framework in its White Paper: *Delivering a Sustainable Energy Future for Ireland - the Energy Policy Framework for 2009-2020.*

The Government has committed to achieving, in 2020, a 20% reduction in energy demand across the whole of the economy through energy efficiency measures. Recognising that Government must lead by example, we are committed to achieving a 33% reduction in public sector energy use by the same year. Significant amounts of energy can be saved through better energy management and behavioural change measures, such as the many completed projects in Kilbarrack Fire Station but capital projects require finance. This is easier said then done within the Public Service. As previously mentioned it is all well and good demanding that the Public Service reduce our on site energy spends by 33% by 2020. However to meet these ambitious targets in a time of financial stress such as the times we are in now, is a very difficult task.

To ease the burden to the Public Service and to help out in some way the Government has announced the *Better Energy in the Work Place* Scheme and the support of the *Energy Service Company*. More over the proven ring fenced savings fund created by the Green Plan has thus far provided DFB with the ability to invest Capital in Renewable Projects within the Organisation. The Capital invested in these circumstances was formerly payed out on wasted energy consumption.

## Better Energy in the Workplace (BEW)

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The Minister for Communications, Energy & Natural Resources, Pat Rabbitte T.D., announced on the 14<sup>th</sup> March, the launch of a capital fund of €7.5M to support sustainable energy investments in 2012 in the public, commercial, industrial and community sectors. This fund, as part of the Government Better Energy programme, aims to deliver a major increase in the pace, scale and depth of sustainable energy investments in upgrading existing buildings and facilities.

This fund\* is designed for implementing a wide range of qualifying sustainable energy upgrading projects in the public, commercial, industrial and community sectors. The main focus of the support will be on achieving delivery in 2012 of a portfolio of energy efficiency investment projects of differing sizes and complexities. The grant support will be provided for energy efficiency project *implementation* – rather than for R&D, feasibility, design or demonstration aspects of energy efficiency projects. The fund is open to projects and related initiatives for the sustainable energy upgrading of buildings, services, facilities, processes and transport. This call for proposals closed in April 2012 and all successful applicants will be informed in June 2012 with works to be completed by November 15<sup>th</sup> 2012. DFB has entered this Fund application on time with a view to completing retro-fit renewable work across DFB Estate. The fund will provide funding of up to 35% of eligible expenditure is available with the potential for 50% funding for exceptional proposals that demonstrate multiple elements of the scheme objectives. In general, grant support per project will not be less than €20,000 and will not exceed €500,000. Projects of a scale eligible to attract grant support of over €100,000 and projects submitted via Energy Supply companies (ESco's) are particularly encouraged.

*Please see DFB BEW application details in Appendix 6*

## Alternative Models to Fund Energy Sustainability

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Incentivising energy saving measures in the public and private sectors of the economy has traditionally relied on providing capital supports. Given the current constraints and fiscal pressures, alternative means of realising energy savings are needed.

The introduction of energy saving obligations on energy suppliers in 2011, which meets our EU commitments and represents the first year of an initial three-year cycle, will provide a sound basis on which to move to new models of realizing energy savings.



## Energy Service Companies (ESco)

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EScos facilitate financing for investment in energy using plant, equipment and infrastructure and allow public bodies to implement energy technology projects without up-front capital costs. The development of ESCO-type services is a key component of the programme for Government.

A Public Body, in this case DFB, may establish an Energy Performance Contract (EPC) with an ESco who provides the investment for an energy saving project, with the investment being repaid out of the reduced energy costs as a result of the energy savings made.

DFB has applied in April 2012, to the SEAI under the BEW scheme. If successful DFB could receive up to 30% of the Capital outlay for some of its Green Plan© projects. The remainder of the Capital could actually come from the Private Sector.

Using this model and launching an e-Tender with its framework, DFB as a dept of DCC, could be very well placed to achieve its 2020 33% Public Sector Energy and Carbon reduction obligations. While at the same time helping to stimulate growth in the economy, be it “Green” or otherwise.

The Government is committed to a transition to a non-Exchequer based funding model by the start of 2014. The development of a national Pay-As-You-Save (PAYS) scheme, which is already well advanced, will outline a proposed framework approach to a more market-orientated method of achieving energy efficiencies. The development of an Energy Services Company (ESCO) model which uses capital provided by the private sector to implement energy saving measures, which are then repaid through energy savings represents a further opportunity. This will assist a fledgling sector to develop, while facilitating the public sector to reduce its energy consumption and significant spend in this area.

The Minister for Communications, Energy and Natural Resources will assess the feasibility of an appropriate PAYS framework for Ireland and measures necessary to stimulate the development of a sustainable ESCO market and bring forward proposals. The result of this is the BEW mentioned above.



### Triple E Register



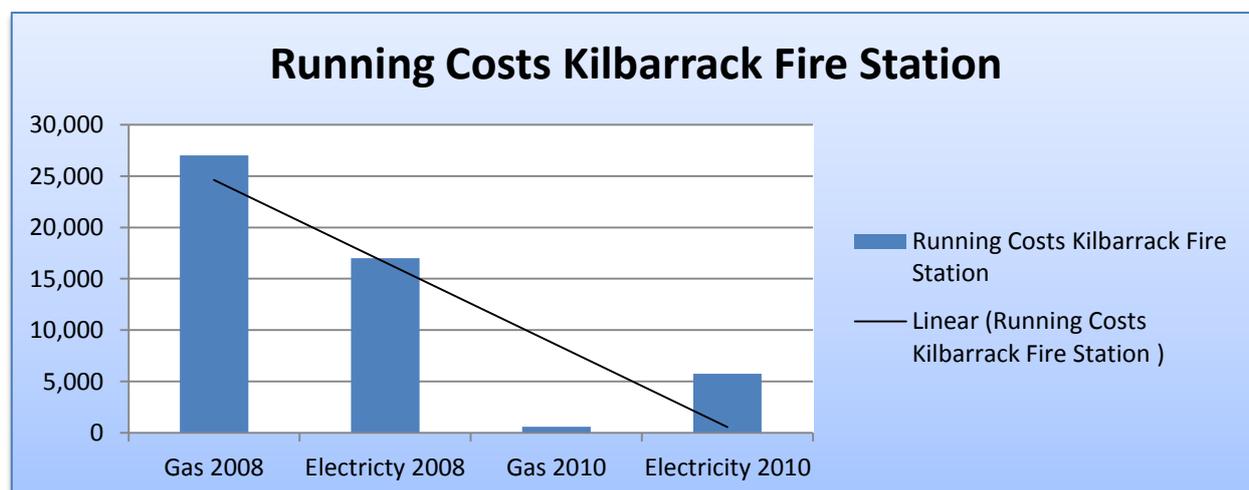
The Triple E aims to assist Irish businesses, the public sector and individuals to reduce their carbon footprint through investing in energy efficient equipment. The Triple E is a searchable listing of energy efficient equipment. Triple E sets minimum criteria that products are required to meet to be listed. For products, these criteria are regularly updated, and aim to ensure that only the top 10 - 15% most energy efficient products in any technology are listed.

The European Communities (Energy Efficient Public Procurement) Regulations S.I. 151 2011 oblige public bodies when purchasing or leasing products to only procure products that: are specifically listed on the *Triple E* Register, or satisfy the energy efficiency criteria published by SEAI for the relevant product categories. The only exemption from this Regulation arises when a public body is of the opinion that complying with it would result in inadequate competition in a procurement process, or if the product was not covered under any criteria in the register. Therefore all public sector tenders must include reference to Triple E compliance and suppliers must be able to demonstrate that their product offering is either on the register or complies with the relevant criteria.

In accordance with S.I. 151 of 2011, public bodies should include reference to the *Triple E* register in relevant procurement documentation such as specifications, requests for tenders and contracts. The following sample text may be used or amended to suit particular procurements:

- 1) As a public body, DFB is obliged under legislation to fulfil an exemplary role with respect to implementing energy efficient procurement practices.
- 2) Any product proposed by the supplier/contractor that are of a class of technology featured in *SEAI's Triple E Product Register* shall be specifically listed on *SEAI's Triple E Product Register* or shall satisfy the Triple E energy efficiency criteria published by SEAI for the products concerned.
- 3) The supplier/contractor shall demonstrate in their tender that all products included in the tender comply with this energy efficiency criterion.

### Kilbarrack Fire Station cost comparator before and after Green Plan© retrofit



DFB has started an Energy Trial in three locations to determine base line figures and savings that can be attributed to the energy efficiency changes made. This trial is being Monitored and Verified (M&V) by independent assessors. The certified independent information will be collated and used to publish a report on the outcome of the trial. There are many other live trials taking place parallel to this trial in DFB at this moment. DFB is retro-fitting new driving bay curtain doors to the Workshop in Stanley ST. This will lessen the energy spend on the gas heaters used to warm the maintenance floor ground. DFB is also completing a fleet fuel carbon reduction trial also. However for the purpose of this case study I am going to keep to the Energy Trial. Upon the success of the trial DFB intends to establish the criteria using this guidance document to correctly run an e-Tender for the GPP\* and installation of technology and implementation of the next wave of Green Plan projects across all of DFB's estate. This will include the BEW scheme 2012 and perhaps 2013; the setting up and completion of an EScO e-Tender and finally Public Partnership arrangements or EPC.

*Please refer to Section 4 Case study on the different GPP headings used to select the correct GPP criteria ahead of a DFB running a tender.*

The Energy Trial is taking place in:

- 1) General Office Third Floor, Tara Street Fire Station.
- 2) Stanley St DFB Workshop
- 3) Finglas Fire Station

### **First steps**

DFB decided upon the three locations for the trial to show versatility in the actions taken. In this regard the locations are completely different to each other and to their energy demands. DFB then conducted an audit to ascertain and agree the financial bearing to the three locations of the Energy Efficiency trial. This will involve world's best technologies and practices for monitoring and verification; including data logging with live feeds to the internet through remote SIM access.

### **Plan**

The plan is to install state of the art LED Lighting and to make sound assessments using due diligence of the technical data and information supplied by suppliers. Lighting should account for 40% of overall electricity consumption in any one location. DFB has insisted on Design to Cost (DTC), Operation and Support (OS) and Life Cycle Cost (LCC.). This involved sitting down with the initial company and educating them on the principals and themes of the Green Plan© for DFB. They must show a clear and adequate understanding of the journey that DFB is now on. They must plan ahead on this project while considering the LCC.

Upon results using the M&V system based by the SEAI, (and including the information from other live trials,) DFB intends to holistically implement the Green Plan© by installing the following technologies. This is to be implemented as part of the EScO described above in this section and will include:

- LEDs and fittings
- Solar Panels
- Voltage conditioners
- Air Source heat pumps
- Microwave technology
- Cavity Insulation
- Energy management systems
- Energy monitoring systems
- Fleet fuel efficiency technology

### Selection Criteria

To ensure that LCC and product end of life had been at the forefront of the trial, I have explained the below headings as the main indicators for the Energy Trial.

- a. Design to Cost (DTC)
- b. Value Engineering Incentive (VEI)
- c. Reliability Demonstration Initiative(RDI)
- d. Source Selection Criteria (SSC)
- e. Operations and Support (O&S)
- f. Reliability Improvement Warranty (RIW)

### Specific Selection Criteria

- Apart from being Triple E registered, all technologies used in this Energy Trial are ROHS certified compliant and contain no hazard.
- Previously a recycle bay has been developed in Kilbarrack Fire Station. Using this facility all lights and fittings will be removed and sent to the new recycling facility. This will reduce our waste costs and the deliver certified product recycling. This follows on from the EU packaging Directive (94/62/EC)
- Packaging waste has also been restricted and will be collected, weighed and recycled by the Supplier at no cost to DFB. A certificate from the recycling facility will also be generated.
- At the first instance the supplier has to use recycled cardboard in the original packaging before being supplied to DFB.
- EU Directives 17 and 18 environmental certification for products
- Interior lighting levels must conform to EU regulation EN12464-1
- The supplier must demonstrate average working luminance; quality degree for glare reduction; group of colour rendering

### Other Funding

A larger application has been made to SEAI this year and the results are pending. If the live energy trial is to receive any SEAI funding from the BEW scheme 2012; DFB must do the following:

- Have started and finished all retro-fit work by November 25th 2012, including tendering for the work (as per the application)
- Have transparently monitored and verified (M&V) every single stage of the BEW Grant application proposal. (using and independent M&V Company)
- There would be a max grant of between 35% and 50% of the total cost up to a ceiling of €500,000 to DFB as long as we provide the remaining capital for the project, or engage in an EScO, EPC or TPF or otherwise.

However it would be much more feasible for DFB to apply for the 2013 BEW fund, if it is available at that stage. That way DFB would have gathered all the results from the Energy trial and had enough time to have constructed an e-Tender guided by the GPP information in this document. If DFB don't receive the BEW Grant funding for this year, we will continue with our SEAI backed Energy trial. We will continue to Monitor and Verify the trial, to form our baseline figures, including Carbon reduction and still roll out the Green Plan© across DFB.

## Section 7: Conclusions

**Green Beginnings**

**Carbon per capita among EU-27**

**The ESco Model**

**DFB Today – Tomorrow**

**Recommendations**



## Green Beginnings

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When I started writing the Green Plan© in 2009 I spent a lot of time explaining the many benefits of Dublin Fire Brigade and Dublin City Council manipulating the economic downturn to our moral and financial reward. If I had suggested a “DFB Green Plan© research and development project in the height of the Celtic Tiger era, would Senior Management listen and take heed\*?” Most probably a gesture of some funding or other would have been approved, with no real account for our environmental actions. I have been speaking and lecturing on Climate Change and environmental responsibility ever since.

*\* The first time I made this statement was at the national LANPAG conference I was invited to as a guest speaker on Climate Change.*

Now more than any time previous DFB are Stakeholders in the eventual Carbon impact reduction of the Service we provide. In 2009 Rahm Emanuels\* said “never let a good crisis go to waste.” Perhaps he was more eloquent than I have been but the objective is still the same.

*\*Rahm Emanuels was the Chief of Staff for US President Barrack Obama.*

## Carbon per capita among EU-27

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The Directive for Display Energy Certificates (1000m<sup>2</sup>) was brought into play in January 2006 however Ireland only brought the DEC programme into power on the after January 2009. This was the deadline date not the start date. Ireland is not just behind in measuring its Public estates and Global impacts, Carbon reduction and energy spend; the remedying actions are getting further away each day. DFB only had its DEC testing in September 2011.

Our CO<sub>2</sub> per capita in Ireland is 13.5tonnes/CO<sub>2</sub>/Capitia. This does not favour well when compared to other cities and countries.

London	5.8	UK	7.8
Tokyo	4.8	USA	21.7
Paris	5	Germany	7
China	5.7		

Can Dublin Fire Brigade play a part in lessening the CO<sub>2</sub> levels of Dublin City and County?

I have asked Codema to conduct an audit of the CO<sub>2</sub> per capita of DFB and this study is ongoing with results due in November 2012.

## The ESco Model

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With such looming apprehensions over Public Sector financing it's all too difficult to bring in funding for necessary projects even if the Green Door is fully open. DFB has had to deal with budgetary cuts of 6% per year since 2009. The Public Service can use its size as leverage to make partnerships with the Private Sector and engage with business to decarbonise its future. The DFB Green Plan© has already provided many achievements yet the greatest achievement would be the set up of an ESco model or likewise across DFB estate. This would dramatically conclude the exemplar work carried out on the Retro-fit of Kilbarrack Fire Station; the Flagship Sustainable Fire Station for Dublin City.

## DFB Today – Tomorrow

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DFB can go further and invest in a Green Officer / Facilitator and Energy Manager as described in Section 6. This would be a new era for DFB and would help with job recovery, even if only in a small way. A Biodiversity Action Plan for DFB was published and implemented in 2010 the year of International Biodiversity. Air monitoring and an air monitoring report involving the permanent removal and overhaul of our breathing apparatus including compressors has been completed. DFB has also piloted a Biodiesel from used cooking oil trial (a waste product) and a fleet fuel reduction trial; with the report soon to be published. This holistic approach has led to many National and International awards for DFB.

Moreover these actions show clearly the path that DFB have taken; balancing DFB needs (v) policy, to not go back to the arena that the unsustainable Celtic Tiger died in, while providing a Frontline Emergency Fire, Rescue and Ambulance Service to Dublin. Should the Pioneering Grid Tie project in Kilbarrack Fire Station be implemented across all DFB locations prove successful, then how many Green jobs would that create?



## Recommendations

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### Next steps

The case studies in this document have clearly shown a strong hand on the supply chain, in transparent finished projects (actual actions) and in ongoing trials. The Kyoto approach is now proven no longer good enough ahead of more demanding EU strategies. The Seventh Theme of the DFB Green Plan© is Procurement. Using the Green Plan© in our business plan approach combined with the Green Public Procurement strategies listed throughout this document; DFB should be guided by the criteria below to lessen our energy spend and impacts on Climate Change. DFB should also use these criteria as contributions to the GPP point scoring.

- 1) The continuation and support of Senior Management.
- 2) Upgrade our stock using world's best renewable technologies and set performance indicators into our business plan for tracking GPP and energy spend reduction. This should include each Fire Station having a DEC rating of B2 at the very least.
- 3) Redesign our consumption of Fossil Fuel energy and use of the National Grid.
- 4) Lessen the demand for fuel in the frontline emergency fleet and comply with the clean Vehicles Directive when procuring new vehicles.
- 5) Offset embedded energy in all our stock with genuine accountable green actions.
- 6) Complete a review of DFB energy spend and carbon production using the IPMVP already initiated in the DFB Energy Trial. Also review the CO<sub>2</sub> emission per Capita of the workforce of Dublin Fire Brigade.
- 7) Complete a review of water consumption including waste water being returned and the agreed approved method of verification by DFB.
- 8) Complete a review of waste production including recycling efforts in DFB and only procure electric products from the WEEE register society registered producers.
- 9) DFB should produce an annual report on waste and recycling waste figures and should contribute to a DCC annual report on waste.
- 10) Ask for information on the waste prevention techniques made by the applying company, before their product, service, equipment etc; is made available to DFB.
- 11) Place an emphasis on Part L of the Building Regulations for Conservation of Fuel and Energy.
- 12) Review current practice and develop appropriate programme of action to create a DFB procurement function that allows for the ESco model, Public Private Partnership or likewise. DFB should consider a partnership with SEAI including a tender for private partners.
- 13) Introduce the position of Green Officer / Facilitator for DFB and look to build Public Private Partnerships EPC's and ESco's. This should include DFB formal training in end of life of product, service, equipment etc; to assist with life cycle costs and cost benefits analysis ahead of DFB running a tender. This should also include the appointment of a Full time Energy Manager.
- 14) Target dedicated individuals and commence training and develop skills to deal with sustainable development and climate change in DFB. This should include the SEAI and the National Procurement Agency involving workshops with new and existing suppliers on Green Public Procurement.
- 15) Standardise tender docs to include all GPP explained in this doc. Remember it's procurement first and then GPP as part of the tender not DFB going looking for green products first. Engage the market and suppliers for their information and commitment to help DFB by building up a list of companies that have given us their commitment before or because of a tender, this includes the ESco model &/ EPC and why a company wants to be involved with DFB. Manage supplier performance and their contracts as in, give a length of expiry time to any panel of approved suppliers.

# Appendix

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Appendix 5: Glossary of Terms

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Appendix 7: Basic Background Information

Appendix 8: Useful Web Links



## Appendix 1: Reference Documents: Sustainable Development

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DFB: Green Plan

DFB: Display Energy Certificate Report

DCNER: Strategy for Renewable Energy

DCNER: Maximising Irelands Energy Efficiency

National Sustainable Transport and Travel Action Plan

UNFCC: Kyoto Protocol

Eurostat: Sustainable Development in the European Union

Prime SD: Guide book for peer reviews for National Sustainable Development

Sustainable Cities: Realising the seven forms of community capital

Codema: Climate change strategy for Dublin City

Codema: Dublin City Sustainable Energy Action Plan 2010 – 2020

DCC: sustainability Report 2012

EPA: National Waste Prevention Programme Plan 2009 – 2012

Our Common Future: Brundtland Report

EU: Energy Roadmap 2050

EU: The Gothenburg Protocol for clean air

EU: from transition to transformation RIO + 20



## Appendix 2: Reference Documents: Procurement

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NPPPU: National Public Procurement Policy Framework

NPS: Public Procurement Guidelines – competitive Process

Green Tenders: an Action Plan on Green Public Procurement

Bus Éireann: a Suppliers guide to Tendering

OECD: Integrity in Public Procurement

EU: Buying Green handbook

EU: Guide to Community Rules on Public Procurement of Services

UK Dept of Energy and Climate Change: The Green Deal

MOD Turkey: Life Cycle Cost Procurement techniques

PPRA: Manual of Procurement Policies Pakistan

Enterprise Ireland: Green Business Approach

DOE: Guidelines for the appraisal and management of Capital Expenditure in the Public Sector



## Appendix 3: Consultants

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Authentic Ltd: GPP Legalities

The Clearview Group: Effective Supplier Relationship Management

IBEC: Waste Prevention and resource management efficiency in the Supply chain

CLEARSTREAM: Green Supply Chain Best Practice

Enterprise Ireland: Company Competitiveness

SKM Enviros: Supplier Environmental management Systems

NPS: National Procurement Service

OPW: Office of Public Works



## Appendix 4: Acknowledgements

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I would like to extend my thanks and recognition to the many people who have given their time and shared their knowledge with me. They have answered some tough questions honestly and I have gained a deeper understanding of the true direction in which Dublin Fire Brigade is now travelling. I would like to thank the Chief Fire Officer of Dublin Fire Brigade Mr. Stephen Brady and the Executive Officer of Dublin Fire Brigade Mr. Gerry Geraghty. It has been at times exhausting, researching this document with very little resources; however they have always given me positive encouragement and support. I would like to thank Paul Delaney – (I know I got under his skin) and Clare Crosby working with Melanie Oliver for their time developing ideas and strategies with me.

Separately I would also like to acknowledge the many people who spoke openly to me in the private and public sector, service providers and businesses, about their fears and problems with procurement, green public procurement and indeed EU interference. This guidance document is a next step for DFB against Climate Change and has followed on in tune with our business plan and been guided by the Green Plan©. I would like to recognise Mark Bennett for his time and dedication to a greener environment – attending countless seminars and conferences with me. Conor Molloy has regularly answered my calls no matter how busy he has been. Breeda Melvin, Terry Kearney, Brendan Carroll and Greg O Dwyer for listening to my ideas and Sinead Hourihane, for her participation in joint projects and workshops.

Finally I have to pay thanks to the Officers and Crew of Dublin Fire Brigade – with special regard for my own Fire Station Kilbarrack Fire Station. The Crew in Kilbarrack have been putting up with the many trials and tasks that I have placed regularly in front of them for a long time now. They provide a frontline full time emergency service yet at the same time live with the many new technologies and projects taking place, without complaint. *Coniuncte ducimus, servimus, commutamus mundum*



## Appendix 5: Glossary of Terms

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EU 27:	European Member States 27 Members 2012
NEF:	New Economics Foundation
TOES:	The Other Economic Summit
UNDP:	United Nations Development programme
OECD:	Organisation for economic co-operation and development
UNEP:	United Nations Environment Programme
UNECE:	United Nations Economic Commission for Europe
UK SDC:	United Kingdom Sustainability Development Commission
IPCC:	Intergovernmental panel on Climate Change
COMHAR SDC:	Sustainable Development Council
LANPAG:	Local Authority Local Advisory Partnership Advisory Group
ROHS:	Restriction of Hazardous Substances
SEAI:	Sustainable Energy Authority of Ireland
IPMVP:	International Performance Measurement and Verification Protocol
ECCP:	European Climate Change programme
COP 15:	Copenhagen 15
IISD:	International Institute for Sustainable Development
CDM :	Clean Development Mechanism
CER :	Certified Emission Reduction
COCONUC:	Coal, Conservation, Nuclear



## Appendix 6: ESco, TPF and BEW Information

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### DFB BEW Application

A larger application has been made to SEAI this year and the results are pending. Regrettably this application was made in haste and the scope and range are too far. To re-jig the original application DFB would have to:

- Carve back a lot of the original application
- Focus on achievable projects that can be tendered and fully completed by Nov 2012
- Be able to raise the remaining capital to complete all projects
- Contract an independent Company to M&V every individual project
- It is only after all above criteria has been met that the BEW Grant can be paid out in December 2012.
- Even if DFB successfully ran an EPA / ESCO Tender and appointed someone to provide the rest of the Capital required, we still couldn't have this finished by then--- and wouldn't receive the grant!

However it would be much more feasible for DFB to apply for the 2013 BEW fund, if it is available at that stage. That way DFB would have gathered all the results from the Energy trial and had enough time to have constructed an e-Tender guided by the GPP information in this document. If DFB don't receive the BEW Grant funding for this year, we will continue with our SEAI backed Energy trial. We will continue to Monitor and Verify the trial, to form our baseline figures, including Carbon reduction and still roll out the Green Plan© across DFB, developing Energy credits for our verified retro fit work and building community based Energy reduction projects.

## ESco Model or TPF

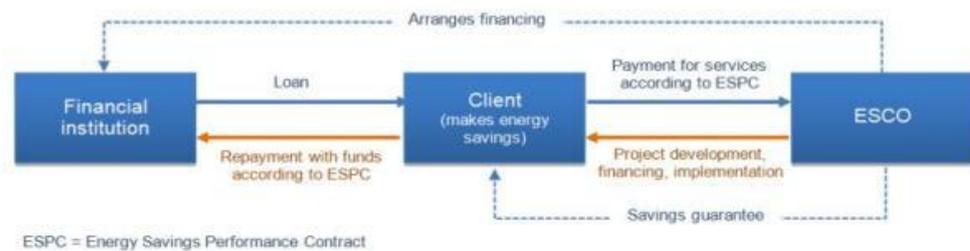
The differences between the two approaches relate to the project finance, payment arrangements and the allocation and apportionment of energy savings and risk. And ESCO contracts are typically classified as being either:

- Shared Savings, or
- Guaranteed Savings.

### Shared Savings



### Guaranteed Savings

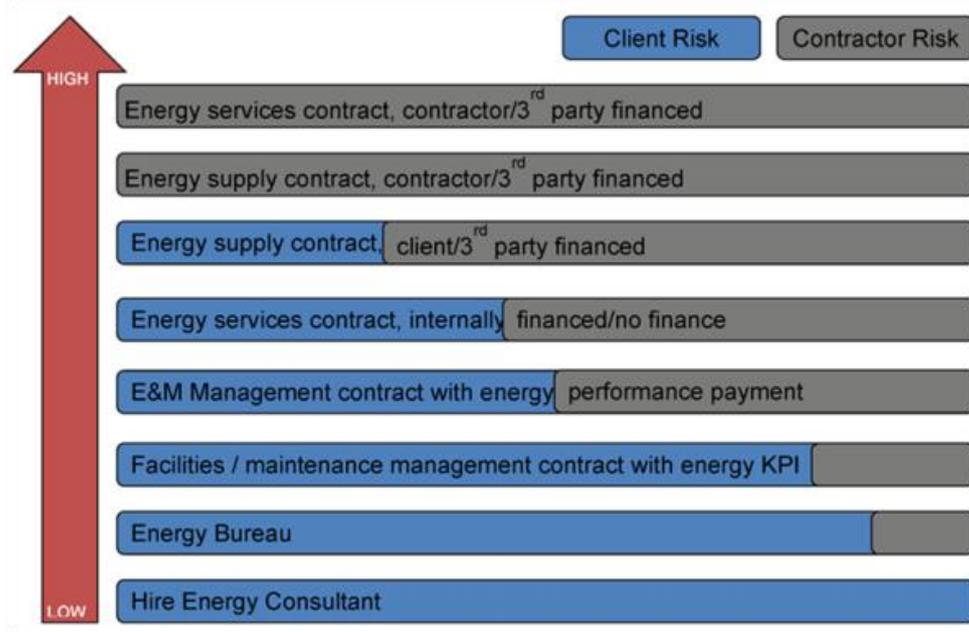


The options range from hiring an energy consultant through to a full energy services contract. The main options for outsourcing energy management (v) Level of Risk are:

- Energy consultant: the classic arrangement whereby an energy consultant advises the client on energy management.
- Energy bureau: typically a contractor provides a standard energy programme including professional advice and services to one or a group of clients.
- Facilities / maintenance management contract with energy KPI: contractor delivers facilities and maintenance management with agreed key performance indicators for energy.
- Maintenance and energy management contract with energy performance payment: contractor delivers maintenance and energy management with remuneration partly dependent on energy performance.
- Energy supply contract: typically an ESCO buys fuel, installs, operates and maintains energy producing plant, and the client purchases the energy output, e.g. heat or electricity.
- Energy services contract (ESCO): operation, maintenance and energy management of building services installed by a contractor, which is typically financed and owned by the contractor.

## ESco Model or TPF

### ESco Model or TPF \*



*\*SEAI ESco risk map*



## Appendix 7: Basic Background Information

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### Green House Gases

The ultimate objective of the Climate Change Convention (UNFCCC) is to achieve "... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."

- 1) **Carbon dioxide (CO<sub>2</sub>)**
- 2) **Methane (CH<sub>4</sub>)**
- 3) **Nitrous oxide (N<sub>2</sub>O)**
- 4) **Sulphur hexafluoride (SF<sub>6</sub>)**
- 5) **Hydrofluorocarbons (HFCs)**
- 6) **Perfluorocarbons (PFCs)**

### Carbon Conversion Rates

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To Convert	To	Multiply By
Carbon (tons)	CO <sub>2</sub> (tons)	3.67 or 44/12
CO <sub>2</sub> (metric tons)	CO <sub>2</sub> (tons)	1.102
CO <sub>2</sub> (pounds)	CO <sub>2</sub> (metric tons)	4.535 x 10 <sup>-4</sup>
CO <sub>2</sub> (billion pounds)	Carbon (million metric tons);	often expressed as Million

Source: U.S. DOE/EIA, 1996 *Emissions of Greenhouse Gases in the United States*, U.S. DOE/EIA, 1997.

### The Ozone Layer

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The sun's rays are absorbed by the Earth's atmosphere. This is in the Earth's stratosphere where 90% of ozone is present. Ozone absorbs the harmful ultra violet rays travelling from the sun and stabilises the Earth's temperature and protects life on Earth. Damage to the ozone layer is responsible for climate change and its many attributed problems. Regrettably it is actual human actions – mainly the release of chlorofluorocarbons - that are the source of the problem. Ironically ozone is actually a pollutant itself – consisting of three oxygen atoms- humans breathe in two oxygen atoms.

### Sustainable development timeline

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Silent Spring was published in 1962. The book's release was considered by many to be a turning point in our understanding of the interconnections among the environment, the economy, and social well-being. Since then, many milestones have marked the journey toward sustainable development.

## Minus 3 project

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MINUS 3% is a three year project funded by the European Commission, through the Intelligent Energy Europe programme. Its aim is to establish shining examples for the implementation of the Energy End-use Efficiency & Energy Services Directive (2006/32/EC) in cities. The participating cities will show that it is possible to save 3% of the City Authority's own energy consumption per year. The energy reduction targets are long term to reach minus 30% by 2020, and each city will have a different year-by-year result to meet this target.

### Member states of the EU (year of entry)

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-  Austria (1995)
-  Belgium (1952)
-  Bulgaria (2007)
-  Cyprus (2004)
-  Czech Republic (2004)
-  Denmark (1973)
-  Estonia (2004)
-  Finland (1995)
-  France (1952)
-  Germany (1952)
-  Greece (1981)
-  Hungary (2004)
-  Ireland (1973)
-  Italy (1952)
-  Latvia (2004)
-  Lithuania (2004)
-  Luxembourg (1952)
-  Malta (2004)
-  Netherlands (1952)
-  Poland (2004)
-  Portugal (1986)
-  Romania (2007)
-  Slovakia (2004)
-  Slovenia (2004)
-  Spain (1986)
-  Sweden (1995)
-  United Kingdom (1973)

## Fossil fuel

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Coal, oil and gas are called "fossil fuels" because they have been formed from the organic remains of prehistoric plants and animals.

## Green washing

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Green washing is the unjustified appropriation of environmental virtue by a company, an industry or organization to create a pro-environmental image to sell a product or a policy.

## Carbon sinks and sources

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All living organisms contain carbon. Soil, natural gas, peat and coal are mainly made of carbon. If any of these absorb more carbon dioxide from the atmosphere than they emit, they are known as carbon sinks. If they emit more carbon dioxide than they absorb, they are carbon sources.

## Embodied energy

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"The quantity of energy required by all of the activities associated with a production process, including the relative proportions consumed in all activities upstream to the acquisition of natural resources and the share of energy used in making equipment and in other supporting functions i.e. direct energy plus indirect energy." (Treloar, 1994).

Basically, this means all the energy required to make a material, such as a clay brick. This includes the energy to extract the clay, transport it to the brick-works, mould the brick, fire it in the kiln, transport it to the building site and put the brick into place. It also includes all the indirect energy required, i.e., all the energy required to manufacture the equipment and materials needed to manufacture a brick, e.g. trucks, kilns, mining equipment, etc. All have a proportion of their energy invested in that brick.

## International Performance Measurement and Verification Protocol (IPMVP)

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The International Performance Measurement and Verification Protocol (IPMVP) provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects. It may also be used by facility operators to assess and improve facility performance.

## Local Authority National Partnership Advisory Group (LANPAG)

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The Local Authority National Partnership Advisory Group (LANPAG) supports the implementation of workplace partnership in the local government sector in Ireland. The overall goal of workplace partnership is to replace the confrontational approach to change with an open and co-operative process where there is consultation and participation. The aim is to create positive outcomes for all those involved: management, employees, unions and the public who use local authority services

### Grid 25

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Grid 25 is EirGrid's plan to develop and upgrade the electricity transmission network from now until 2025. This major initiative will put in place a safe, secure and affordable electricity supply throughout Ireland. This is a major undertaking which will take several years, represents an investment of €4 billion. It involves extensive work throughout the country which includes building 1,150km of new power lines and upgrading 2,300 km of existing lines which will double the size of today's electricity Grid. Grid25 is critical to Ireland's future from both an economic as well as environmental standpoint, and will help secure Ireland's energy needs for next generations.

The success of Grid25 will depend on how informed our communities are about the benefits of transmission infrastructure to their futures as well as their everyday lives and their support for the infrastructure in their community.

### RIO + 201

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Often referred to as the "world's greatest market failure", climate change, and hence sustainable development, requires reconsideration of the role of market forces and that of government. This chapter takes the view that both Governments and markets can fail to serve the long-term needs of citizens who rely on the planet's finite resources. The best course of action is to ensure the provision of public goods through collective action, to discontinue distorting interventions and to ensure a smooth functioning of the market where it works best, while ensuring the participation of civil society actors, enforcing laws and regulations that value natural capital and strengthening social inclusion and helping to "keep all players honest". The challenge lies in attaining such a policy mix.

### Gothenburg protocol for clean air

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The Gothenburg Protocol sets emission ceilings for 2010 for four pollutants: sulphur, NOx, VOCs and ammonia. These ceilings were negotiated on the basis of scientific assessments of pollution effects and abatement options. Parties whose emissions have a more severe environmental or health impact and whose emissions are relatively cheap to reduce will have to make the biggest cuts. Once the Protocol is fully implemented, Europe's sulphur emissions should be cut by at least 63%, its NOx emissions by 41%, its VOC emissions by 40% and its ammonia emissions by 17% compared to 1990.

## Organisation for Economic Co-operation and Development (OECD)

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The mission of the Organisation for Economic Co-operation and Development (OECD) is to promote policies that will improve the economic and social well-being of people around the world. The OECD provides a forum in which governments can work together to share experiences and seek solutions to common problems. They work with governments to understand what drives economic, social and environmental change, measure productivity and global flows of trade and investment. They analyse and compare data to predict future trends and set international standards on a wide range of things, from agriculture and tax to the safety of chemicals.

## Convention on Biological Diversity

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Rio de Janeiro, 22 June 2012. The nations of the world have recognized the crucial role of biodiversity in ensuring sustainable development in the outcome document of the Rio + 20 conference and called for greater efforts to implement the Convention on Biological Diversity. The outcome document, entitled: “The Future we Want,” agreed by heads of state in Rio de Janeiro reiterated the international commitment to the achievement of the three objectives of the Convention on Biological Diversity, which was opened for signature at the 1992 “Earth Summit” held in Rio De Janeiro.

## United Nations development programme (UNDP)

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UNDP strengthens national capacity to manage the environment in a sustainable manner to advance poverty reduction efforts. Through our country teams in 135 developing countries, we help our partners build their capacity to integrate environmental considerations into development plans and strategies, establish effective partnerships, secure resources, and implement programmes to support sustainable, low-carbon, climate-resilient development pathways.

## Stern Review on the economics of Climate Change

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The Stern Review is an assessment of the economics of moving to a low-carbon global economy, focusing on the medium to long-term perspective, and drawing implications for the timescales for action, and choice of policies and institutions. It is also an assessment of the potential of different approaches for adaptation to changes in the climate.

## NEF: New Economics Foundation

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The new economics foundation is an independent think-and-do tank that inspires and demonstrates real economic well-being. They aim to improve quality of life by promoting innovative solutions that challenge mainstream thinking on economic, environment and social issues. NEF was founded in 1986 by the leaders of The Other Economic Summit (TOES) which forced issues such as international debt onto the agenda of the G7 and G8 summits.

## Euro cities

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Former Lord Mayor Eibhlin Byrne (2008 - 2009) was one of the first group of Mayors from Europe's major cities to sign the Eurocities Declaration on Climate Change in Lyon, France recently. The Lord Mayor joined nine other mayors in making a formal contribution to a Round Table discussion on Dublin's response to climate change.

## UNEP: A Global Green Deal

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A Global Green New Deal is a discussion paper undertaken by the UNEP as a manifestation of better leadership. It refers to a set of globally coordinated large scale stimulus packages and policy measures that have the potential to bring about global economic recovery in the short term, while laying the foundation for sustained economic growth in the medium- and long-term. Notably the call for the re-investment of 1% of GDP of any Nation in renewable energy will prevent a rise in GDP levels by 5%.

## Clean Development Mechanism

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The mechanism is seen by many as a trailblazer. It is the first global, environmental investment and credit scheme of its kind, providing standardized emissions offset instrument, CERs. A CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy-efficient boilers. The mechanism stimulates sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction or limitation targets.

## EU framework directive for Water

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The European Union (EU) has established a Community framework for water protection and management. Firstly, Member States must identify and analyse European waters, on the basis of individual river basin and district. They shall then adopt management plans and programmes of measures adapted to each body of water.

## Grantham research institute

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The purpose of the Institute is:

- to increase knowledge and understanding by performing world-class research on climate change and the environment;
- to promote better informed decision-making about climate change and the environment by engaging with a wide range of key audiences around the world and to educate and train new generations of researchers.

December 7 – December 18, 2009, Copenhagen, Denmark was the venue for the 15th annual United Nations Climate Change Conference, also known as the 15th Conference of the Parties — or COP 15.

## Energy MAP Dublin Fire Brigade

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Sustainable Energy Ireland has developed an energy management strategy, which can be applied to businesses, in this case Dublin Fire Brigade. They have called this strategy Energy Management Action Programme (Energy MAP.) Energy MAP consists of 5 pillars of excellent energy management. The pillars are the five main themes of energy management. Each pillar is made up of a number of steps. Some of the steps also have “guides” associated with them which provide more detailed information about how to complete that step. For a comprehensive explanation of this Strategy and how Dublin Fire Brigade could implement it, I attended a workshop and seminar held in Dublin City Council head office in Wood Quay, Dublin in 2009. I have also been fully trained in Energy MAP by the SEAI in 2011.

The workshop was run for the council by Codema Energy Consultancy Ltd. I have presented my finding to Senior Management with a view to formulating an Energy MAP for all of Dublin Fire Brigade. The information below lists the twenty steps required to successfully implement the energy Map. A major problem facing Dublin Fire Brigade during these times of National Economic uncertainty is the budget required to implement this Energy MAP. One of the first steps identified under the heading *Commit*, that there is a need to appoint an Energy Manager.

### The 5 pillars and 20 steps of Energy MAP are:

#### **Commit**

- Step 1: Appoint senior manager to Energy MAP
- Step 2: Appoint energy manager
- Step 3: Establish an energy policy
- Step 4: Communicate policy to employees
- Step 5: Annual review by management of Energy MAP

#### **Identify**

- Step 6: Develop and overview total energy consumption
- Step 7: Identify key factors that influence energy consumption
- Step 8: Survey energy use & identify significant energy users
- Step 9: Identify energy saving opportunities

#### **Plan**

- Step 10: Set objectives and targets
- Step 11: Establish Energy MAP Plan
- Step 12: Allocate Adequate Resources

#### **Take Action**

- Step 13: Promote energy efficiency awareness and practices amongst employees
- Step 14: Train key personnel in energy efficient practices
- Step 15: Establish an energy savings register
- Step 16: Efficient design, purchase, operation and maintenance of significant energy

#### **Review**

- Step 17: Develop and Monitor Energy Performance Indicators (EPIS)
- Step 18: Establish a Measuring and Monitoring System
- Step 19: Review Energy Map Actions Annually and Identify Improvements
- Step 20: Management Review of Energy Map



## Appendix 8: Useful Web Links

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### Sustainable development

[http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-78-09-865/EN/KS-78-09-865-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-78-09-865/EN/KS-78-09-865-EN.PDF)

[http://www.bth.se/fou/cuppsats.nsf/all/094f598a9577b354c12575ca008120b1/\\$file/Thesis -  
\\_Sustainable Cities - Community Capital - AKM KMM CUO.pdf](http://www.bth.se/fou/cuppsats.nsf/all/094f598a9577b354c12575ca008120b1/$file/Thesis_-_Sustainable_Cities_-_Community_Capital_-_AKM_KMM_CUO.pdf)

[http://www.dublincity.ie/WaterWasteEnvironment/Sustainability/Documents/SEAP-  
FINAL%20version%20for%20website.pdf](http://www.dublincity.ie/WaterWasteEnvironment/Sustainability/Documents/SEAP-FINAL%20version%20for%20website.pdf)

<http://www.dublincity.ie/Documents/Sustainability%20Report%5B1%5D.pdf>

[http://www.iisd.org/pdf/2012/sd\\_timeline\\_2012.pdf](http://www.iisd.org/pdf/2012/sd_timeline_2012.pdf)

[Energy End-use Efficiency & Energy Services Directive \(2006/32/EC\)](#)

<http://denmark.dk/en/green-living/>

[http://www.unece.org/fileadmin/DAM/publications/oes/RIO\\_20\\_Web\\_Interactif.pdf](http://www.unece.org/fileadmin/DAM/publications/oes/RIO_20_Web_Interactif.pdf)

<http://www.comharsdc.ie/>

[http://www.decc.gov.uk/en/content/cms/tackling/green\\_deal/green\\_deal.aspx](http://www.decc.gov.uk/en/content/cms/tackling/green_deal/green_deal.aspx)

### Energy

[http://www.dcenr.gov.ie/NR/rdonlyres/FC3D76AF-7FF1-483F-81CD-  
52DCB0C73097/0/NEEAP\\_full\\_launch\\_report.pdf](http://www.dcenr.gov.ie/NR/rdonlyres/FC3D76AF-7FF1-483F-81CD-52DCB0C73097/0/NEEAP_full_launch_report.pdf)

<http://www.esb.ie/main/sustainability/downloads%5CESB-Sustainabilit-Report-2010.pdf>

<http://www.iquest.ie/mwg-internal/de5fs23hu73ds/progress?id=9Pg2Dd4Ww9>

<http://www.dublincity.ie/WATERWASTEENVIRONMENT/SUSTAINABILITY/Pages/EurocitiesDeclarationonClimateChange.aspx>

<http://www.consumosostenibile.eu/>

<http://www.consumosostenibile.eu/index.php/conferenza-eu-finale/english#>

### Biodiversity

<http://www.cbd.int/doc/press/2012/pr-2012-06-22-rio-outcomes-en.pdf>

<http://www.cbd.int/convention/>

## Appendix 8: Useful Web Links

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### **Kyoto & Climate Change**

<http://unfccc.int/resource/docs/convkp/kpeng.pdf>

[http://www.dublincity.ie/YourCouncil/CouncilPublications/Documents/climatechangeLOW\\_ENG.pdf](http://www.dublincity.ie/YourCouncil/CouncilPublications/Documents/climatechangeLOW_ENG.pdf)

<http://www.neweconomics.org/about>

<http://www.nerc.ac.uk/research/issues/climatechange/carbon.asp?cookieConsent=Ac>

[http://unfccc.int/meetings/copenhagen\\_dec\\_2009/meeting/6295.php](http://unfccc.int/meetings/copenhagen_dec_2009/meeting/6295.php)

<http://cleanairinitiative.org/portal/node/8456>

<http://www.cccep.ac.uk/Home.aspx>

[http://www.unece.org/env/lrtap/multi\\_h1.html](http://www.unece.org/env/lrtap/multi_h1.html)

[http://www.unece.org/fileadmin/DAM/hlm/documents/Publications/climate.neutral.cities\\_e.pdf](http://www.unece.org/fileadmin/DAM/hlm/documents/Publications/climate.neutral.cities_e.pdf)

[http://www.unece.org/fileadmin/DAM/publications/oes/RIO\\_20\\_Web\\_Interactif.pdf](http://www.unece.org/fileadmin/DAM/publications/oes/RIO_20_Web_Interactif.pdf)

<http://www2.lse.ac.uk/GranthamInstitute/Home.aspx>

### **Procurement**

<http://ecologic.eu/1443>

<http://ftp.rta.nato.int/public//PubFullText/RTO/MP/RTO-MP-096///MP-096-13.pdf>

<http://www.procurement.ie/publications/public-procurement-guidelines-competitive-process>

[http://ec.europa.eu/internal\\_market/publicprocurement/docs/guidelines/services\\_en.pdf](http://ec.europa.eu/internal_market/publicprocurement/docs/guidelines/services_en.pdf)

[http://www.etenders.gov.ie/guides/Guides\\_show.aspx?id=743](http://www.etenders.gov.ie/guides/Guides_show.aspx?id=743)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:083:0047:0200:en:PDF>

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:134:0114:0240:EN:PDF>

<http://www.buseireann.ie/pdf/1269938333-Bus-eireann-new-pdf.pdf>

[http://www.kkv.se/t/Page\\_7619.aspx](http://www.kkv.se/t/Page_7619.aspx)

<http://www.oecd.org/dataoecd/43/36/38588964.pdf>

[http://www.javnabava.hr/userfiles/file/Razne%20publikacije/Brochure\\_anticorruption\\_ENG.pdf](http://www.javnabava.hr/userfiles/file/Razne%20publikacije/Brochure_anticorruption_ENG.pdf)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:083:0047:0200:en:PDF>

## Appendix 8: Useful Web Links

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### **Partnership**

<http://www.lgmsb.ie/LANPAG.aspx>

### **Green tenders**

<http://www.environ.ie/en/Environment/SustainableDevelopment/GreenPublicProcurement/News/MainBody,29206,en.htm>

<http://www.greenbusiness.ie>

<http://www.ecocert.ie>

### **Waste prevention**

<http://www.epa.ie/downloads/pubs/waste/prevention/Prevention%20Plan%202009-2012%20FINAL2.pdf>

[http://ec.europa.eu/environment/water/water-framework/index\\_en.html](http://ec.europa.eu/environment/water/water-framework/index_en.html)



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