



**NOTIFICATION TO ATTEND MEETING OF THE ENVIRONMENT SPC
TO BE HELD IN THE COUNCIL CHAMBER, CITY HALL, DAME STREET, DUBLIN 2.,
ON WEDNESDAY, 23 SEPTEMBER 2015 AT 4.00 PM**

AGENDA

WEDNESDAY, 23 SEPTEMBER 2015

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**Minutes of the Meeting Environment Strategic Policy Committee,
held on 23rd September 2015.**

1. Minutes of the meeting held on 24th June 2015.

- Minutes to be amended to reflect the discussion between Mr. McCarthy & Mr. Fitzpatrick in relation to PM10 & PM2.5 monitoring (Item 8)
- Topics of Urban Agricultural Support & Parks Use and Management to be included in City Development Plan minute. (Item 5)
- DCC website to be uploaded with SPC meeting Agenda, Minutes and associated documentation
- Cllr O'Moore disputed the assertion from Jerry Grant Irish Water that the metering program was not a factor in the lead problem in Raheny.

Order: Noted

2. Chairpersons Business

It was agreed to hold a workshop on 14th October to develop a submission from the SPC in relation to the City Development Plan

Order: Noted

3. Correspondence

Letter from DECLG regarding waste bye- laws

Order: Noted

4. Low Carbon Cement – Andrew McGrane

Order: Presentation Noted.

5. Climate Change Strategy

Members thanked Dr. Wardell for his presentation and raised the following points.

- The Strategy should be knitted into Local Area and City Development Plans.
- Can the revised strategy be completed by 2016.
- Carbon Exchanges / Carbon Credits
- Can targets be met, 3% reduction per year until 2020

Dr. Wardell pointed out that although carbon credits are the least preferred option they are legitimate and Ireland has legally binding commitments that if not met penalties will issue. In terms of the target of 3% reduction in energy use per annum most of the easy options have been exhausted and it will take a concerted effort to continue the progress made, but it can be achieved.

A plan will be put in place by the subcommittee which will indicate how long it will take to develop the plan.

Order: Presentation Noted. Climate Change Strategy Subcommittee to be established comprising Councillor Byrne, Councillor O'Brien & Sectoral Member Nicholas Cloake.

6. Waste Policy

Bulky Household Waste Collection Service

Members raised concerns regarding the introduction of the new service and discontinuation of the current bulky household waste collection service:

- There is some merit in a charge but a revised scheme could be run in tandem with an annual free collection service
- The current service is very popular and should not be discontinued
- There should be an onus on manufacturers / suppliers to take back bulky household items similar to WEEE
- Trucks not turning up as scheduled
- When a customer avails of this scheme what safeguards are in place to prevent additional items being presented for collection
- The profile of people who will use this service will generally be those without transport and the charge is therefore expensive
- Charging could in fact increase the incidents of illegal dumping.

The Executive Manager pointed out that it is not good environmental practice to have trucks driving around housing estates collecting bulky household waste. This is totally contrary to the polluter pays principle. Furthermore in the context of current budgetary constraints it is no longer justifiable to provide this service for free as those most in need (DCC tenants) will continue to be provided a service by Housing Maintenance.

Councillors can consider this matter further in the context of the budgetary discussions that will take place.

Order: Report Noted

Litter Management Plan 2015 – 2018 update

Order: Report Noted, Draft Litter Management Plan to be presented to the Committee at the November Meeting for consideration.

Household Waste Collection Regulations / Bag Collections

- Query raised about areas currently on bag collection where the refuse collection vehicles do not have access

The Executive Manager advised that guidelines are awaited from the DECLG on how such areas are dealt with.

Order: Report Noted

7. Response to Community Gain Fund (CGF) Report - Joe McCarthy

The Executive Manager in response to Mr. McCarthy's report made the following points.

- The central point at issue is the calculation of the community gain fund - is it 3% of the overall cost or 3% of the construction cost of the facility
- The CGF was introduced by the Council and is without precedent. DCC stated quite clearly in the EIS that the fund would be 3% of the construction cost of the facility which at that stage was €266m which equated to €8m
- The CGF was put forward by DCC and not An Bord Pleanala
- The CGF figure has been updated based on the current construction costs (€346m) and now stands at €10.38m
- An Bord Pleanala in their findings accepted the €8m but changed the calculation of the annual contribution.

Mr. Joe McCarthy, An Taisce summarised his report as set out below.

- The essence of the challenge to the Community Gain fund report is to distinguish between capital cost and construction cost.
- The entire set of references at the Bord Pleanala hearing was on the Capital Cost & the Inspector clarified that it was to be 3% of the capital cost and not €8m.
- An Bord Pleanala did not refer to the €8m except what was in referenced in Mr. Coll's evidence.
- The Bord decided that it would be 3% of the Capital Cost of the facility.
- It has been stated by the Chief Executive and Covanta that the capital cost is €500m
- DCC proposed 3% of the Capital Cost in 4 places in the EIS.
- If it had been intended to be 3% of the construction cost it would have been so stated.
- Interest should also be included in the Capital cost in accordance with the Department of Finance instructions.
- Mr. McCarthy queried who is responsible for meeting Condition 3 of the planning permission; who then raises the appropriate Section 160 to ensure that Condition 3 is complied with.
- The reference to capital/construction costs should be removed from DCC's report.
- Mr. McCarthy also queried the status of the 2 identified flagship projects associated with the CGF.

The Executive Manager quoted specifically from the EIS "DCC proposes that the fund should comprise of a once off capital contribution of 3% of the capital cost of the facility and an annual revenue contribution of 0.5% of the annual revenues generated by gate fees subject to a maximum of €500,000. Based on an estimated construction cost of €266m the capital contribution will be in the order of €8m"

The Executive Manger further explained that 2 flagship projects were in the initial need assessment and it is up to the Community Gain fund committee to decide what projects are funded.

Members thanked Mr. McCarthy for his report.

The Chairperson summed up that agreement could not be reached on how the value of the CGF is determined and it was agreed the he would write to An Bord Pleanala seeking advice on the interpretation of Condition 3 of the planning permission.

Order: Chair to write to An Bord Pleanala seeking guidance on the specific interpretation of Condition 3 of the planning permission.

8. Dublin Waste to Energy update report.

It was agreed that the item would be taken in detail at a Special Meeting on the 14th. Joe McCarthy tabled the following questions for consideration at that meeting:

- Location of the new local office
- Source of waste
- Dust and air quality including permanent monitoring campaign

Order: Item not completed and to be dealt with at a Special Meeting on 14th October 2015

9. SPC reporting to wider Council on DWtE project.

Order: Item not reached and to be dealt with at a Special Meeting on 14th October 2015

10. A.O.B.

CLlr Mannix Flynn requested a report on the dumping of silt in Dublin Bay.
Joe McCarthy requested a presentation on Air Quality as an agenda item for the next SPC meeting including proposals (if any) to update the Air Quality Management Plan.

None

Attendance

Members

Councillor Naoise Ó Muirí (Chairperson)
Councillor Catherine Ardagh
Councillor Claire Byrne
Councillor Mannix Flynn
Councillor Andrew Keegan
Councillor Ciaran O'Moore
Councillor Michael O'Brien
Nicholas Cloake - Dublin Docklands Business Forum
Joe McCarthy - An Taisce
Robert Moss - Dublin City Community Forum

Apologies

Lord Mayor Christy Burke
Councillor Denise Mitchell
Sinead O'Brien - Environmental Pillar

Absent

Councillor Declan Flanagan
Councillor Bríd Smith
Louise McCann - Disability Federation of Ireland

Officials

Declan Wallace, Director of Traffic
Brian Hanney, Senior Executive Officer
Helen McNamara, Senior Executive Officer
Hugh Coughlan, Administrative Officer
James Nolan, Executive Engineer
Ciarán McGoldrick, Staff Officer
Owen Sweeney, Staff Officer

City of Dublin Energy Management Agency
Dr. Gerry Wardell

Councillor Naoise Ó'Muirí

Chairperson

30th September 2015

Low Carbon Cement

Familiar Structures

*Convention Centre,
Dublin City*



*Rosie Hackett Bridge,
Dublin City*



*Father Collins Park,
Dublin*



*Boyne Valley Bridge,
Meath*



Civic Offices, Cork



*Aviva Stadium,
Dublin*



What is the issue?

2 types of carbon and energy

Operational Carbon & Energy:

- Carbon dioxide & energy emitted during the life of a building. Typically through day to day living – oil/gas/electricity.

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Embodied Carbon & Energy

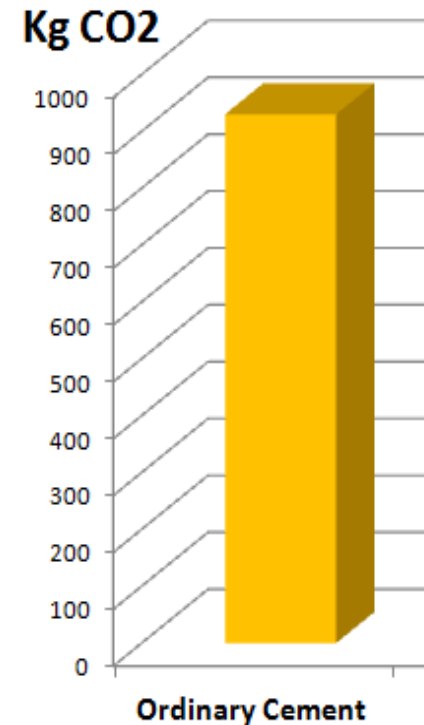
- Embodied carbon refers to carbon dioxide emitted during the manufacture, transport and construction of building materials.

Embodied carbon of cement

The carbon footprint of ordinary cement is very high – **930 Kg/tonne**

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Concrete made from ordinary cement typically contributes to over 50% of the embodied carbon of a building.



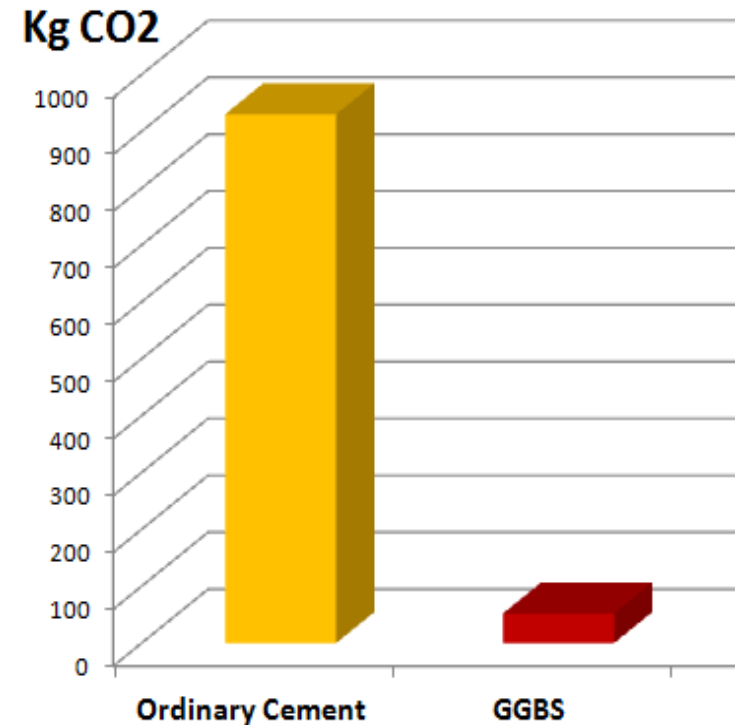
GGBS low carbon cement

However, by mixing ordinary cement with a material called **GGBS (Ground Granulated Blastfurnaced Slag)** it is possible to reduce the carbon footprint of cement by up to **70%**.

GGBS has a carbon footprint of only **52Kg/tonne**

When GGBS is mixed with ordinary cement you get GGBS Low Carbon Cement. This is used in the making of low carbon concrete.

GGBS Low Carbon Cement is produced in Ireland as well as imported. It is supplied by a number of cement companies in Ireland.



Familiar Structures - Conference Centre Dublin



- GGBS Low Carbon Concrete saved 11,000 tonnes of CO₂
- Equivalent to:
 - Taking approx. 4,400 cars off the road for a year
 - Providing electricity to approx. 2,200 homes for a year.

Greystones Marina



- GGBS Low Carbon Concrete saved 13,000 tonnes of CO₂
- Equivalent to:
 - Taking over 5,000 cars off the road for a year
 - Providing electricity to over 2,500 homes for a year.



Key Benefits

(of GGBS Low Carbon Concrete)

GGBS Concrete - Lasts longer

Design Life Extension

NRA – 50% GGBS



More Resilient to Salts and Chemicals

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Shanganagh Waste Water Treatment Plant – 50% GGBS

Blackpool sea front defence and promenade



GGBS Concrete - Stronger

Rosie Hackett Bridge, Dublin City

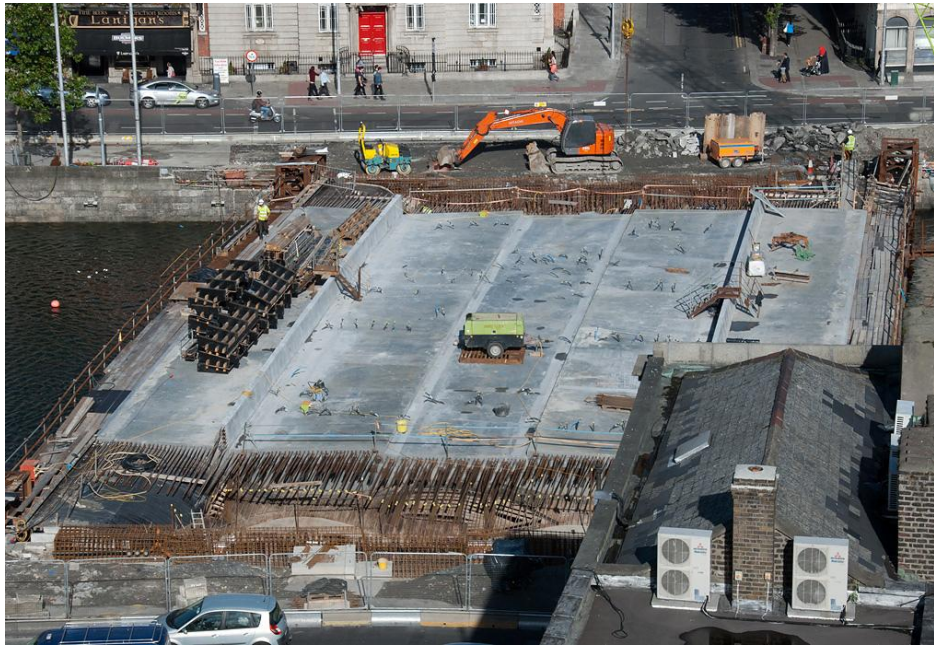


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Implementation

- GGBS Low Carbon Concrete a bit longer to set
- GGBS Concrete sets at a higher strength

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Rosie Hackett Bridge, Dublin City

Higher Quality Finish

Father Collins Park, Dublin
70% GGBS



Reduces Impact on Natural Environment

- For every tonne of ordinary cement produced, 1.6 tonnes of limestone / shale are removed from the landscape
- GGBS production involves no quarrying of limestone or clay



Greater Surface Reflectance



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- Reduces outdoor lighting requirements by enhancing night time visibility
- Lighter coloured surfaces are safer
- Saves money, energy and carbon emissions
- Approx. 30% less lighting needed to achieve same visibility for concrete as it does for asphalt

Cost Competitive

■ GGBS Low Carbon Concrete is **cost competitive**

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Conclusion

Real Opportunity – future development

- For every 10,000 homes built using GGBS Low Carbon Concrete there is a saving of:
 - **43,400 tonnes of CO₂** – equivalent to taking nearly **20,000 cars** off the road for a year.
 - **46,400 MWh** of energy use – equivalent to supplying approx. **8,500 homes** with electricity for one year.

Summary

Feature	Benefit
Low level of embodied CO ₂	Significant reduction in embodied CO ₂ . Increase in sustainability. Reduced Carbon footprint.
Low level energy footprint	Significant reduction in energy requirement for production.
Stronger	Enhances strength. Can reduce volume of concrete required.
Durable	Enhanced durability resulting in concrete lasting longer. More resistant to attack by salts, sulphates, farm effluent and chemicals.
Aesthetics	Superior and brighter finish
Security	Its brighter finish reflects street lighting more effectively
Safety	More fire resistant
Water	Uses less water



Thank You

Climate Change Strategy for Dublin City

Environment SPC
23rd September 2015

Dr. Gerry Wardell - Codema





Structure of Presentation

- 1) Background to last Climate Change Strategy
- 2) Developments since 2008
- 3) Energy Policy & Planning
- 4) Conclusions & Recommendations

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Who we are

10 staff members



- Engineering
- Environmental science
- Sustainable development
- Communication
- Project management

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Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

Comhairle Contae
Fhine Gall
Fingal County
Council



Comhairle Contae
Átha Cliath Theas
South Dublin County Council

codema
Dublin's Energy Agency

1. Background

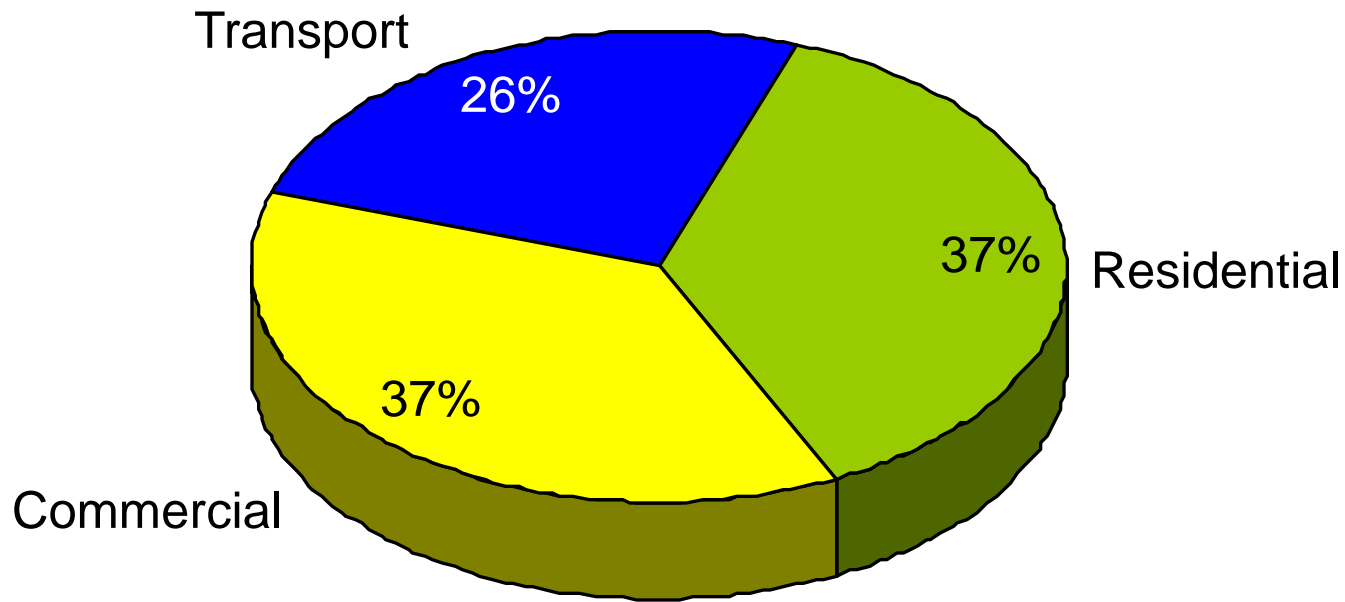
- Initiative of Dublin City Council (then) E & E SPC
- Developed in association with Codema
- 2009 – First Year Review

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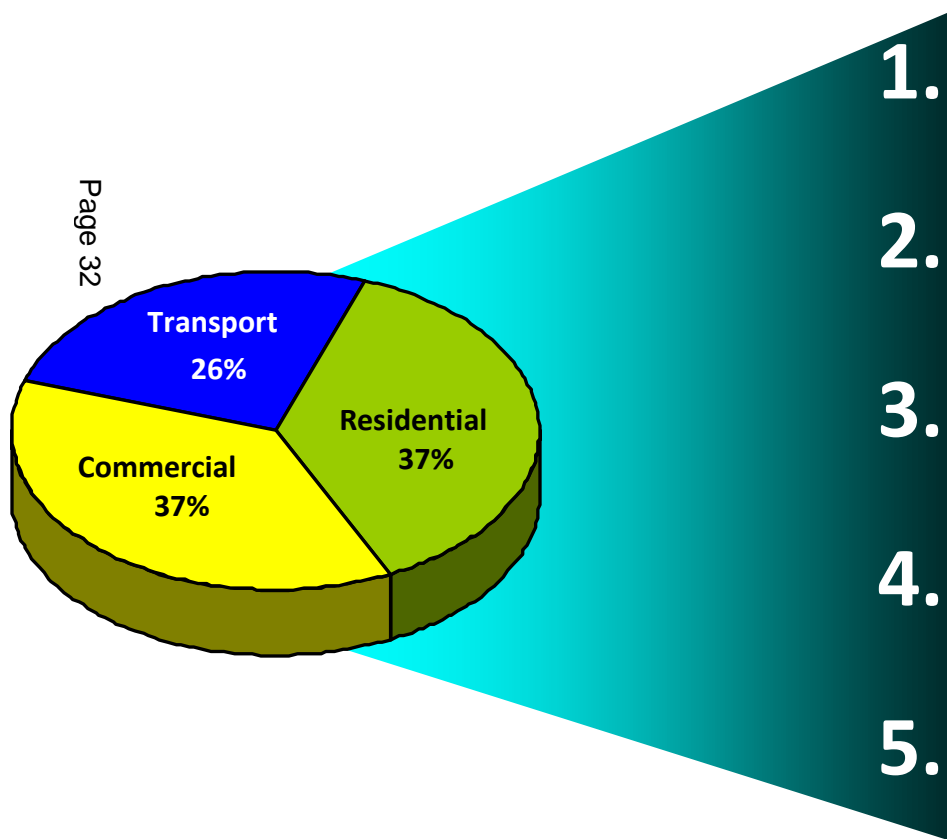


Dublin CO₂ Emissions (2006)



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Strategy has 5 Chapters



1. Energy
2. Planning
3. Transport
4. Waste Management
5. Biodiversity



2. Developments since 2008

- Research:
 - Energy Monitoring Report (2014)
 - Flood Resilient City Report (2012)
- Scientific confirmation of climate change
- Dublin adaptation measures in response to climate change
- Climate Action & Low Carbon Bill

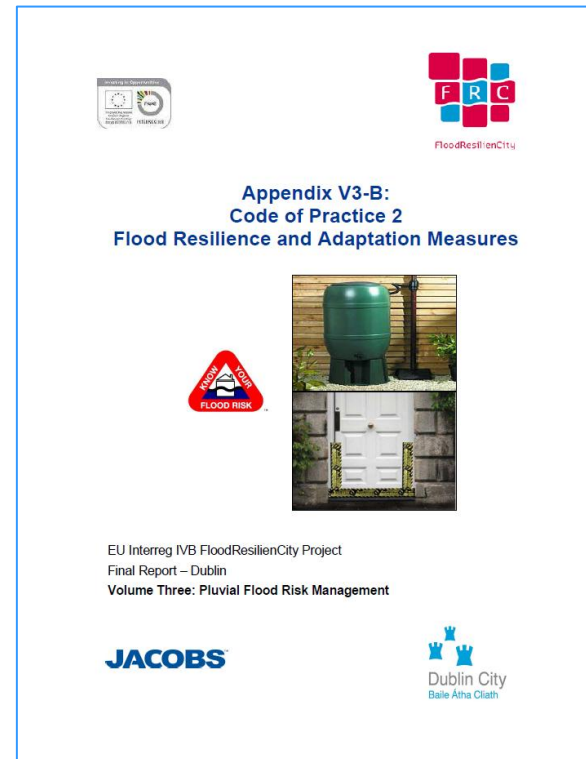
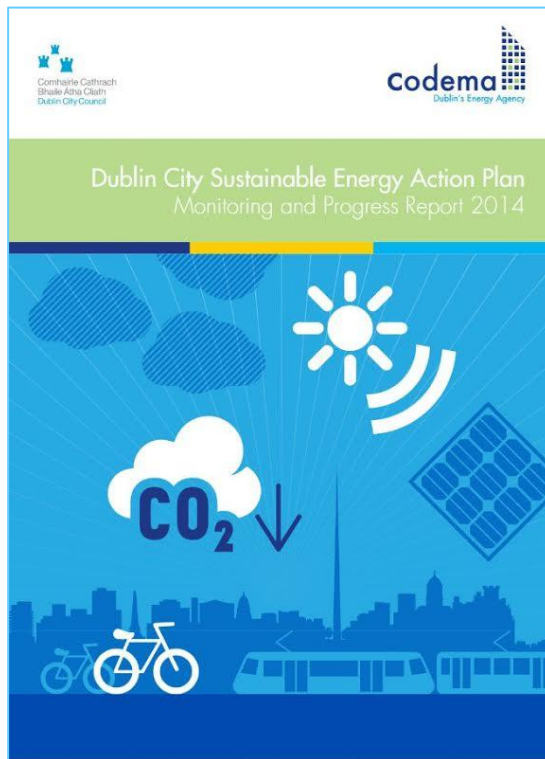


Research

Energy Monitoring Report 2014

Flood Resilient City project 2012

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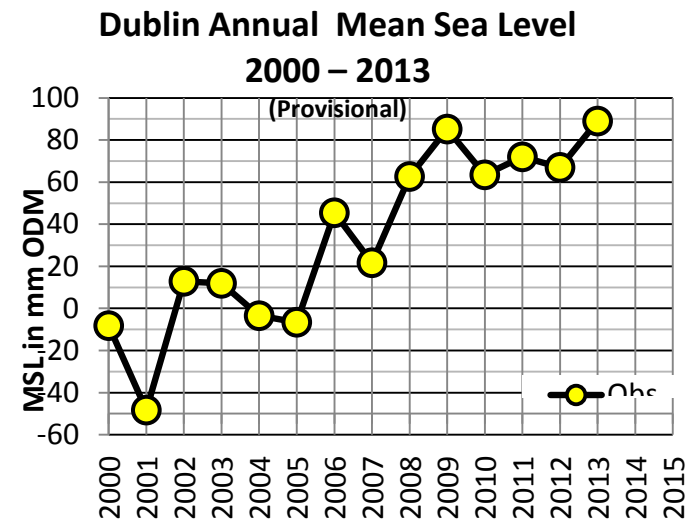


Nobel Laureates' Declaration 2015



36 Nobel laureates signed the Mainau Declaration on 3rd July, 2015 on Climate Change, an emphatic appeal for climate protection.

Impacts of Climate Change

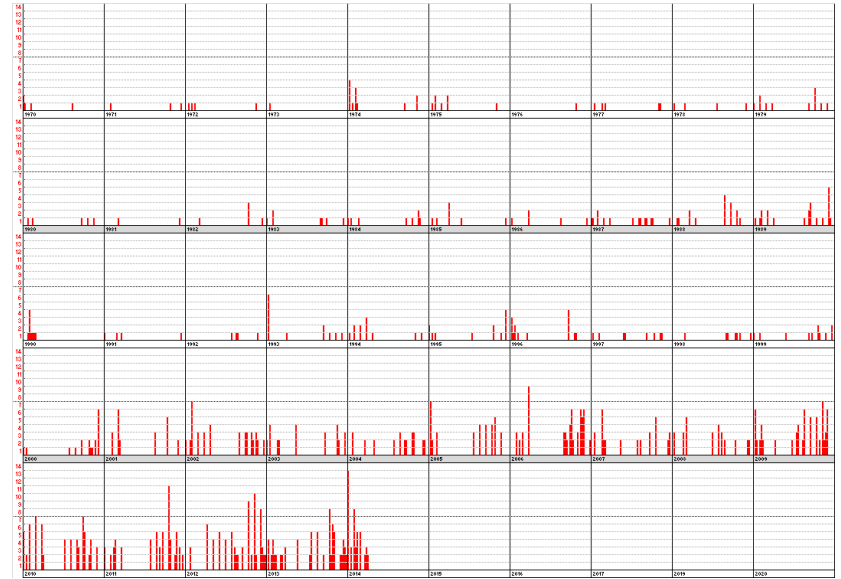




Storminess since 1970



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Frequency of very high tides 1970-2014
(Number of tides >2m per week)



Coastal Flooding 2002



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- Historical Flooding on Clontarf Road



Flood Defences (Jan 2014)



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Similar high tide to 2002

But:

- Less waves, wind, rain
- DCC better prepared
 - Forecasting
 - Defences



Adaptation Measures

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Flood defence works

Georges Quay

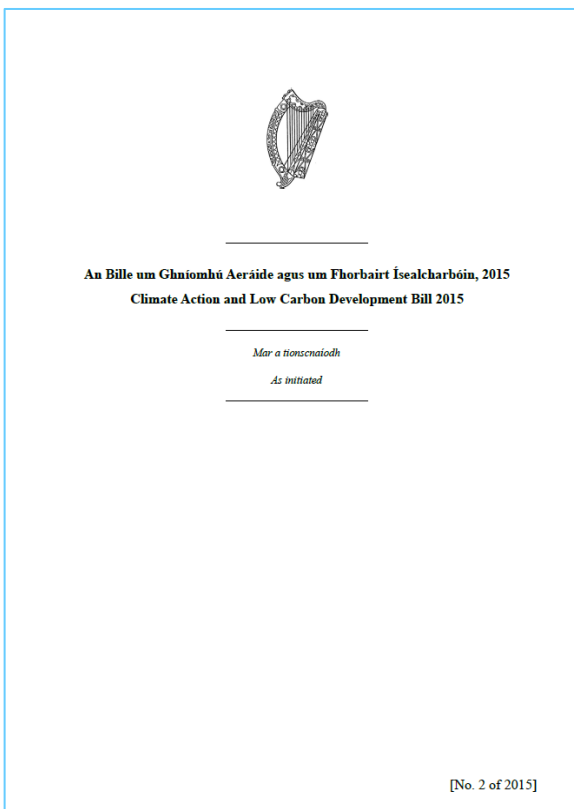
September 2015

3. Climate Policy & Planning

Climate Action and Low Carbon Development Bill 2015

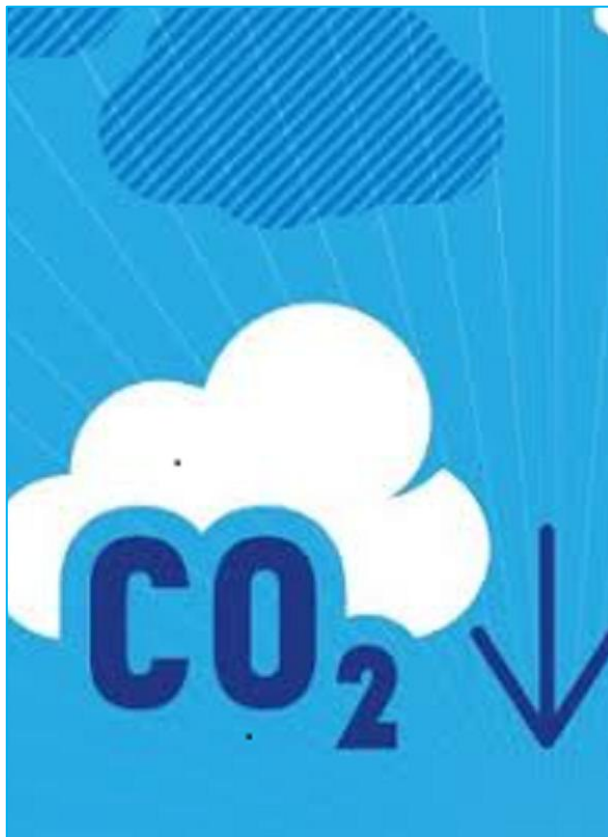
*Presented by the Minister
Environment, Community and
Local Government*

15th January 2015



Climate Action & Low Carbon Development Bill 2015

Ch 4: Mitigation Plan



Ch 5: Adaptation Framework





4. Conclusion & Recommendation

Recommendation

Develop a new

‘Climate Mitigation and Adaptation Strategy for Dublin City, 2016-2020’



Suggested topics for new strategy

Two sections (in line with National Bill):

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1. Mitigation Plan

- Reduce our carbon emissions in order to avoid the unmanageable

2. Adaptation Framework

- Prepare for the impacts of climate change that are unavoidable



1. Mitigation Plan

- Based on Current Climate Change Strategy
 - Review 5 sectoral chapters
 - Set new targets for 2020



2. Adaptation Framework

- Develop a new climate adaptation framework
 - Specific to Dublin City Council
 - In accordance with National Framework
- Estimate cost of flood defences to 2025
- Share knowledge with other cities
 - ‘Mayors Adapt’ Initiative



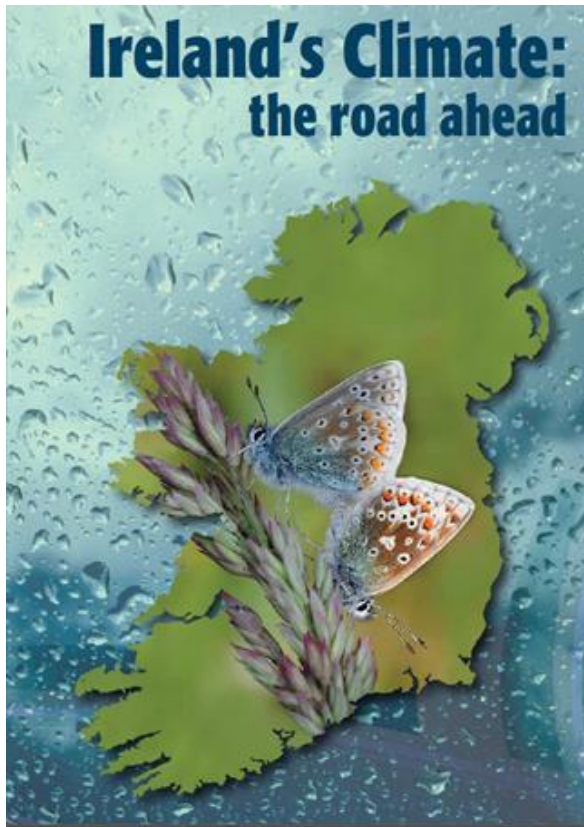
Suggested Issues for SPC

- Review Flood Resilience Codes of Practice
 - Spatial Planning and Building Regulations
 - Flood resilience and Adaptation Measures
- Evaluate Emergency preparedness
 - Storms, floods, snow & ice, heatwaves, water shortages
- Include Social Factors
 - Immigration of Climate Refugees



Suggested process for new strategy

- 1. Establish a SPC sub-group to review:**
 - **Updates** from relevant Departments/Sections for: Energy, Planning, Transport, Waste Management & Biodiversity
 - **Briefings** from relevant Departments/Sections for: Surface Water, Flood Defence, Emergency Response
- 2. Appoint body to prepare new draft strategy for review by SPC**
- 3. New draft strategy to go to Public Consultation and approval by full Council**
- 4. Codema to offer technical support through process**



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And what about
the butterflies?



Thank you for your attention

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Contact:

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www.codema.ie



Environment and Transportation Department,
Block 2, Floor 6,
Civic Offices,
Dublin 8.

16th September 2015.

To Each Member of the
Environment Strategic Policy Committee

PROPOSED CHANGES IN THE BULKY HOUSEHOLD WASTE COLLECTION SERVICE

INTRODUCTION

It is recognised that households sometimes generate an amount of household waste that is bulky or too large in nature to be accepted by the regular waste collection service. The volume of such waste generally does not warrant the hire of a skip from a waste contractor. Unfortunately, such waste is sometimes collected by unscrupulous operators and subsequently dumped illegally which is only to the detriment of all concerned.

Householders can currently dispose of bulky household waste by bringing the material to one of the City Council's 2 Civic Amenity sites which are located in North Strand and Ringsend. In addition, Dublin City Council has traditionally provided a bulky household waste collection service to all householders across the City. Collection schedules typically operated over a three to five year revolving period. If a street was due for a collection the householder was notified by a leaflet drop 48 hours before the scheduled collection was due to take place. The leaflet stated the date of the collection and also provided details of what type of bulky waste was acceptable.

PROPOSED BULKY HOUSEHOLD WASTE COLLECTION

The cost of providing the bulky household waste collection service, to all householders across the City amounts to approximately € 0.5m per annum. The service that Dublin City Council has provided free of charge is a major draw on resources and is no longer sustainable. Only two other local authorities (Galway City Council and Waterford City and County) provide a door to door collection service but in both cases a charge is applied for each item collected by the respective Council.

It is proposed to introduce a new online Bulky Waste Collection Service operated by Dublin City Council. Bookings for a Bulky waste collection will be made via www.dublincity.ie and the cost will be € 40 per house payable in advance. This charge will be limited to 5 bulky items per household. Once payment is made, the local Cleansing Inspector for the Area will

be in contact with the householder and will arrange for a suitable collection time within 3 working days.

The Bulky Household Waste Collection provided by the Waste Management Division will cater for different types of waste as follows:

Material types accepted:-

Household furniture, carpets, bedding, mattresses, kitchen units, worktops, sinks, ironing boards, doors, bathroom & toilet suites, bicycles, ladders, garden furniture including barbeques, oil tanks, radiators, boilers, children's swings & slides, buggies, prams and other larger toy items. All these items can also be brought to the two Civic Amenity sites in the City.

Items not accepted:-

Black, green or brown material suitable for domestic bins, DIY material & builders rubble, gas cylinders, priority waste such as batteries, paints, solvents and asbestos.

It should be noted that Dublin City Council already provides a bulky Household waste removal service to its tenants free of charge through its Housing Maintenance Section and it is intended that this service will continue.

We anticipate that the online Bulky Waste Collection Service will commence in the Spring of 2016 and the benefit of the new service is that the Bulky Waste Collection will be available to each householder on demand all year round. This is a significant enhancement for the householder. The fee will assist the Council in partially offsetting the costs associated with providing this service.

Brian Hanney
Senior Executive Officer
Waste Management Division
Environment and Transportation Department



Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

Environment and Transportation Department,
Block 2, Floor 6,
Civic Offices,
Dublin 8.

16th September 2015.

To Each Member of the
Environment Strategic Policy Committee

Update on Litter Management Plan

Waste Management completed a non statutory public consultation phase of the Litter Management Plan before the Summer and we received 128 submissions from all sectors of the community. We have concluded a review of the old plan and are currently finalising the draft new LMP for consideration by the Environmental SPC in November. Once the draft plan has been approved by the SPC it will be presented to the City Council for approval before the draft Litter Management Plan goes on public consultation.

The statutory public consultation process will mirror the earlier non statutory process. Advertisements' will be placed in newspapers, local radio, Dublin City Council website, social media etc inviting members of the public, business community, elected representatives etc to comment or contribute to the final plan. All submissions received at that stage will be examined and incorporated into the Litter Management Plan where appropriate. The final Litter Management Plan will come back to the SPC and City Council for approval and we anticipate that the Litter Management Plan for 2016-2018 will be in place early in 2016.

Brian Hanney
Senior Executive Officer
Waste Management Division
Environment and Transportation Department

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Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

Environment and Transportation Department,
Block 2, Floor 6,
Civic Offices,
Dublin 8.

16th September 2015.

To Each Member of the
Environment Strategic Policy Committee

Household Waste Regulations

At the June meeting of the Environment Strategic Policy Committee a verbal report was delivered in relation to new Regulations (S.I 197 of 2015 - Waste Management Collection Permit Amendment Regulations 2015) governing the Collection of Household Waste. It was agreed that a briefing document would issue to members of the committee outlining proposed changes to current collections arrangements.

A report issued to Members of the Committee on 5th August advising that the Regulations provided for the following changes to existing Household Waste Collection arrangements.

- Household Customers of a waste operator must be provided with a recyclable collection every two weeks.
- The collector must weigh all receptacles collected separately and they must be in reusable containers.
- The collectors must report the weights in writing to householder at a minimum once per month.
- Collectors must use an approved weighing system and only use vehicles that have been fitted with this weighing system
- Collectors must prepare a customer charter and publish on website.
- There is a minimum list of recyclables that a waste operator must collect.
- Phasing out bags – Household waste collections using bags will not be permissible beyond 1st July 2016 apart from very specific areas designated by Local Authorities.

The City Council has commenced a data gathering exercise to determine if those areas of the City currently in receipt of a bag collection service are suitable for wheeled bin collections. At this stage in excess of 800 streets have been identified as having a bag collection services and / or a mix of bags and wheeled bins. In order to ascertain the suitability of areas it is necessary to carry out a physical inspection of each street and this process is ongoing.

It is likely to be mid October before this exercise is complete and I will report further at the November meeting of the Committee.

A bagged waste service is provided at our Civic Amenity sites. A new tender is currently being drafted for both sites and will include provisions to comply with the new regulations.

Discussions are ongoing with waste operators in relation to the phasing out of bag collections and there will be further input from the DECLG in relation to the criteria for determining the designation of bag collection areas.

Declan Wallace
Executive Manager

Discussion Paper - Community Gain Fund Contribution

The calculation of the capital contribution to the community gain fund for the Poolbeg Incinerator is quite straightforward.

Proposal and Planning Permission

Dublin City Council proposed that the community gain fund would receive a capital contribution of 3% of the capital cost of the facility. This proposal was made in four places in the application to An Bord Pleanála. The phrase used in each reference was “3% of the capital cost of the facility”.

The Inspector’s report from the oral hearing also made four references. Again in each case it was a reference to a capital contribution of 3% of the capital cost of the facility.

Mr Twomey on behalf of Dublin City Council clarified that “It was approximately 3% of the capital cost, whatever the capital cost of the project would be”.

Finally, Condition 3 of An Bord Pleanála’s decision in case EF2022 states:

“This fund shall include a once-off capital contribution equivalent to 3% of the capital cost of the facility “

Calculation in 2007

In 2007 an estimate of € 8 million for the capital contribution was made based on 3% of the € 266 million capital cost of the facility at that time which was the estimated construction cost of € 266 million.

In 2007 there was no cost of capital because the contract required the private partner to provide balance sheet financing.

In 2010 the contract lapsed and Covanta negotiated a restated contract with Dublin City Council on behalf of the four Dublin Local Authorities. For unknown reasons, DCC released Covanta from the obligation to provide equity finance and allowed Covanta to raise project finance in the market.

The capital cost of raising the finance has turned out to be € 154 million. This extraordinarily high cost should be the subject of a separate investigation. (See note.)

Calculation in 2014

By 2014 the construction cost had risen to € 346 million and together with the finance cost of € 154 million this brought the capital cost for this facility to € 500 million.

The 3% capital contribution to the community gain fund is therefore € 15 million.

Additional Consideration

Since this project cost a further € 100 million spent by DCC on land acquisition, planning and other matters, consideration should be given to the provision of a further contribution of € 3 million to the community gain fund.

This would bring the proper capital contribution to the community gain fund to € 18 million.

Errors and Omissions in the DCC Briefing Paper

The briefing paper submitted on 5th August 2015 by Dublin City Council Environment and Transportation Department contains several errors.

Regarding the clarification sought by the Inspector from Mr Twomey on the basis for the 3%: the quotation from the Inspector's report is cut short by omitting the phrase:

"... whatever the capital cost of the project would be".

A further distortion of this clarification is introduced on the last page of the paper where it states:

"It should be further noted that DCC as applicant clarified that the proposal associated with the onecoff capital contribution was not fixed at €8m but would be calculated by reference to 3% of the capital/construction cost."

The clarification by Mr Twomey as recorded by the Inspector did not use the phrase "capital/construction cost". The clarification in the Inspector's report was:

"It [the lump sum] was not €8 million, irrespective of the capital cost of the project. It was approximately 3% of the capital cost, whatever the capital cost of the project would be."

This use of the words "capital/construction cost" is not used in the application, nor is it used by the Inspector in his reports, nor is it used in the planning permission.

This is an attempt by the authors to substitute the capital cost of the facility with the construction cost of the facility. The briefing paper also attempts to confuse the capital cost with a "project cost".

Spurious Methodology

The paper attempts to introduce a methodology of calculating 3% of the capital cost by limiting the capital cost to the construction element alone.

No methodology is mentioned in the planning application documents nor is a methodology referred to in the Inspector's report and, in particular, no methodology is mentioned in the grant of planning permission.

No special methodology is required to calculate 3% - just multiply by 3 and divide by 100.

Capital Cost

The briefing paper does not address the actual capital cost of the facility as it stands today. The capital cost consists of two elements:

- the construction cost estimated at € 346 million
- the cost of capital estimated at € 154 million

The overall capital cost is the sum of these two capital costs and is therefore € 500 million.

Covanta in their SEC 10-Q filing state:

“The total investment in the Dublin Waste-to-Energy Facility is expected to be approximately €500 million, funded by a combination of third party non-recourse project financing (€375 million) and the contribution of project equity by Covanta Energy (approximately €125 million net investment ...)”

Financing Costs and Capitalized Interest

Covanta also state in the 10-Q filing that interest expense paid on the Dublin project financing and costs amortized to interest expense will be capitalized during the construction phase of the project.

In accordance with the United States Generally Accepted Accounting Principles (GAAP) used by Covanta the interest cost of loans for a project must be capitalised.

The Department of Finance guidance for Public Private Partnership projects also requires capitalised loan interest to be included in the total capital cost.

Conclusion

The capital cost of this facility is € 500 million.

The capital contribution to the community gain fund should be € 15 million not the € 10.38 million proposed by DCC.

Joe McCarthy

Member (An Taisce)
Environment Strategic Policy Committee
Dublin City Council

September 2nd 2015

Note

The clarification sought by the Inspector from Mr Twomey was prescient because the capital cost has risen to almost twice the cost expected in 2007 – from € 266 million to € 500 million in 2014.

The principle reason for this enormous rise is the change to the contract conditions originally required by DCC whereby the private partner would use its own equity on balance sheet to build the incinerator. After the project contract lapsed in 2010 Covanta obtained agreement from the DLAs to have the project financed from the market. The consequence is that substantial interest costs now arise.

An eye watering interest rate of 13.5% is being paid to a Covanta company in Luxemburg which lent € 75 million*.

A rate of some 9.5% applies to the € 50 million Dublin Junior Term Loan lent by Macquarie Capital.

The Dublin Senior Term Loan of € 250 million is at 6%. This loan is from AIB, Bank of Ireland, Barclays, the Ireland Strategic Investment Fund, Macquarie Bank and Ulster Bank.

It is not clear how such high interest rates can be justified for a public private partnership project when state borrowing rates are currently around 4% or less.

The excess interest paid of some € 70 million over the term of the loans is a reduction in profit of the same amount. This reduction in profit will seriously diminish the revenue share of the DLAs.

JMcC

* **Irish Times** - Colm Keena - Tuesday, June 23, 2015

Funding for the building of the waste to energy incinerator in Poolbeg, Dublin, is coming from a company in Luxembourg with a structure similar to the ones that featured in last year's Luxleaks controversy over aggressive tax planning.

...

Filings in Luxembourg show that a company there, Dublin First WTE, was incorporated in September 2014 and immediately entered into a stakeholder loan agreement with an Irish company, Dublin Waste to Energy (Holdings), for €75 million.

The Luxembourg company is charging 13.5 per cent per annum interest on the loan, which is to be repaid in 2029. The arrangement means that the taxable profits booked in Ireland by Dublin Waste to Energy (Holdings) will be reduced by the cost of servicing the debt to the Luxembourg company. One of the features of the Luxleaks controversy was the creation of entities in Luxembourg that created profit-reducing costs in other jurisdictions, while not producing comparable taxable profits in Luxembourg.

...

Dublin First WTE has no employees, according to its 2014 accounts, and it was established so as to invest in and take interests in other companies, and grant loans to affiliated companies. It is in turn owned by a company in the Cayman Islands.

Community Gain Fund – Background Paper

This document collects all the references in the planning documents to the 3% contribution to the community gain fund:

- 1 From the EIS – 2 references – A and B
- 2 From Mr Coll’s brief of evidence to the oral hearing - C
- 3 From Mr Coll’s presentation slides to the oral hearing - D
- 4 From the inspectors report – 2 references – E and F
- 5 From the inspectors summary of the oral hearing – 2 references – G and H
- 6 From Condition 3 imposed by An Bord Pleanála - I

In all nine cases the amount is stated to be 3% of the capital cost of the facility.

EIS – Appendix 13.2

**WASTE TO ENERGY ENVIRONMENTAL IMPACT STATEMENT
COMMUNITY GAIN PROPOSALS**

Page 2

Proposed Scale of the Community Gain Fund

Dublin City Council is proposing that the fund should comprise a once-off capital contribution of 3% of the capital cost of the facility

A

Page 6

Summary of Proposal

The following is a summary of the proposal regarding a Community Gain Fund:

1. A Community Gain Fund would be established comprising:
 - (a) a once off capital contribution of 3% of the capital cost of the facility, which is estimated at €8m

B

Mr Coll - Brief of Evidence

Dublin City Council

Dublin Waste to Energy Project – Community Gain

- A once off capital contribution equivalent to 3% of the capital cost of the facility. This contribution is estimated at €8m

C

Mr Coll - Presentation Slides

Community Gain Fund Proposal

- A once off capital contribution equivalent to 3% of the capital cost of the facility. This contribution is estimated at €8m

D

An Bord Pleanála – Inspectors Report

In the current case, I consider that in general the extent of the fund being proposed by the Local Authority is reasonable, i.e. a capital contribution equivalent to 3% of the capital cost of the facility and an annual revenue contribution equivalent to 0.5% of the revenue generated by gate fees, subject to an annual ceiling of €500,000.

E

PL29S.CH2061/
PL29S.EF2022

An Bord Pleanála

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- 4 A Community Gain Fund shall be established to support facilities and services which would be of benefit to the community in the general catchment area. This fund shall include a once-off capital contribution equivalent to 3% of the capital cost of the facility and an annual contribution per tonne of waste accepted for thermal treatment at the plant.

F

PL29S.CH2061/
PL29S.EF2022

An Bord Pleanála

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An Bord Pleanála – Inspectors Report – Oral Hearing

APPENDIX NO. 1 REPORT ON ORAL HEARING

Mr. Coll stated that the community gain fund would include a once off capital contribution equivalent to 3% of the capital cost of the facility. This contribution is estimated at €8 million

G

PL29S.CH2061/
PL29S.EF2022

An Bord Pleanála

Page 2 of 7

Prior to their closing submission, in response to a question from the Inspector as to whether the lump sum for the community fund would be based on the actual capital cost and a percentage of this, or if it would be €8 million as stated, Mr. Twomey, on behalf of Dublin City Council stated that it was approximately 3% of the capital cost of the project as outlined in Mr. Coll's brief of evidence. It was not €8 million, irrespective of the capital cost of the project. It was approximately 3% of the capital cost, whatever the capital cost of the project would be. Mr. Twomey stated that there was no decision made in regard to when the initial payment would be made.

H

PL29S.CH2061/
PL29S.EF2022

An Bord Pleanála

Page 2 of 7

An Bord Pleanála – Decision – Condition 3

An Bord Pleanála PLANNING AND DEVELOPMENT ACTS 2000 TO 2006 Dublin City Council DECISION

3. A community gain fund shall be established to support facilities and services which would be of benefit to the community in the general catchment area. This fund shall include a once-off capital contribution equivalent to 3% of the capital cost of the facility and an annual contribution per tonne of waste accepted for thermal treatment at the plant. The annual contribution shall be €1 per tonne in the first year following commissioning of the plant and thereafter shall be updated in accordance with the consumer price index. Details of the management and operation of the community gain fund, which shall be lodged in a special community fund account, shall be agreed between Dublin City Council and the community liaison committee referred to in condition number 2 above.



29S.EF2022

An Bord Pleanála

Page 3 of 7

Capital Cost

Construction cost is stated to be € 346 million
Total investment cost is stated to be approx € 500 million.

Financing and interest costs arise from three tranches of borrowing:

The amounts and interest rates applicable to these loans are:

1. Dublin Convertible Preferred €75 million anticipated funding in 2015
a fixed rate of 13.50% per annum
2. Dublin Junior Term Loan €50 million anticipated funding in 2015 / 2016
a fixed rate of 5.23% during the first six months of the loan, and thereafter at fixed
rates from 9.23% to 9.73%
3. Dublin Senior Term Loan €250 million anticipated in 2016 / 2017
Euro Interbank Offered Rate ("EURIBOR") plus an applicable margin, which will
range from 4.00% to 4.50%

Capital Cost – Covanta Treatment – SEC 10-Q

Financing Costs and Capitalized Interest

Financing costs related to the Dublin project financing totaled \$3 million for the three months ended March 31, 2015. Interest expense paid on the Dublin project financing and costs amortized to interest expense will be capitalized during the construction phase of the project.

Dublin Waste-to-Energy Facility

The total investment in the Dublin Waste-to-Energy Facility is expected to be approximately €500 million, funded by a combination of third party non-recourse project financing (€375 million) and the contribution of project equity by Covanta Energy (approximately €125 million net investment through commencement of operations, including previously invested amounts towards project development and pre-construction works, which total approximately €30 million). We expect to fund the majority of our additional project equity in 2015. Following the utilization of Covanta's initial equity investment for project costs (approximately €125 million), the Dublin project company will utilize committed funding from the Dublin Convertible Preferred (€75 million, anticipated funding in 2015), the Dublin Junior Term Loan (€50 million, anticipated funding in 2015 / 2016), and finally the Dublin Senior Term Loan (€250 million, anticipated in 2016 / 2017).

We plan to fund the majority of our equity investment with existing offshore cash balances, with any additional or interim project funding requirements to be funded with ongoing cash flow and/or capacity under the Revolving Credit Facility.

In preparing our condensed consolidated financial statements in accordance with United States Generally Accepted Accounting Principles ("GAAP"),

Capital Cost – Dept of Finance Circular for PPPs

The accounting treatment guidance for capital cost is to include the capitalised interest. See note from Dept of Finance below.

TO: All Departments

F 7/1/00

2 April 2007

Circular 4/2007: Accounting for Public Private Partnership (PPP) Projects in the 2007 and subsequent years' Appropriation Accounts

A Dhuine Uasail

7. The **total capital cost** (i.e. **excluding Operation and Maintenance costs**) of the project, to be shown in Column 4 in the table, should represent all the costs (**including VAT**) associated with the construction of the physical asset to the point of becoming available for use and included in the winning bidder's financial model:
 - i. **Actual capital construction costs** (including "fit out" services and equipment costs)
 - ii. Administration arrangement overheads for consortium that would be factored into commercial pricing of the built asset (e.g. bank fees, SPC operating costs insurance, etc.)
 - iii. Short term funding costs (excluding finance charges) to point of delivery of the built asset (i.e. arrangement and commitment fees, **capitalised interest**, etc.)

FAS 34 - Capitalization of Interest Cost

This Statement establishes standards for capitalizing interest cost as part of the historical cost of acquiring certain assets. To qualify for interest capitalization, assets must require a period of time to get them ready for their intended use. Examples are assets that an enterprise constructs for its own use (such as facilities) and assets intended for sale or lease that are constructed as discrete projects (such as ships or real estate projects). **Interest capitalization is required for those assets if its effect, compared with the effect of expensing interest, is material.** If the net effect is not material, interest capitalization is not required. However, interest cannot be capitalized for inventories that are routinely manufactured or otherwise produced in large quantities on a repetitive basis.

The interest cost eligible for capitalization shall be the interest cost recognized on borrowings and other obligations. The amount capitalized is to be an allocation of the interest cost incurred during the period required to complete the asset. The interest rate for capitalization purposes is to be based on the rates on the enterprise's outstanding borrowings. **If the enterprise associates a specific new borrowing with the asset, it may apply the rate on that borrowing to the appropriate portion of the expenditures for the asset.** A weighted average of the rates on other borrowings is to be applied to expenditures not covered by specific new borrowings. Judgment is required in identifying the borrowings on which the average rate is based.

Capital Cost – IFRS and IAS 20 Treatment

Full EU IFRS requirements

- **Borrowing costs** that are directly attributable to the acquisition, construction or production of a qualifying asset **must be capitalised as part of the cost of that asset.**

IAS 23 Borrowing Costs requires that **borrowing costs** directly attributable to the acquisition, construction or production of a 'qualifying asset' (one that necessarily takes a substantial period of time to get ready for its intended use or sale) **are included in the cost of the asset.** Other borrowing costs are recognised as an expense.

Capita Report – Oversight and Scrutiny

Page 24

From a governance standpoint, it would be reasonable to expect the EESPC, as the Council's designated sub-committee most closely linked to the Engineering function, to ask for and receive sufficiently detailed and regular information to allow Councillors to have effective scrutiny and oversight of the WTE project. Based on the work we have undertaken, this has not occurred in the period covered by the review.

RECOMMENDATION 6: The WTE project should be included as a standing agenda item for meetings of the EESPC, at least until the proposed development is completed and operational. The Assistant City Manager should provide Committee members with a concise but sufficiently detailed update on the progress of the project for consideration at EESPC meetings.

Reference in the Contract

See page 30:

A lump sum capital contribution amount equivalent to three percent (3%) of the capital cost of the Facility ...

Reference in the Managers Briefing of 19th Sept 2014

See 2 references:

On page 6

Full cost of constructing the DWtE facility (estimated at circa €500m)

Page 13

Foreign direct investment into Ireland as a result of its €500m investment cost.

**Environment and Transportation Department,
Block 2, Floor 6,
Civic Offices,
Dublin 8.**

25th November 2015.

**To Each Member of the
Environment Strategic Policy Committee**

Dublin Waste to Energy (DWtE) Project

1 Construction Status

Construction remains on schedule for completion in Q3 2017.

1.1 Progress to Date

Progress in the key areas are summarised below:

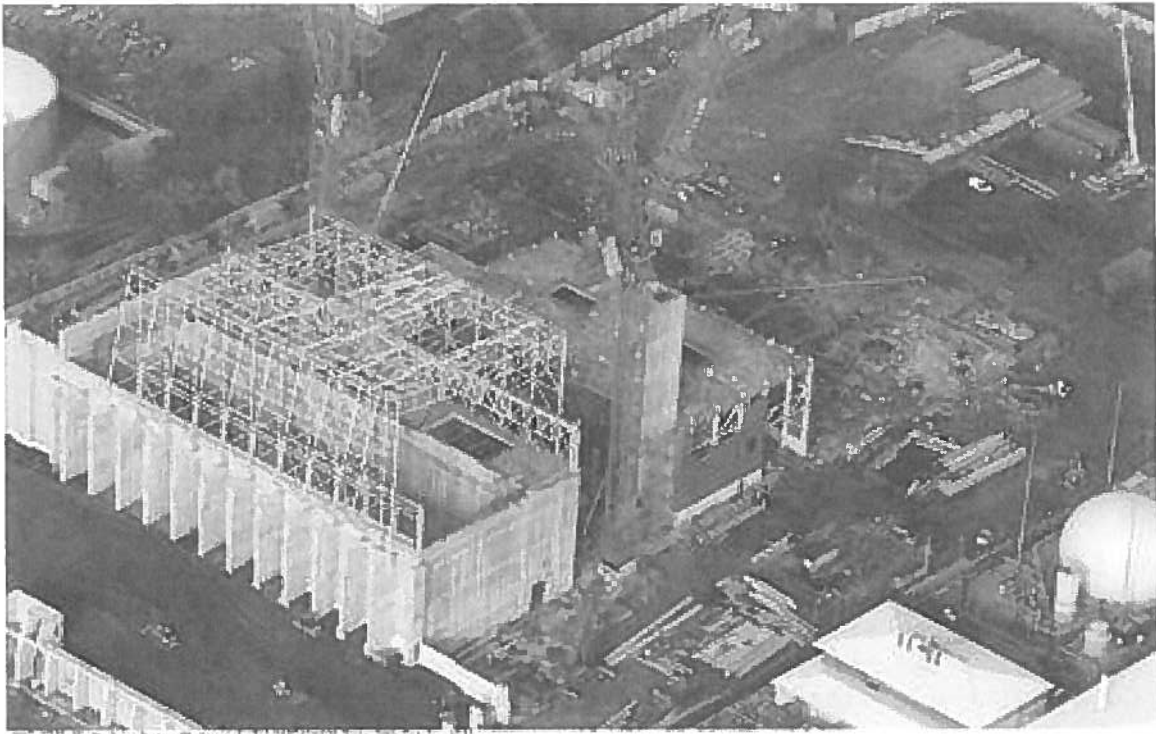
Construction

- There are currently approximately 289 contractors on site at any point in time.
- Construction is currently programmed on a 24/7 basis.
- PM Group Limited, the civil designer and construction manager have reported that design and procurement activities for the civil related aspect of the facility are now 95% complete.
 - The main focus of PM Group and their subcontractors are:
 - the installation of structural steel for the enclosure over the waste bunker area,
 - works associated with the facility cooling water system,
 - works associated with the tipping hall floor,
 - finalisation of the civil works associated with the electrical and transformer rooms.
- Hitachi Zosen Inova (HZI), the process systems designer have reported that they are 85% complete in the efforts focused on completing Process & Instrumentation Diagram's, equipment specifications and procurement of equipment.
 - The main focus of HZI and their subcontractors activities are:
 - erection of structural steel for both lines of the boiler and the turbine hall,
 - installation of the process equipment,
 - inspection and review of process equipment manufacturing.



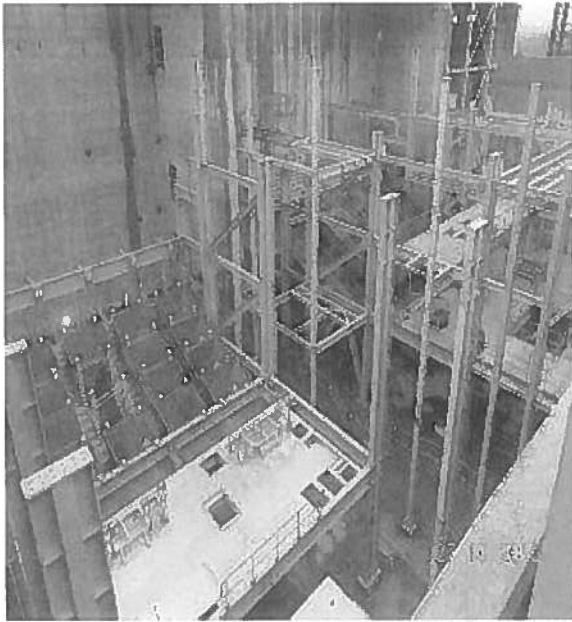
IMC 31241 Photo: Peter Kumpo Photography Ltd 0811159414 Date: 21st October 2015

Site Aerial View Looking East October 2015 (Copyright PML)

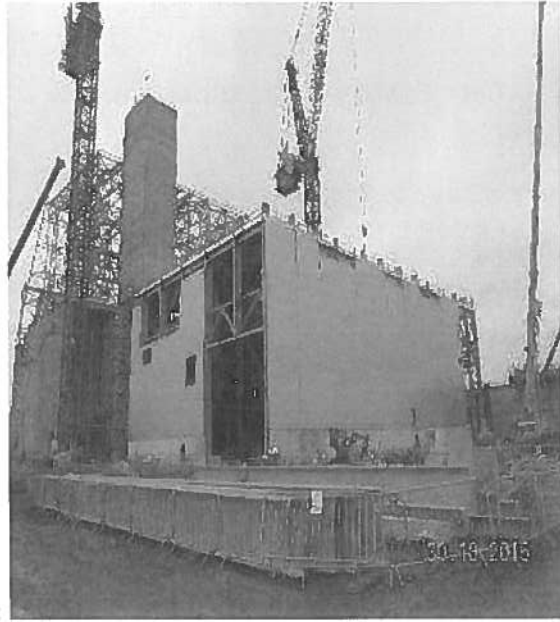


IMC 31241 Photo: Peter Kumpo Photography Ltd 0811159414 Date: 21st October 2015

Site Aerial View Looking Northwest October 2015 (Copyright PML)



Boiler Hall (Copyright PML)



Turbine Hall (Copyright PML).

2 Environmental Impact

Environmental monitoring and mitigation measures continued to be implemented during the Construction phase of the DWtE facility and the construction phase environmental report for quarter 3 (July – September) 2015 is presented as Appendix 1 to this report.

Additionally the wildfowl monitoring report for winter 2014/2015 is presented as Appendix 2 to this report.

All reports are also available for download at the Dublin Waste to Energy Website.

3 Community Liaison

3.1 DWtE Local Office

The local office for the Dublin Waste to Energy Facility relocated to the Ringsend Library, Fitzwilliam Street, Dublin 4, on a trial basis from the 17 November. The office will operate on Tuesday and Thursday mornings between 10:00 and 12:00.

3.2 Community Gain Liaison Committee

The second meeting of the Community Gain Liaison Committee (CGLC) took place on the 28th of October 2015.

4 Compliance with statutory consents

There are no non-compliance issues to report.

Declan Wallace

Executive Manager

Dublin Waste to Energy

Construction Phase Environmental Monitoring Report - Quarter 3 (July - September) 2015

Signoff	Originator	Checked	Approver	Date
Name	Ray Derrig	Ciaran Reay	Eoin Curham	19 th November 2015

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1 Introduction

An environmental monitoring programme has been implemented during the construction stage of the Dublin Waste to Energy (DWTE) Project. In conjunction with the monitoring, a number of controls and procedures have been implemented during construction activities to avoid, or minimise, potential adverse impacts to the environment and local community.

The monitoring programme assists in demonstrating compliance with the conditions and requirements laid out in An Bord Pleanála Order-29S.EF2022, Condition 13d; *“A scheme for monitoring noise, dust deposition and suspended solids in surface water run-offs and adjacent waters shall be prepared for the construction phase of the development. Details of the scheme shall be made available for inspection at the offices of Dublin City Council and at a local office in the Ringsend/Poolbeg area prior to the commencement of construction works. Monitoring shall be carried out during the construction phase and reports on the monitoring shall be made available for inspection at the offices in question on a 3 monthly basis. The reports shall compare monitored results with standards set out in the environmental impact statement or standards given in recognised national or international guidelines as relevant.”*

Construction of the DWTE facility recommenced in October 2014 and an environmental monitoring programme in accordance with the 'Dublin Waste to Energy - Construction Phase Monitoring Scheme' September 2009 has been implemented. The 3rd Quarterly Report 2015 on the Construction Phase Monitoring Scheme relates to environmental monitoring undertaken for the period of July to September 2015. The PM Group construction management team were present on site throughout the July to September 2015 monitoring period. The PM Group construction management team ensured construction works were undertaken to comply with environmental procedures for the site. Environmental monitoring with regards to noise, dust deposition and suspended solids in surface water commenced with construction works.

2 Local Environment

The main population centres of Ringsend, Irishtown and Sandymount are located approximately 1km from the boundary of the site.

The closest sensitive receptors to the site are the residential properties at Pigeon House Road which are located approximately 865m west of the site boundary. A map of sensitive locations and environmental monitoring points (noise, dust and surface water) are included in Figure 2.1.

The identified sensitive noise locations are N1 – N6 as follows:

- N1 - Rehab Institute
- N2 – Seafort Avenue
- N3 – Beach Avenue
- N4 – Leukos Road
- N5 – Pigeon House Road
- N6 – Walkway (Irishtown Nature Reserve)

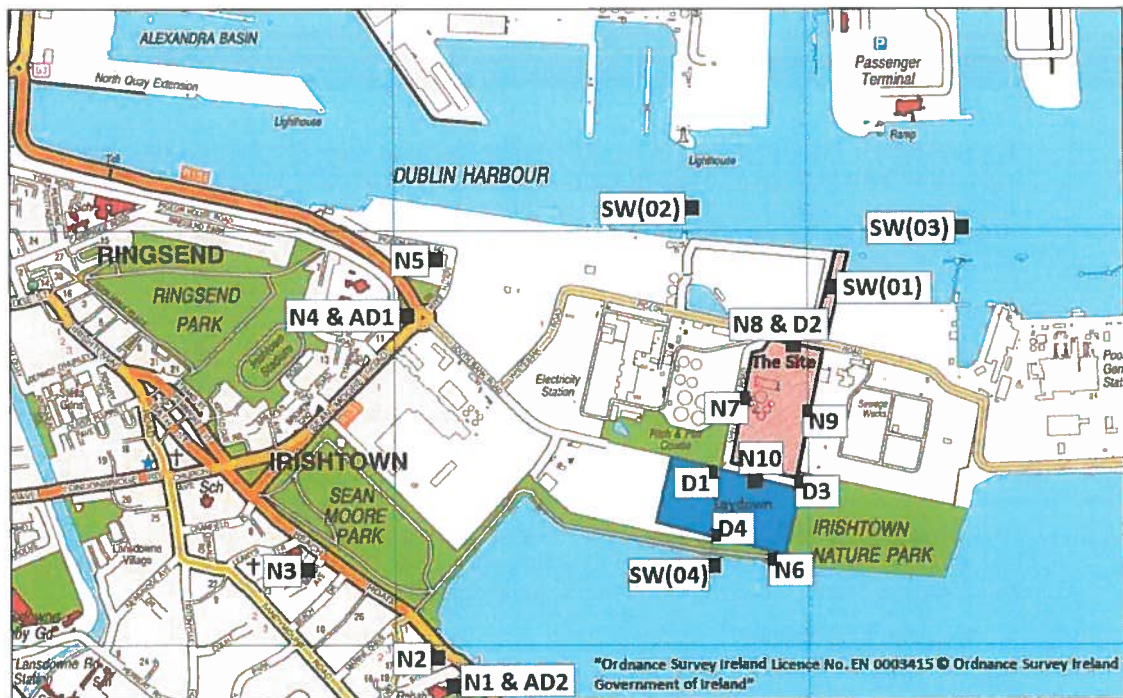


Figure 2.1: Environmental Monitoring Locations

3 Noise

Monitoring of noise levels at sensitive locations is required during construction to assess compliance with the requirements of the Environmental Impact Statement (EIS) and An Bord Pleanála Order-29S.EF2022, Condition 13d. Refer to Figure 2.1 in Section 2 for the monitoring locations.

3.1 Noise Guidance & Standards

The noise monitoring was conducted in accordance with the following guidance:

- International Standard ISO 1996-1:2003 - Acoustics – Description, Measurement and assessment of Environmental Noise
- BS 4142:2014 - Methods for rating and assessing industrial and commercial sound
- BS 5228-1:2009 + A1:2014 – Code of practice for noise and vibration control on construction and open sites.

3.2 Measurement Parameters

Noise is measured in terms of decibels (dB). The various measurement parameters and noise terminology are defined below.

- Decibel (dB)

Decibel (dB) is the standard unit for expressing the noise level (sound pressure level). It is calculated as a logarithm of the intensity of sound. It is derived from the logarithm of the ratio between the value of a quantity and a reference quantity. For sound pressure level the reference quantity is $20\mu\text{Pa}$ which is the threshold of normal hearing and equates to 0dB. At the upper end of the scale 140dB is the threshold of pain.

- A-weighted Decibel (dBA)

Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sound of different frequency (pitch) in a similar way to the human ear. This takes account of the fact that the human ear has different sensitivities to sound at different frequencies.

- L_{Aeq}

The equivalent continuous sound level – the sound pressure level of a steady sound having the same energy as a fluctuating sound over a specified measuring period. It can be considered similar to an average level. The L_{Aeq} value is the A-weighted Leq.

- L_{A90} and L_{A10} Values

The L_{A90} and L_{A10} values represent the A-weighted sound pressure levels exceeded for a percentage of the instrument measuring time. The L_{A90} represents the sound pressure level exceeded for 90% of the monitoring period and is a good indicator of the background noise level excluding peak noise events. L_{A10} indicates the sound pressure level exceeded for 10% of the monitoring period and is a good parameter for expressing event noise such as passing traffic.

- L_{AMax} (dBA)

The maximum instantaneous value recorded over the monitoring period including A-weighting

3.3 Construction Noise Limits at Sensitive Locations

Ambient noise levels at the nearest sensitive locations to the site have being established based on review of the Environmental Impact Statement, Dublin City Noise Map model and preconstruction noise monitoring. These ambient measurements at the noise sensitive locations are compared against the values identified in "British Standard 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Part 1:Noise " and maximum permissible

noise levels at façade dwellings are recommended. The maximum noise levels are presented in Table 3.1 below.

Table 3.1: Maximum Permissible Noise Levels at the Facade of Dwellings during Construction

	Sensitive Locations					
	Rehab Institute	Seafort Avenue	Beach Avenue	Leukos Road	Pigeon House Road	Walkway Irishtown Nature Park
Daytime Monday - Friday 0700hrs to 1900hrs Rating level, L_{Aeq} (1hr)dB	65	65	65	65	65	65
Evenings and Weekends 1900hrs to 1100hrs Rating level, L_{Aeq} (1hr)dB	55	55	55	55	55	55
Night time 2300hrs to 0700hrs Rating level, L_{Aeq} (1hr)dB	50	50	50	50	50	50

3.4 Noise Monitoring Results

Monitoring was undertaken at site boundary and sensitive locations during construction works. The survey was carried out over the months July to September 2015. The surveys involved a 30 minute sample period taken at each of the noise monitoring locations.

3.4.1 Noise Calculations from Boundary Sampling Locations

To establish the contribution of the July - September 2015 DWTE site activities, to the noise levels at the sensitive receptors, the 'British Standard 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Part 1: Noise' was used to calculate the noise levels at the sensitive receptors based on noise levels monitored at the western and southern site boundary locations only.

The western and southern boundaries are used to represent the closest boundaries to the sensitive receptors as the most accurate calculation of noise levels. On this basis, when both are available, the southern boundary is used to calculate the noise level contribution levels for the Rehab Institute, Seafort Avenue, Beach Avenue and Irishtown Nature Park. The Western Boundary is used to calculate the noise contribution levels at the Pigeon House Road and Leukos Road.

Using the BS 5228 Standard calculation, the highest contribution of noise calculated for the months of July to September 2015 at each of the sensitive locations is presented in Table 3.2.

Table 3.2: The Contribution of the DWTE Site Activities to Noise Levels at Sensitive Receptors

Month	Time	Sensitive Locations					
		Rehab Institute N1	Seafort Avenue N2	Beach Avenue N3	Leukos Road N4	Pigeon House Road N5	Irishtown Nature Park N6
July 2015 Results level, L _{Aeq} (30 min)dB	Daytime	35	34	33	34	34	48
	Evening	22	21	20	23	23	35
August 2015 Results level, L _{Aeq} (30 min)dB	Daytime	37	36	35	43	43	50
	Evening	34	33	32	36	36	47
	Nighttime	27	27	25	28	29	40
September 2015 Results level, L _{Aeq} (30 min)dB	Daytime	31	30	29	36	33	44
	Evening	23	22	21	25	25	36
	Nighttime	24	23	22	28	29	37

3.5 Conclusion

The noise levels were calculated from measurements taken at the site boundary locations and their contribution to the closest residential sensitive receptor established. During the July to September period the greatest daytime noise level contribution at a residential sensitive receptor was 43dB. The greatest daytime noise level at Irishtown Nature Park was calculated as 50dB. The greatest evening time noise level contribution at a residential sensitive receptor was 36dB. The greatest evening time noise level at Irishtown Nature Park was calculated as 47dB. The greatest nighttime time noise level contribution at a residential sensitive receptor was 29dB. The greatest daytime noise level at Irishtown Nature Park was calculated as 40dB.

These noise contribution levels are significantly lower than the construction noise limits as detailed in Table 3.1. Most construction works occur during the daytime hours with limited construction occurring thereafter. The noise monitoring contribution at sensitive location is within permissible levels.

Ambient noise level at sensitive locations is found to be similar or higher than those monitored at site boundary locations. The sensitive locations are situated up to 1km away from site boundaries and noise contribution from site is low as shown in Table 3.2. The noise at sensitive receptors is affected by localised noise sources, mainly road traffic. The boundary monitoring readings are used to calculate the noise contribution at the closest sensitive receptors. Table 3.2 shows that these were below the maximum permissible noise levels at the facade of dwellings during construction.

On this basis, it is concluded that the site activities undertaken during the July – September 2015 construction period are not causing exceedances of the construction noise limit values at sensitive receptors.

Detailed noise monitoring data is included in Appendix A.

4 Dust Deposition

A scheme for monitoring dust deposition and direction has been developed for the construction phase of the development.

4.1 Monitoring Method

Monitoring was overseen by the Project Environmental Consultant and undertaken by independent laboratory in accordance with the 'Dublin Waste to Energy - Construction Phase Monitoring Scheme', September 2009. Dust monitoring locations D1 – D4 are shown in Figure 2.1.

There are no legislative regulations regarding fugitive dust during construction either in Ireland or the UK. The "Technical Instructions on Air Quality Control – TA Luft" 2002 emission value for dustfall of 350 mg/m²/day is therefore used as the maximum guideline level during construction.

Continuous particulate matter monitors were installed at two sensitive locations close to the construction project. The parameter being sampled was particulate matter (PM₁₀, PM_{2.5} and Total Particulate Matter. These locations AD1 and AD2 are shown in Figure 2.1.

4.2 Monitoring Results

4.2.1 Weather Conditions

The average weather conditions during the July to September 2015 monitoring period are given below (<http://www.wunderground.com>);

- July 2015
 - Average Precipitation: 1.8mm/ Day
 - Average Wind Speed: 18.2 km/H
 - Average Temperature: 13.6° C
 - Total Precipitation 55.0mm
- August 2015
 - Average Precipitation: 2.1mm/ Day
 - Average Wind Speed: 16.0 km/H
 - Average Temperature: 13.8° C
 - Total Precipitation 64.0mm
- September 2015
 - Average Precipitation: 0.8mm/ Day
 - Average Wind Speed: 16 Km/H
 - Average Temperature: 11.6° C
 - Total Precipitation 22.9mm

4.2.2 Dust Deposition – Bergerhoff Gauges

The dust deposition results from the Bergerhoff gauges are given in Tables 4.1 – 4.3. Refer to Figure 2.1 in Section 2 for the monitoring locations.

Table 4.1: Dust Deposition Results – July 2015

Sample Locations	Date Deployed	Date Collected	Dust Gauge Diameter (cm)	Dust Collected mg/gauge	Rate of Dust Deposition mg/m ² /day	TA Luft Limit mg/m ² /day (Annual Average)
1 (West)	23.06.2015	21.07.2015	8.5	18.5	116	350
2 (North)	23.06.2015	21.07.2015	8.5	14.8	93	350
3 (East)	23.06.2015	21.07.2015	8.5	41.3	260	350
4 (South)	23.06.2015	21.07.2015	8.5	15.0	94	350

Table 4.2: Dust Deposition Results – August 2015

Sample Locations	Date Deployed	Date Collected	Dust Gauge Diameter (cm)	Dust Collected mg/gauge	Rate of Dust Deposition mg/m ² /day	TA Luft Limit mg/m ² /day (Annual Average)
1 (West)	21.07.2015	18.08.2015	8.5	17.8	112	350
2 (North)	21.07.2015	18.08.2015	8.5	31.8	200	350
3 (East)	21.07.2015	18.08.2015	8.5	37.6	237	350
4 (South)	21.07.2015	18.08.2015	8.5	24.0	151	350

Table 4.3: Dust Deposition Results – September 2015

Sample Locations	Date Deployed	Date Collected	Dust Gauge Diameter (cm)	Dust Collected mg/gauge	Rate of Dust Deposition mg/m ² /day	TA Luft Limit mg/m ² /day (Annual Average)
1 (West)	18.08.2015	22.09.2015	8.5	151.3	762	350
2 (North)	18.08.2015	22.09.2015	8.5	60.9	307	350
3 (East)	18.08.2015	22.09.2015	8.5	56.1	283	350
4 (South)	18.08.2015	22.09.2015	8.5	48.1	242	350

Table 4.4: Dust Deposition Results – Annual Average October 2014 – September 2015

Sample Locations	Commencement Date	Completion Date	Rate of Dust Deposition mg/m ² /day (Annual Average)	TA Luft Limit mg/m ² /day (Annual Average)
1 (West)	28.10.2014	22.09.2015	319	350
2 (North)	28.10.2014	22.09.2015	160	350
3 (East)	28.10.2014	22.09.2015	224	350
4 (South)	28.10.2014	22.09.2015	143	350

4.2.3 Particulate Monitoring Results

Date	Sample Location				Limit values of CAFE Directive 2008/50/EC	
	AD1 Recycling Facility		AD2 Rehab Facility		24 Hour Mean Limit	Annual Mean
	PM10 µg/m ³	PM2.5 µg/m ³	PM10 µg/m ³	PM2.5 µg/m ³	PM10 µg/m ³	PM2.5 µg/m ³
01/07/2015	30	7	18	6	50	-
02/07/2015	8	2	5	2	50	-
03/07/2015	23	5	10	4	50	-
04/07/2015	22	8	21	7	50	-
05/07/2015	12	5	11	5	50	-
06/07/2015	11	3	9	3	50	-
07/07/2015	7	3	7	3	50	-
08/07/2015	12	4	10	4	50	-
09/07/2015	11	5	10	5	50	-
Average	15	5	11	4	-	25
Min	7	2	5	2	-	-
Max.	30	8	21	7	-	-

4.3 Conclusion

The annual average readings (Table 4.4) for all monitoring locations are below the recommended "Technical Instructions on Air Quality Control – TA Luft" 2002 standard guideline of 350mg/m²/day over an annual period. The largest annual average reading of 319mg/m²/day on the westerly boundary location for dust deposition exists for the site since monitoring commenced in October 2014.

One elevated reading of 762mg/m²/day was recorded in September on the western boundary (D1) from the twelve results over the three monthly period. The September reading was over twice the recorded value of the other monitoring points in September. Due to the confined construction area, excavations undertaken adjacent to the monitoring station is the likely cause for the elevated reading. A water bowser operated to mitigate dust in dry weather conditions. All vehicles leaving the construction areas of the site pass through a wheel cleansing area prior to entering the local road network.

The maximum PM₁₀ concentration recorded at sensitive locations was 30µg/m³ which is below the limit value for PM₁₀ of 50µg/m³ over a 24hour period. The maximum PM_{2.5} concentration recorded at sensitive location was 8µg/m³. There is no 24 hour limit to compare PM_{2.5} monitoring results to. The maximum PM_{2.5} concentration over 24 hours of 8µg/m³ is below the recommended annual mean limit of 25µg/m³. This monitoring confirms site activities are causing no elevated particulate matter at offsite sensitive locations.

5 Surface Water

A scheme for monitoring suspended solids in surface waters adjacent to the site is placed for the construction phase of the project, as per the EIS requirements and in accordance with An Bord Pleanála Order-29S.EF2022. Refer to Figure 2.1 in Section 2 for the monitoring locations.

5.1 Monitoring Method

Monitoring was carried out by an independent laboratory technician and overseen by the project environmental consultant in accordance with 'Dublin Waste to Energy - Construction Phase Monitoring Scheme' September 2009.

5.2 Monitoring Results

Analysis of suspended solids in surface water at the four surface water monitoring locations was undertaken.

The suspended solids results for July to September 2015 are presented in Table 5.1.

Table 5.1: Surface Water Monitoring – Suspended Solids Results

Parameter	Units	Date	Time	High Tide	Low Tide	SW(01)	SW(02)s	SW(02)d	SW(03)s	SW(03)d	SW(04)
Location	-	-				Cooling Water Channel	Fairway West (surface)	Fairway West (deep)	Fairway East (surface)	Fairway East - Pler (deep)	Irishtown Nature Park
Grid Reference Easting	-	-	-	-	-	6°11'54.95W	6°12'17.0W	6°12'17.0W	6°11'64.0W	6°11'64.0W	6°12'02.01W
Grid Reference Northing						53°20'28.32N	53°20'59.6N	53°20'59.6N	53°20'60.6N	53°20'60.6N	53°20'08.35 N
Suspended Solids (July 2015)	mg/l	21/07/15	09:30-13:50	03:25 & 15:53	09:17 & 21:26	244	150	184	135	173	192
Suspended Solids (August 2015)	mg/l	24/08/15	09:45 -11.15	06:55 & 19:33	00.17 & 12.56	2	2	10	10	13	2
Suspended Solids (September 2015)	mg/l	22/09/15	09:35 – 10:50	06:23 & 18:53	12.16	58	56	140	134	84	149

5.3 Conclusion

In the 3rd Quarter 2015 period the suspended solids ranged from 2 – 244mg/l. The highest level of suspended solids was recorded at the Cooling Water Channel, SW(01) in July 2015 with a result of 244mg/l. Baseline monitoring from 2010 – May 2015 ranged from 1 - 508mg/l.

Enabling works for site setup to construct the cooling water pump station commenced at end of June 2015. Construction works of the coffer dam for the cooling water pump station commenced at the end of July 2015.

During the construction period no elevated suspended solid readings were recorded when compared against preconstruction baseline readings and previous months. The levels recorded in August were detected at very low levels compared to other months. Fluctuations in suspended solids occur due to the intertidal area, urbanised catchment being sampled and water traffic operating on the waterbody. Therefore variation is expected throughout all samples readings. Fluctuations in suspended solids are common with levels recorded up to 508mg/l over the preconstruction monitoring period. During the quarterly monitoring period no elevated suspended solid readings were recorded compared to previous readings.

Appendix A

Noise Data

Table 1.1: Construction Noise Monitoring Locations

Noise Monitoring Location	Description
N1 – Rehab Institute	Outside front gate of Rehab, Roslyn Park
N2 – Seafort Avenue	Footpath adjacent to No. 33 Seafort Avenue
N3 – Beach Avenue	Footpath adjacent to the dividing wall of No. 10 and No. 11 Beach Avenue
N4 – Leukos Road	In front of DCC recycling facility
N5 – Pigeon House Road	Footpath immediately in front of the Coastguard Cottages
N6 – Walkway (Irishtown Nature Reserve)	Walkway south of the site connecting Sean Moore Park and Irishtown Nature Reserve
N7 – Western Site Boundary	Midway on the western site boundary
N8 – Northern Site Boundary	Midway on the northern site boundary
N9 – Eastern Site Boundary	Midway on the eastern site boundary
N10 – Southern Site Boundary	Midway on the southern site boundary

Table 1.2 Continued: July Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	LAeq dB(A)	LAMax dB(A)	LA90 dB(A)	LA10 dB(A)	Principal Noise Sources	Weather Conditions
02nd July 2015	N7	Western	30	09.05	67.6	87.1	59.6	70.7	<ul style="list-style-type: none"> - Cranes operating - Digger excavating material, A40 trucks operating - Trucks arriving with concrete and material - Steel erection - Dumper trucks operating shifting material - Erecting Scaffolding - Digger stockpiling material - Rebar installation 	Calm, Partially Cloudy
02nd July 2015	N8	Northern	30	09.42	78.4	50.3	54.8			
02nd July 2015	N9	Eastern	30	11.08	82.6	70.8	65.2			
02nd July 2015	N10	Southern	30	11.42	93.3	56.1	70.9			
09th July 2015	N7	Western	30	09.40	69.1	85.4	57.3	73.7	<ul style="list-style-type: none"> - Digger excavating material - Digger stockpiling material - Rebar installation - Steel erection - Humming noise from Ringsend Wastewater Treatment Plant (WWTP) - Cranes operating - Shuttering for concrete 	Clear and calm
09th July 2015	N8	Northern	30	10.15	77.8	48.8	56.0			
09th July 2015	N9	Eastern	30	12.37	93.1	68.1	79.9			
09th July 2015	N10	Southern	30	13.11	65.9	54.8	67.8			
09th July 2015	N7	Western	30	21.11	49.4	63.3	48.1	50.6	<ul style="list-style-type: none"> - Steel fixing - Formwork installation 	Clear and calm
09th July 2015	N10	Southern	30	21.53	51.7	49.1	53.6			

Table 1.2 Continued: July Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{Amax} dB(A)	LA90 dB(A)	LA10 dB(A)	Principal Noise Sources	Weather Conditions
14 th July 2015	N7	Western	30	14.29	66.5	85.0	59.3	69.9	- Diggers excavating material, A40 trucks operating - Trucks arriving with concrete and material, Concrete pump - Piling rigs operating	Dry, slight breeze
14 th July 2015	N8	Northern	30	15.04	58.9	74.8	53.0	62.7	- Cranes operating - Dumper trucks operating shifting material - Road sweeper	
14 th July 2015	N9	Eastern	30	15.39	70.0	98.6	66.8	71.9	- Slipform scaffolding operating - Rebar installation	
14 th July 2015	N10	Southern	30	16.12	63.7	79.7	57.5	66.3	- Humming noise from WWTP	
14 th July 2015	N7	Western	30	20.52	53.2	63.5	50.8	54.6	- Culvert Shuttering works - Steel fixing	Calm, Cloudy
14 th July 2015	N10	Southern	30	21.31	51.8	60.8	48.3	53.8		
23 rd July 2015	N7	Western	30	12.01	65.8	83.3	58.4	69.8	- Steel Installation - Diggers excavating material - Dumper trucks operating	Sunny Clear, Slight Breeze
23 rd July 2015	N8	Northern	30	12.35	56.2	74.6	53.2	60.0	- Scaffolding erection/removal - Rebar installation - Digger stockpiling material	
23 rd July 2015	N9	Eastern	30	14.09	67.8	83.2	64.9	70.0	- Trucks arriving with concrete and material - Formwork installation - Crane operating	
23 rd July 2015	N10	Southern	30	11.24	62.9	81.6	57.9	64.4	- Roadsweeper - Humming noise from WWTP	

Table 1.2 Continued: July Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{AMax} dB(A)	LA90 dB(A)	LA10 dB(A)	Principal Noise Sources	Weather Conditions
30 th July 2015	N7	Western	30	08.44	71.8	95.5	61.7	75.0	- Steel Installation - Sheepiling - Diggers excavating material - Dumper trucks operating - Scaffolding erection/removal - Rebar installation - Trucks arriving with concrete and material - Formwork installation - Crane operating - Roadsweeper	Clear and calm
30 th July 2015	N8	Northern	30	09.18	54.5	74.7	51.8	56.4		
30 th July 2015	N9	Eastern	30	09.55	70.3	91.8	64.3	72.3		
30 th July 2015	N10	Southern	30	10.29	62.9	92.0	53.5	65.3		
30 th July 2015	N1	Rehab	30	12.39	65.1	89.3	52.2	67.4	- Consistent road traffic - No construction noise audible at any noise source - Background noise from Dublin Port, crane and container loading machinery - Car passing - No construction noise audible at the noise source	Sunny, Clear, Calm
30 th July 2015	N3	Beech Ave	30	13.31	69.8	83.4	54.6	73.4		
30 th July 2015	N5	Pigeon Hs	30	12.03	60.6	81.8	55.8	63.4		
30 th July 2015	N6	Nature Reserve	30	11.02	51.7	78.0	48.0	52.9	- Humming noise from WWTP - Hum from machinery	

Table 1.2 Continued: August Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{Amax} dB(A)	LA90 dB(A)	LA10 dB(A)	Principal Noise Sources	Weather Conditions
06 th August 2015	N7	Western	30	11.00	71.0	89.0	66.2	73.5	- Trucks arriving with concrete and material - Cranes operating	
06 th August 2015	N8	Northern	30	11.36	56.2	82.9	54.2	58.3	- Digger excavating material, A40 trucks operating - Steel erection	
06 th August 2015	N9	Eastern	30	12.16	70.6	93.3	65.9	72.8	- Dumper trucks operating shifting material - Erecting Scaffolding - Digger stockpiling material - Rebar installation	Clear, Slight Breeze
06 th August 2015	N10	Southern	30	12.50	64.6	79.1	57.6	68.3		
06 th August 2015	N7	Western	30	19.58	63.5	72.4	57.8	65.8	- Rebar installation - Formwork Installation	
06 th August 2015	N10	Southern	30	19.17	63.8	87.8	51.7	62.2		
07 th August 2015	N7	Western	30	00.39	60.2	69.3	45.4	47.1	- Steel Fixing - Formwork Installation	Dry, Calm, Cloudy
07 th August 2015	N10	Southern	30	01.15	57.1	68.2	50.2	53.0		

Table 1.2 Continued: August Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{AMax} dB(A)	LA90 dB(A)	L _{A10} dB(A)	Principal Noise Sources	Weather Conditions
13 th August 2015	N7	Western	30	11.45	71.1	94.4	60.6	72.6	- Digger excavating material - Digger stockpiling material - Rebar installation - Steel erection	
13 th August 2015	N8	Northern	30	12.28	63.2	86.1	53.0	63.0	- Humming noise from Ringsend Wastewater Treatment Plant (WWTP) - Cranes operating - Shuttering for concrete	Clear and calm
13 th August 2015	N9	Eastern	30	13.01	67.7	97.5	62.2	67.6		
13 th August 2015	N10	Southern	30	13.38	65.0	84.1	62.2	67.4		
13 th August 2015	N7	Western	30	19.40	60.8	73.1	57.8	63.9	- Steel fixing - Formwork installation	
13 th August 2015	N10	Southern	30	20.27	62.1	76.1	55.3	65.3		Cloudy and Calm
14 th August 2015	N7	Western	30	00.10	53.3	63.1	45.3	49.3	- Steel Fixing - Cladding	Cloudy and Calm
14 th August 2015	N10	Southern	30	00.53	45.3	49.2	42.3	44.5		

Table 1.2 Continued: August Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A90} dB(A)	L _{A10} dB(A)	Principal Noise Sources	Weather Conditions
18 th August 2015	N7	Western	30	14.51	64.9	82.6	62.0	66.7	- Diggers excavating material, A40 trucks operating - Trucks arriving with concrete and material, Concrete pump	
18 th August 2015	N8	Northern	30	16.40	63.4	80.9	55.5	64.4	- Piling rigs operating - Cranes operating - Dumper trucks operating shifting material - Road sweeper	Dry, slight breeze
18 th August 2015	N9	Eastern	30	16.05	73.6	90.3	70.3	75.9	- Slipform scaffolding operating - Rebar installation - Humming noise from WWTP	
18 th August 2015	N10	Southern	30	15.31	60.4	82.3	54.8	63.8		
20 th August 2015	N7	Western	30	20.21	55.3	63.5	46.3	49.1	- Shuttering works - Steel fixing - Cladding installation	
20 th August 2015	N10	Southern	30	21.15	59.8	69.1	47.8	50.3		Calm, Cloudy
20 th August 2015	N7	Western	30	23.30	57.8	62.8	47.1	49.9		
21 st August 2015	N10	Southern	30	00.10	53.8	63.5	46.1	50.2		

Table 1.2 Continued: August Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{Amax} dB(A)	LA90 dB(A)	L _{A10} dB(A)	Principal Noise Sources	Weather Conditions
27 th August 2015	N7	Western	30	10.00	63.4	82.5	59.8	65.7	- Steel installation - Digger excavating material, A40 trucks operating - Trucks arriving with concrete and material - Cranes operating	Cloudy, slight breeze
27 th August 2015	N8	Northern	30	10.35	56.5	75.0	52.4	58.6	- Trucks arriving with concrete - Erecting Scaffolding - Digger stockpiling material - Rebar installation - Road sweeper operating - Humming noise form WWTP	
27 th August 2015	N9	Eastern	30	11.29	67.9	78.7	65.2	70.1		
27 th August 2015	N10	Southern	30	12.14	64.1	82.2	56.7	66.5		
27 th August 2015	N7	Western	30	20.32	63.2	79.2	57.8	63.6	- Concrete truck arriving - Pouring wall - Steel and cladding erection	Cloudy slight breeze
27 th August 2015	N10	Southern	30	19.34	61.1	70.8	60.1	62.4		
27 th August 2015	N7	Western	30	23.52	49.3	73.0	46.6	51.2	- Pouring wall - Steel and cladding erection - Hum from wastewater treatment plant	
28 th August 2015	N10	Southern	30	00.38	45.7	70.2	43.8	46.4		

Table 1.2 Continued: August Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aq} dB(A)	L _{Amax} dB(A)	L _{A90} dB(A)	L _{A10} dB(A)	Principal Noise Sources	Weather Conditions
28 th August 2015	N2	Seaforth Ave	30	10.31	65.1	71.2	49.4	68.9	- Consistent road traffic - No construction noise audible at any noise source	
28 th August 2015	N3	Beech Ave	30	11.07	64.7	76.1	52.0	68.6		
28 th August 2015	N5	Pigeon Hs	30	09.31	62.7	95.7	57.4	65.5	- Background noise from Dublin Port, crane and container loading machinery - Car passing - No construction noise audible at the noise source	Sunny, slight breeze
28 th August 2015	N6	Nature Reserve	30	08.30	54.5	72.3	51.8	57.3	- Humming noise from WWTP - Hum from machinery	

Table 1.2 Continued: September Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{Amax} dB(A)	LA90 dB(A)	L _{A10} dB(A)	Principal Noise Sources	Weather Conditions
01 st September 2015	N7	Western	30	09.41	66.1	91.7	59.0	68.8	- Trucks arriving with concrete and material - Cranes operating - Digger excavating material, A40 trucks operating - Steel erection	
01 st September 2015	N8	Northern	30	12.00	60.7	80.0	54.6	63.2	- Cladding installation - Erecting scaffolding - Digger stockpiling material - Rebar installation and concrete pours	Dry, Cloudy, slight breeze
01 st September 2015	N9	Eastern	30	12.40	70.6	90.8	72.1	65.8		
01 st September 2015	N10	Southern	30	11.10	65.0	90.3	56.7	68.0		
01 st September 2015	N7	Western	30	20.40	52.4	76.2	49.6	53.5	- Rebar installation - Formwork installation - Steel Erection	
01 st September 2015	N10	Southern	30	19.55	54.1	78.1	49.9	55.4	- Hum from Ringsend Wastewater Treatment Plant	Dry, Calm, Cloudy
02 nd September 2015	N7	Western	30	00.15	52.9	72.1	50.8	53.7		
02 nd September 2015	N10	Southern	30	00.55	53.3	87.7	48.3	51.7		

Table 1.2 Continued: September Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L_{Aeq} dB(A)	L_{Amax} dB(A)	L_{A90} dB(A)	L_{A10} dB(A)	Principal Noise Sources	Weather Conditions
08 th September 2015	N7	Western	30	09.32	65.7	88.6	59.2	62.2	- Cranes lifting materials - Trucks arriving with concrete and material - Digger excavating material, A40 trucks operating	
08 th September 2015	N8	Northern	30	10.09	54.3	71.9	54.0	56.3	- Steel erection - concrete pouring with pumps - Cladding installation - Erecting scaffolding - Rebar installation and concrete pours	Dry, sunny, and slight breeze
08 th September 2015	N9	Eastern	30	10.46	71.7	86.6	69.8	72.1		
08 th September 2015	N10	Southern	30	11.23	63.5	92.5	53.0	59.5		
08 th September 2015	N1	Rehab	30	14.31	73.6	90.5	59.3	78.9	- Consistent road traffic - Pedestrians walking close by - No construction noise audible at any noise source	Dry, sunny, and slight breeze
08 th September 2015	N2	Seafort Ave	30	13.39	58.0	83.3	49.9	52.4		
08 th September 2015	N3	Beech Ave	30	12.57	55.2	75.4	47.0	57.5		
08 th September 2015	N4	Leukos Rd	30	15.10	63.7	86.5	60.7	66.7	- Consistent road traffic passing or in background - Noise from Dublin Port prominent - No construction noise audible at any noise source	Dry, sunny, and slight breeze
08 th September 2015	N5	Pigeon Hs	30	15.44	58.7	79.0	53.0	57.0		
08 th September 2015	N6	Nature Reserve	30	12.00	49.0	77.9	45.5	49.1	- General construction noise audible, reversing beacons, diggers - Humming noise from WWTP - Birds singing	Dry, sunny, and slight breeze

Table 1.2 Continued: September Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{AMax} dB(A)	LA90 dB(A)	L _{A10} dB(A)	Principal Noise Sources	Weather Conditions
10 th September 2015	N7	Western	30	22.25	50.4	67.9	49.8	52.3	- Cladding Installation - Rebar installation - Formwork Installation - Steel Erection - Hume from Ringsend Wastewater Treatment Plant	Dry, Calm, Clear
10 th September 2015	N10	Southern	30	21.42	54.6	75.6	52.8	53.4		
11 th September 2015	N7	Western	30	03.02	53.2	71.6	50.0	52.4		
11 th September 2015	N10	Southern	30	03.40	55.5	69.8	50.1	53.3		
17 th September 2015	N7	Western	30	12.12	63.8	86.1	63.1	67.0	- Diggers excavating material, A40 trucks operating - Trucks arriving with concrete and material, Concrete pump - Cranes lifting materials - Dumper trucks operating shifting material - Road sweeper - Scaffolding operating - Steel erection - Erecting Scaffolding - Rebar installation and formwork - Humming noise from WWTP	Dry, Clear, Calm
17 th September 2015	N8	Northern	30	12.40	62.0	80.7	56.3	61.1		
17 th September 2015	N9	Eastern	30	13.24	68.0	83.5	68.2	70.6		

Table 1.2 Continued: September Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L_{Aeq} dB(A)	L_{max} dB(A)	L_{A90} dB(A)	L_{A95} dB(A)	Principal Noise Sources	Weather Conditions
17 th September 2015	N10	Southern	30	14.05	63.9	79.6	64.9	67.3	As Above.	
17 th September 2015	N7	Western	30	22.20	55.2	74.4	55.1	57.0	- Steel Erection - Rebar and formwork installation - Cladding installation	Calm, Cloudy
17 th September 2015	N10	Southern	30	21.40	52.9	82.0	49.6	50.3		
18 th September 2015	N7	Western	30	00.15	54.6	74.0	53.0	55.4		
18 th September 2015	N10	Southern	30	00.50	53.2	84.7	50.2	50.8		

Table 1.2 Continued: September Noise Monitoring Results

Date	Location No.	Boundary Location	Duration (min)	Start Time	L _{Aeq} dB(A)	L _{AMax} dB(A)	LA90 dB(A)	LA10 dB(A)	Principal Noise Sources	Weather Conditions
24 th September 2015	N7	Western	30	09.10	66.2	85.0	62.1	68.3	- Digger excavating material, A40 trucks operating - Steel installation - Trucks arriving with concrete and material	
24 th September 2015	N8	Northern	30	09.45	59.8	79.8	56.7	61.3	- Cranes lifting materials - Digger stockpiling material - Rebar installation	
24 th September 2015	N9	Eastern	30	10.20	68.7	84.4	65.2	69.7	- Road sweeper operating - Humming noise from WWTP	Clear, slight breeze
24 th September 2015	N10	Southern	30	10.55	60.3	79.6	56.2	63.3		
29 th September 2015	N7	Western	30	22.56	50.8	73.0	48.3	51.2	- Concrete pouring wall - Steel and cladding erection	
29 th September 2015	N10	Southern	30	22.20	51.7	62.6	50.1	53.0		
30 th September 2015	N7	Western	30	01.12	54.4	79.4	51.4	54.1	- Steel and cladding erection - Hume from wastewater treatment plant	Clear, slight breeze
30 th September 2015	N10	Southern	30	01.48	50.7	65.4	51.6	53.5		

Table 1.3: July noise level calculation Monitoring Results "(BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1:Noise (Section F.2.2))"

Date	Time	Site Boundary	Noise Level dB(A) (L _{aeq} 30 min)	Distance between boundary monitoring location and noise source location (m)	Distance between receptor location and noise source location (m)						Screening adjustment dB(A)	Calculated Noise level at closest Sensitive receptors (Noise Level dB(A) (L _{aeq} 30 min))								
					Rehab Institute	Seafort	Beach	Leukos	Irishtown Nature Park	Pigeon House Rd		Rehab Institute	Seafort	Beach	Leukos	Irishtown Nature Park	Pigeon House Rd			
02/07/2015	09:05	Western	67.6	25					900	1127	865	10				31				32
02/07/2015	11:42	Southern	70.7	25	870	941	1127	900	191		865	10	35	34	33	31				31
08/07/2015	09:40	Western	69.1	20				900	191		865	10				31				31
09/07/2015	13:11	Southern	65.9	30	870	941	1127	900	191		865	10	32	31	29					18
09/07/2015	21:11	Western	49.4	40				900	191		865	10				17				
09/07/2015	21:53	Southern	51.7	40	870	941	1127	900	191		865	10	20	19	18					26
14/07/2015	14:29	Western	66.5	15				900	191		865	10				26				
14/07/2015	16:12	Southern	63.7	30	870	941	1127	900	191		865	10	29	29	27					43
14/07/2015	20:52	Western	53.2	50				900	191		865	10				23				23
14/07/2015	21:32	Southern	51.8	50	870	941	1127	900	191		865	10	22	21	20					35
23/07/2015	12:01	Western	65.8	30				900	191		865	10				31				32
23/07/2015	11:24	Southern	62.9	40	870	941	1127	900	191		865	10	31	30	29					44
30/07/2015	08:44	Western	71.8	20				900	191		865	10				34				34
30/07/2015	10:29	Southern	62.9	30	870	941	1127	900	191		865	10	29	28	26					42

Table 1.3: Continued: August noise level Calculation Monitoring Results "(BS 5228-1:2009:-A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (Section F.2.2))"

Date	Time	Site Boundary	Noise Level dB(A) (Laeq 30 min)	Distance between monitoring location and noise source location (m)	Distance between receptor location and noise source location (m)							Screening adjustment dB(A)	Calculated Noise level at closest Sensitive receptors (Noise Level dB(A) (Laeq 30 min))				
					Rehab Institute	Seafort	Beach	Leukos	Irishtown Nature Park	Pigeon House Rd		Rehab Institute	Seafort	Beach	Leukos	Irishtown Nature Park	Pigeon House Rd
06/08/2015	11:00	Western	71.0	15	870	941	1127	900	191	865	10	27	26	25	30	40	31
06/08/2015	12:50	Southern	64.6	20	870	941	1127	900	191	865	10	31	33	32	31	47	32
06/08/2015	19:58	Western	63.5	40	870	941	1127	900	191	865	10	34	33	32	28	47	29
06/08/2015	19:17	Southern	63.8	50	870	941	1127	900	191	865	10	27	27	25	43	40	43
07/08/2015	00:39	Western	60.2	40	870	941	1127	900	191	865	10	37	36	35	29	50	29
07/08/2015	01:15	Southern	57.1	60	870	941	1127	900	191	865	10	32	32	30	45	45	24
13/08/2015	11:45	Western	71.1	60	870	941	1127	900	191	865	10	18	18	16	30	32	31
13/08/2015	13:38	Southern	65.0	60	870	941	1127	900	191	865	10	26	25	24	23	39	24
13/08/2015	19:40	Western	60.8	40	870	941	1127	900	191	865	10	30	29	28	30	43	26
13/08/2015	20:27	Southern	62.1	50	870	941	1127	900	191	865	10	24	23	22	26	37	29
14/08/2015	00:10	Western	53.3	50	870	941	1127	900	191	865	10	34	34	32	29	47	36
14/08/2015	00:53	Southern	45.3	70	870	941	1127	900	191	865	10	33	32	31	36	46	36
18/08/2015	14:51	Western	64.9	30	870	941	1127	900	191	865	10	17	17	15	19	31	20
18/08/2015	15:31	Southern	60.4	30	870	941	1127	900	191	865	10	17	17	15	19	31	20
20/08/2015	20:21	Western	55.3	40	870	941	1127	900	191	865	10	17	17	15	19	31	20
20/08/2015	21:15	Southern	59.8	50	870	941	1127	900	191	865	10	17	17	15	19	31	20
20/08/2015	23:30	Western	57.8	40	870	941	1127	900	191	865	10	17	17	15	19	31	20
21/08/2015	00:10	Southern	53.8	50	870	941	1127	900	191	865	10	17	17	15	19	31	20
27/08/2015	10:00	Western	63.4	30	870	941	1127	900	191	865	10	17	17	15	19	31	20
27/08/2015	12:14	Southern	64.1	50	870	941	1127	900	191	865	10	17	17	15	19	31	20
27/08/2015	20:32	Western	63.2	70	870	941	1127	900	191	865	10	17	17	15	19	31	20
27/08/2015	19:34	Southern	61.1	60	870	941	1127	900	191	865	10	17	17	15	19	31	20
27/08/2015	23:52	Western	49.3	50	870	941	1127	900	191	865	10	17	17	15	19	31	20
28/08/2015	00:38	Southern	45.7	60	870	941	1127	900	191	865	10	17	17	15	19	31	20

Table 1.3: Continued: September noise Level Calculation Monitoring Results " (BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1:Noise (Section F.2.2))"

Date	Time	Site Boundary	Noise Level dB(A) (L _{aeq} 30 min)	Distance between monitoring location and noise source location (m)	Distance between receptor location and noise source location (m)					Screening adjustment dB(A)	Calculated Noise level at closest Sensitive receptors (Noise Level dB(A) (L _{aeq} 30 min))									
					Rehab Institute	Seafort	Beach	Leukos	Irishtown Nature Park		Pigeon House Rd	Rehab Institute	Seafort	Beach	Leukos	Irishtown Nature Park	Pigeon House Rd			
01/09/2015	09:41	Western	66.1	30					900	191	865	10					32	44		
01/09/2015	11:10	Southern	65.0	30		870	941	1127	900		865	10					18			
01/09/2015	20:40	Western	52.4	30					900		865	10								
01/09/2015	19:55	Southern	54.1	40		870	941	1127	900		865	10					19			
02/09/2015	00:15	Western	52.9	30					900		865	10								
02/09/2015	00:55	Southern	53.3	40		870	941	1127	900		865	10					32			
08/09/2015	09:32	Western	65.7	30					900		865	10					19			
08/09/2015	11:23	Southern	63.5	30		870	941	1127	900		865	10					32			
10/09/2015	22:25	Western	50.4	40		870	941	1127	900		865	10					19			
10/09/2015	21:42	Southern	54.6	30					900		865	10								
11/09/2015	03:02	Western	53.2	30		870	941	1127	900		865	10					19			
11/09/2015	03:40	Southern	55.5	40					900		865	10								
17/09/2015	12:12	Western	63.8	50		870	941	1127	900		865	10					34			
17/09/2015	14:05	Southern	63.9	40					900		865	10								
17/09/2015	22:20	Western	55.2	40		870	941	1127	900		865	10					24			
17/09/2015	21:40	Southern	52.9	50					900		865	10								
18/09/2015	00:15	Western	54.6	40		870	941	1127	900		865	10					23			
18/09/2015	00:50	Southern	53.2	50					900		865	10								
24/09/2015	09:10	Western	66.2	20		870	941	1127	900		865	10					28			
24/09/2015	10:55	Southern	60.3	50					900		865	10								
29/09/2015	22:56	Western	50.8	80		870	941	1127	900		865	10					25			
29/09/2015	22:20	Southern	51.7	40					900		865	10								
30/09/2015	01:12	Western	54.4	80		870	941	1127	900		865	10					28			
30/09/2015	01:48	Southern	50.7	40					900		865	10								

