DKM
ECONOMIC
CONSULTANTS

Galway Harbour Extension
John Lawlor Brief of Evidence

January 2015

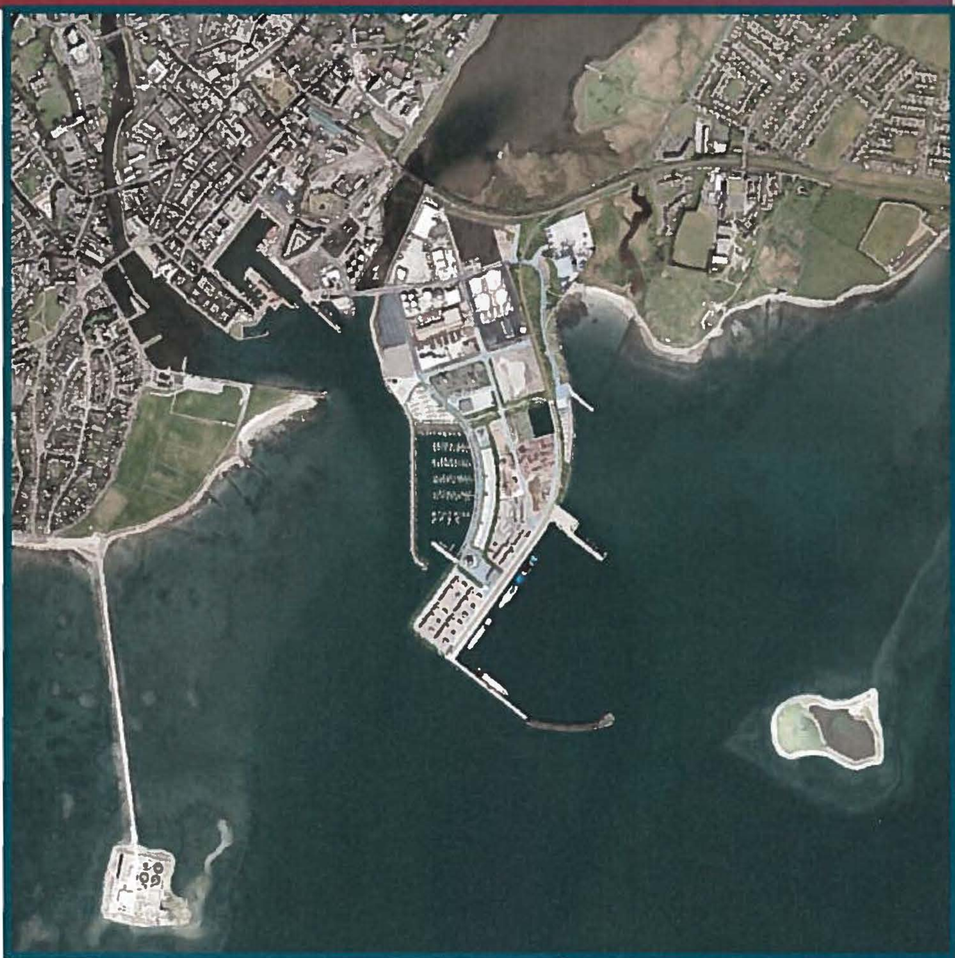

Table of Contents

1. INTRODUCTION

1.1 JOHN LAWLOR QUALIFICATIONS & EXPERIENCE

1.1.1 My name is John Lawlor. I am a director of DKM Economic Consultants (DKM), with offices at Office 6, Grand Canal Wharf, South Dock Road, Ringsend, Dublin 4.

1.1.2 I completed a Masters in Economic Science degree in UCD in 1993. I joined the Economic & Social Research Institute (ESRI) in 1993, and worked in the Environmental Policy Research Centre, where I was principally engaged in research on energy, transport and environmental services. Previous to this I qualified as a chartered accountant in the mid-1980s and worked for several years as an accountant in Ireland and overseas.

1.1.3 In 1997 I joined DKM, where I have worked on a broad range of sectors, notably project evaluation/Cost Benefit Analysis, energy, transport, the environment, the health sector, and national and regional development.

1.2 EIS REFERENCE

1.2.1 This Brief of Evidence relates to matters that are dealt with in more detail in:

(a) Report entitled *Galway Harbour Extension Business Case & Cost Benefit Analysis*, dated 13th December 2013, which is contained in *Vol. 2C: Appendices to EIS*, Appendix 2.2.1, as well as being summarised in Chapter 2 of *Vol. 2B: Main EIS.* This report involved an independent review of the business case produced by Raymond Burke Consulting (RBC), as well as a Cost Benefit Analysis (CBA) of the proposed project, in accordance with the Department of Public Expenditure & Reform's *Public Spending Code.*

(b) Report entitled *Galway Harbour Extension Alternative Solutions*, dated 13th December 2013, which is contained in *Vol. 2C: Appendices to EIS*, Appendix 3.3, as well as being summarised in Chapter 3 of *Vol. 2B: Main EIS.* This was an addendum to the report referred to in (a) above.

(c) Report entitled *Galway Harbour Extension Consideration of Development in Context of Article 6(4) of the Habitats Directive as Transposed into Irish Law*, which has been submitted as part of the response to the Request for Further information from An Bord Pleanála (ABP), as part of the planning process for the proposed project.

1.2.2 I am the main author of (a) above, which was completed with the assistance of a number of my colleagues in DKM (all aspects having been reviewed by me), and the sole author of (b) above. I was assisted in producing (a) above by information and insights from Raymond Burke of RBC, and in producing (b) above by information and insights from Gus McCarthy of McCarthy Keville O' Sullivan (MKOS). Report (c) above was completed by myself with Raymond Burke of RBC and with Gus McCarthy of MKOS.

1.2.3 As reflects the content of (a) above, Raymond Burke of RBC in his Brief of Evidence has dealt primarily with the Business Case and trade projections for Galway Port, while in this document I concentrate mainly on the wider socio-economic aspects of the proposed project. I also make reference to relevant points raised in the submissions received with respect to the project, and conclude with a summary of the need for the project.

1.3 SUMMARY OF THE DEVELOPMENT

1.3.1 Galway Harbour Company (GHC) is seeking planning permission from ABP for a major extension of the port, referred to as Galway Harbour Extension or GHE. Details of the project and the limitations of the existing facilities have been discussed in the Briefs already presented, and I do not repeat them here.

1.3.2 The proposed project, by removing operational limitations on the port, seeks to facilitate a significant increase in the volume and types of business handled by the port, and to enable it to fulfil its role as a major infrastructure asset for Galway and the West region. The development of significant tourism and leisure activities at Galway will also be enabled by the project.

1.3.3 The Natura Impact Statement (NIS) prepared for the proposed project has concluded that adverse impact on Natura 2000 sites cannot be ruled out beyond reasonable scientific doubt. For this reason among others, the application for the proposed project must assess, among other things, other apparently potential solutions with a view to establishing whether there is an alternative that would involve less damage to a Natura 2000 site.

1.3.4 A Business Case and a CBA of the proposed project has been carried out, which assists in determining whether the proposed development is sustainable in the medium to long-term.

1.3.5 The Business Case for the project was prepared by RBC. GHC requested DKM to undertake both a review of this Business Case, and a CBA of the project.

1.3.6 The CBA takes the results of the Business Case and effectively converts commercial or "internal" costs and benefits to cost and benefits to the wider economy, as well as including "external" costs and benefits - those that are excluded from the business case because they do not directly affect GHC, such as additional economic activity by the port's customers and in the tourism sector, and adjustment to market construction costs to reflect high unemployment in the construction sector.

1.3.7 Put simply, the Business Case evaluates the project from the point of view of GHC, while the CBA evaluates it from the point of view of society as a whole.

1.3.8 This Brief summarises the findings of these reports.

2. OPTIONS & ALTERNATIVES

2.1 OPTIONS

Our analysis considered the following options:

(i) Demand management.

(ii) Do Minimum/Without Development – continue with the current configuration in the existing port.

(iii) Do Something – other/phased investment within the existing harbour space.

(iv) Do Project/With Development, as per the Business Case.

(v) Do Elsewhere – i.e. to the degree possible cater for the expected additional port traffic elsewhere, taking into account additional road transport and landside investment, and environmental impacts, where appropriate. Options under this heading comprised:
   - other locations in Galway Bay (Tawin, Mutton Island, Ros a' Mhíl),
   - other ports of national significance, and
   - other transport modes and other ports aboard.

2.2 ALTERNATIVES

2.2.1 With respect to the assessment of whether viable alternatives exist, the methodology must consider in the first place the objectives of the proposed project, that an alternative would have to meet. This can then be expressed as specific criteria, such as water depth, quay length, landside facilities, distance from customers and commercial viability, environmental impacts, etc. National policy, such as regional ports catering primarily for regional cargo, must also be considered.

2.2.2 For the proposed project, the key question is, could the projected additional business be handled at different ports, and if so, at what cost, including the implications for the environment, for Galway and the surrounding region, and for national policy?

2.2.3 As a starting point, the analysis demonstrated that demand management, other investment within the existing harbour space, other locations within Galway Bay, other transport modes and other ports abroad were non-feasible, for a variety of reasons ranging from not addressing the project objectives, unsuitability for the bulk cargo in question, lack of capacity, landside facilities or land transport connections, and environmental impacts.

2.2.4 This left the Tier 1 and Tier 2 ports of national significance. The Tier 2 ports were eliminated due to distance and lack of appropriate facilities, leaving the Tier 1 ports, i.e. Shannon-Foynes (specifically Foynes), Dublin and Cork (specifically Ringaskiddy). Dublin and Ringaskiddy are problematic because of distance, given the nature of the cargo (high volume:value ratio). Foynes comes closest to meeting the requirements, but it is still considerably more distant for GHC's customers (Figure 2.2 on page 17 of the *Consideration of Development* document referred to in Paragraph 1.2.1 above demonstrates the geographic location of these customers), and there remain issues in terms of implications for NATURA 2000 sites at all three Tier One ports.

2.2.5 With regard to specific traffic volumes at Galway, our analysis of other options can be summarised as follows (Raymond Burke's Brief of Evidence provides further detail):

Bitumen

2.2.6 Cold Chon proposes to develop an international transhipment operation at Galway, if the project proceeds. The firm has a significant storage facility at the port and a processing operation in Oranmore, and holds planning permission to increase storage further. Foynes does undertake transhipment activities, but for it to fulfil the function being proposed, Cold Chon would have to replicate its bitumen terminal and processing and storage facilities at Foynes, at considerable extra cost, and they have indicated that this does not fit with their business plans.

Petroleum

2.2.7 Petroleum is imported and transhipped into and between numerous ports in Ireland. Indeed much of the fuel currently imported into Galway comes via other Irish ports.

2.2.8 On the face of it, there appear to be a number of other options for catering for this cargo, therefore. However, additional costs would arise in terms of the longer land transport of this fuel into Galway and its hinterland, which would be at least partly passed on to customers. We note also that Galway is seen as having a strategic role in fuel storage for Ireland, and it holds some of the National Oil Reserve Agency's (NORA) reserves.

Limestone

2.2.9 The location of McGrath's Limestone Works in Cong, Co. Mayo, and the nature and relative cost of the product, makes Galway the natural port to cater for this cargo. Given the product's weight-to-value ratio, there is a question over the commercial feasibility of catering for volumes through a more distant port. McGrath's themselves have indicated that export through other ports would not be commercially economic. Thus there appears not to be a feasible other option with respect to this cargo. A further issue with other locations is the environmental impact of using more distant ports, as discussed further below.

Cruise Business & Marina Business

2.2.10 The projected additional cruise business is driven by the particular attractions of Galway city and its hinterland from a tourism viewpoint. It is difficult therefore to see how there could be a feasible alternative to cater for the additional business being envisaged under this heading. It has been suggested that Ros a' Mhíl harbour could cater for this business, given its proximity to Connemara. However, this is primarily a fisheries harbour, it lacks the recognition factor and the attractions of Galway city, and the ability to walk into the city centre from the disembarkation point, which is a major advantage for cruise visitors. It is remote compared to Galway, road links are poor, and it lacks the range of services cruise ships seek in ports, as well as having safety issues.

2.2.11 It may be feasible to build another sizeable marina on the west coast of Ireland, including elsewhere in Galway Bay, but on the face of it Galway is an ideal location, given its relative position on the west coast, the location of the Inner Dock, the facilities already in place and the attractions of Galway city.

Other Business

2.2.12 Much of the other business proposed is not dependent on the proposed project proceeding, and thus is not relevant here. Most of the other business is local to Galway or its immediate hinterland, so Galway is the natural port to cater for it, and to send it elsewhere would contravene the proximity principle and the role the National Ports Policy sees for Galway.

2.2.13 Servicing of gas and oil exploration rigs, as well as offshore renewables, could be catered for at other ports in Ireland, although Galway is very well placed vis à vis the current and prospective exploration sectors off the west coast, and there is also a danger that the rig servicing business could be lost to Ireland.

2.2.14 In summary, we concluded that for a range of the existing and envisaged additional business for Galway under the project, there is no viable alternative port, and as discussed in the two reports (b) and (c) referred to in paragraph 1.2.1, none of the other ports were considered feasible.

2.3 NATIONAL POLICY - PROPER PLANNING

2.3.1 National policy is relevant on many levels with respect to Galway's expansion plans:

- The recently published *National Ports Policy 2013*[1] (NPP) indicates that Galway is a port of regional (as opposed to national) significance, which "function(s) as important facilitators of trade for their regional and local hinterland", notably for petroleum products.
- The Irish Marine Development Office (IMDO) also identifies Galway as an important port for servicing the offshore energy sector.
- Galway has a strategic role in fuel storage for Ireland under the NPP, and it holds some of the NORA reserves.
- The *National Spatial Strategy*[2] sees Galway as a national Gateway (as is Limerick/Shannon), and the only Gateway in the West NUTS III region. Gateways are seen as drivers of economic activity, and centres of key economic infrastructure, such as ports.
- Galway (unlike Limerick/Shannon) is also situated in the BMW NUTS II region, which includes the least economically developed parts of the country, and is a particular focus for Government efforts at economic development.
- Development policy is articulated for example through IDA Ireland's *Horizon 2020 Strategy*[3], which specifically has a target of 50% jobs generation outside Dublin and Cork and to support regional economic development:

  > "IDA has identified key areas of infrastructure improvement that are essential if we are to be successful in winning new investments into the regions outside Dublin and Cork. Transport and energy are vital."

The Galway Harbour Extension, which is being designed as a regional port with adequate capacity to service the needs of Galway and its hinterland, is thus a key element of transport infrastructure, in accordance with national policy.

2.4 ENVIRONMENTAL BENEFITS OF GHE IN RELATION TO THE TRAFFIC IMPACTS & OTHER ASSOCIATED IMPACTS

2.4.1 The project, if it proceeds as proposed, is likely to generate a number of positive environmental impacts, notably:

- Several Irish and EU environmental policies and obligations relate to reducing (specifically land-based) transport and the related pollution, and to encouraging modal shift in favour of sea transport[4].
- Transport is responsible for around a quarter of all EU Greenhouse Gas emissions, second only to the energy sector. Road transport alone contributes about one-fifth of the EU's total emissions of carbon dioxide (CO_2), the main greenhouse gas.

---

[1] http://www.transport.ie/uploads/documents/news/National%20Ports%20Policy%202013%20-%20Web.pdf
[2] http://nss.ie/pdfs/Completea.pdf
[3] http://www.idaireland.com/news-media/publications/library-publications/ida-ireland-publications/IDA-Ireland-Strategy-2020.pdf
[4] As articulated for instance in the EU *Short Sea Shipping* policy http://ec.europa.eu/transport/modes/maritime/short_sea_shipping/index_en.htm

- This is relevant because GHE is projected to cater for large volumes of bulk cargo (1.932 million tonnes per annum compared to 581,000 tonnes per annum in 2013), arising in its hinterland, which in the absence of the proposed project would have to be diverted by road to other more distant ports (assuming the business remained commercially viable, which for some would not be the case).
- There seems little doubt that, given Ireland's and the EU's long term strategy in the transport sector, the pressure will continue to intensify for further and more significant reductions in greenhouse gas emissions across all areas of economic activity, but notably, given its environmental footprint, in road transport.
- If one analyses the GHE as opposed to other possible alternatives, including Dublin, Cork and Foynes, significant benefits in terms of reduced emissions arise from the development of GHE as compared to all other such possible alternatives (while keeping in mind that in many cases transfer of the business to Foynes or elsewhere is not commercially viable, as discussed above).
- We estimate that an additional 353 million tonne km per annum would be generated on Irish roads if the identified additional cargo had to be transported by road to/from Foynes (the nearest major port), in the Base Case, when the tonnages stabilise. Under certain scenarios, this could exceed 680 million tonne km per annum.
- This would have a significant energy usage and environmental impact. We estimate an additional 4.3 million litres of diesel per annum would be required (Base Case).
- This equates to significant additional tonnages of Carbon dioxide, Carbon monoxide, Hydrocarbons, Nitrogen oxides, Sulphur oxides, and Particulates, emitted to air per annum, all of which are subject to national and EU targets, and have implications for global warming and human health.
- We can place an economic value on these emissions, based on values provided by the EU Commission (for CO_2) and the Sustainable Energy Authority of Ireland (SEAI). Net of the Irish carbon tax, environmental damage from additional emissions to air comes to €315,000 per annum. Over the period to 2035 (the period over which the Business Case and CBA were analysed) the present value of the pollution (net of carbon tax) would be €1.95 million. Note that this value differs from that presented in Documents (b) and (c) referred to in paragraph 1.2.1 above, as the latter contained an error in their calculations. Section 4.1 including Table 4.1 of Document (b) has been amended as per the Appendix to this Brief. Likewise, Section 2.3.4 including Tables 2.3 and 2.4 of Document (c) has been amended as per the Appendix to this Brief. The values in this Brief are based on the corrected figures.
- To this would have to be added impacts on road damage, noise and congestion, as well as greater risk of accidents, notwithstanding planned improvements to the N69 to improve access to Foynes. While the risk of accident is low, the consequences are high, and over the long term one could expect accidents to be avoided as a result of the proposed project.

- Another environmental benefit of the proposed development is that, with the movement of petroleum-related activities out of the Inner Dock, the Seveso-restricted area of the port will be moved away from the city centre.
- Apart from health and safety benefits and reductions in risk, this is likely to have a positive impact on future planning applications in the city centre by removing obstacles to redevelopment.

2.4.2 National and EU policy is also aimed at energy efficiency, reducing Ireland's carbon footprint and encouraging sea in preference to road transport. All these would argue against the leakage of traffic from Galway harbour to other more distant ports around the country.

2.4.3 In this context, it is clear that national environmental and transport policy would favour the development of Galway port as opposed to other options.

2.5 SUMMARY

2.5.1 In summary, there are a number of categories of business at the extended Galway harbour that would be problematic from the point of view of identifying other ports that could handle the business, from either a commercial or environmental perspective. In addition:

- Galway Port itself would suffer from the transfer of business to other ports, and there might be question marks over its longer term viability.
- There would be negative implications for economic activity in the region, as costs would be higher and enterprises might relocate to be closer to the other ports, while some businesses are not transferable and could be lost to Ireland altogether. Some elements of additional business would not be commercially viable. This would conflict with national and regional development policy.
- Our analysis indicates that only the three Tier One national ports can be considered potential other ports for the business in question, but they are not feasible alternatives because of increased distance (the nearest being Foynes – 130km from Galway and considerably further from some GHC customers), and there remain issues in terms of implications for NATURA 2000 sites at all three Tier One ports.
- National and EU policy with respect to transport and the environment clearly favour developing the business at Galway as opposed to other more distant ports.

3. BUSINESS CASE REVIEW

3.1 DEFINITION

3.1.1 The Business Case/financial appraisal produced by RBC considers the financial or "internal" costs and benefits of the proposed project. Each of these must be assessed over the lifetime of the proposed project, compared to continuing with the current configuration at the port.

3.2 VALIDATION OF THE RBC BUSINESS CASE

3.2.1 DKM was provided with the GHE Business Case report, prepared by RBC. The Business Case produced Base, High and Low Growth Cases, with data presented for the entire GHC business and in current money terms (i.e. including inflation). DKM reviewed the RBC model and found that it was valid and based on reasonable assumptions.

3.2.2 As part of DKM's review, RBC provided a number of back-up spreadsheets, which enabled us to isolate the net impact of the proposed project, and express all values in constant (2012) money, i.e. stripping out future inflation. This facilitates direct comparison with the socio-economic CBA. I reviewed these spreadsheets in detail and satisfied myself as to their accuracy and validity.

3.2.3 In terms of tonnages, Under the Without Development option, tonnages grow in the short term but then fall back to a little over their current level (528,000 tonnes per annum). This is reflective of the constraints on the existing infrastructure in terms of the size of ship than can be accommodated. Over time, ship sizes are increasing, and this is projected to have a gradual negative impact on the port in its current configuration as the range of ships that can be accommodated narrows. Lack of space in the harbour for loading/off-loading will be a negative factor going forward also. If the project proceeds as proposed, projected tonnages grow to 1.932 million tonnes over time (Base Case) (see Figure 4.3 on p.23 of the *Business Case & Cost Benefit Analysis* in the EIS, referred to in Paragraph 1.2.1 above).

3.2.4 The results of the Business Case, isolating the net impact of the project, if it proceeds as proposed, including the expected impact of land sales and with inflation stripped out, indicate that the project is likely to be profit-making and therefore sustainable from a business point of view. It is projected to generate a positive €12.986 million over the period of analysis, on a Net Present Value (NPV) basis, with an Internal Rate of Return (IRR) of 7.8% (net of inflation), in the Base Case.

3.3 SCENARIO/SENSITIVITY ANALYSIS

3.3.1 In the context of project appraisal, scenario/sensitivity analysis is an important element in testing for variations in outcomes. DKM investigated a High Growth Case and a range of less positive outcomes.

High Case

3.3.2 GHC received communication from its main customers indicating their intentions to increase business volumes through the port, if the project proceeds as proposed. For its Base Case, RBC deducted some elements of volumes from this, to adjust for what might be described as "optimism bias". In DKM's High Case, we presented the results on the basis that these projections from customers would fully materialise. This has a sizeable positive impact on the Business Case, increasing the NPV to €17.716 million.

Less Positive Scenarios

3.3.3 The project could potentially be vulnerable to the loss of significant lines of business or if the expected business growth fails to occur. Likewise, the costs of infrastructure project such as this are difficult to predict, and regularly cost significantly more than estimated. In appraisals of projects such as this, DKM would generally test a case where the capital cost is 50% higher than expected.

3.3.4 On the other hand, the project, if it proceeds as proposed, confers significant benefits on certain customers and on the tourism sector, above and beyond the benefits to GHC itself. In this context, it is possible that contributions from customers and/or grants from e.g. Fáilte Ireland might be forthcoming. The potential impact on the business case can be considered.

3.3.5 DKM tested the following scenarios:

1.	Discount/interest rate	+ 50%
2.	Upfront capital expenditure	+ 50%
3.	Valuation of benefits	– 50%
4.	Cruise & Marina business fails to grow	
5.	Business contributions/grants	€10 million received

3.3.6 DKM also tested scenarios whereby other expected future business growth fails to materialise. In summary, the commerciality of the project is vulnerable to:

- significant increases in capital costs,
- significant reductions in overall benefits, and
- failure of some expected future volume growth to materialise.

3.3.7 However, grant aid/contributions from customers would insulate the project from most of this downside. The analysis also found that the port as a whole remains highly profitable even under these negative scenarios.

4. ECONOMIC APPRAISAL

4.1 DEFINITION

4.1.1 The economic appraisal takes the Business Base Case, and adjusts for external/wider economic costs and benefits, including additional profits/cost savings for the port's customers, evaluated from the perspective of society as a whole, i.e. in terms of the public interest and benefit.

4.2 INCREASED PROFITS/REDUCED COSTS FOR PORT CUSTOMERS

4.2.1 A number of wider economic benefits can flow from the project, if it proceeds as proposed. These add to the overall GDP of the economy, in addition to the increased profitability of the port itself. Existing and/or new port customers can reduce their costs, because:

a. The extended Galway harbour can handle larger and more economical ships and time constraints are removed, leading to cheaper cargo, and/or
b. Galway harbour is nearer than the next best port and thus land transport costs are reduced.
c. The additional cruise and marina business will also have a significant wider impact in the tourism sector, in Galway and further afield. The economic benefits of cruise tourism in particular are well-documented internationally, it is a strongly growing sector and a focus for national tourism policy[5].

4.3 OTHER POSITIVE & NEGATIVE IMPACTS

Environmental & Planning

4.3.1 Another positive impact of the project is that, with the movement of petroleum-related activities out of the Inner Dock, the Seveso-restricted area of the port will be moved further from the city centre (while the storage facilities will not be moved, the ship discharging fuel is a Seveso site while discharging).

4.3.2 This may have a positive impact on future planning applications in the city centre. However, from the current standpoint it is not possible to place a value on this potential benefit and it must remain a qualitative impact.

4.3.3 While there are other ecological impacts they have been dealt with in other Briefs of Evidence.

[5] See for instance http://www.sailing.ie/Portals/13/Failte%20Ireland.pdf , and https://www.tourismireland.com/CMSPages/GetFile.aspx?guid=593a7c19-0e5d-48cd-b6a1-3b19e761eb8d

Employment

4.3.4 Significant employment will be generated directly or facilitated elsewhere in the economy by the proposed project, which is of particular benefit given the very high unemployment level in Ireland. Direct employment changes in GHC will be modest, but its employment and employment in port customers – totalling approximately 800 Full Time Equivalent (FTE) jobs - will be sustained by the project. To this can be added significant indirect employment (in GHC's and its customers' suppliers) and induced employment (when the direct and indirect wages are spent in the wider economy).

4.3.5 We would see additional employment arising in two main areas:

a) the construction of the project, and
b) the tourism industry as a result of the increased cruise and marina business.

4.3.6 We estimate that the construction phase would generate in total some 580 years of employment in the economy, over the period of construction. The tourism sector is particularly employment-intensive, and significant additional economic activity will be generated as a result of the increased cruise and marina business at the port. Our model estimates that the net increase in permanent tourism related employment as a result of the development would be 73 FTE.

4.4 Socioeconomic Cost Benefit Analysis Results

4.4.1 The CBA results are summarised in Tables 5.4 and 5.5 of the *Business Case & Cost Benefit Analysis* in the EIS, referred to in Paragraph 1.2.1 above, building on the Base and High Growth Cases are as per the Business Case.

4.4.2 Considering the Base Case, while the Business Case indicates that the project is profitable for the port, the wider economic impacts greatly increase the project's worthwhileness from a societal viewpoint. Taking into account both the benefits for the port and the wider economic impacts, the project generates a Net Present Value (NPV) of €147.409 million and an Internal Rate of Return (IRR) of 26.8% over the period of analysis. The net wider economic impacts of the project are very substantial (€131.162 million), and are far greater than those for GHC itself. Therefore this project is sustainable in the long term and there is a strong public interest and benefit in the project proceeding. The High Growth Case indicates higher returns both for the port and for the wider economy.

4.5 Scenario/Sensitivity Analysis

4.5.1 As with the Business Case, we tested a range of less positive scenarios around the key assumptions made in the CBA Base Case. For the most part they mirror the scenarios tested for the Business Case. The socio-economic NPV of the proposed project remains positive under all these scenarios. This gives comfort around the robustness of our results. It must also be borne in mind that a number of benefits have not been quantitatively evaluated in the Base Case, so it represents a somewhat conservative estimate of the total benefits.

5. COMMENTS ON SUBMISSIONS & CONCLUSIONS

5.1 COMMENTS ON SUBMISSIONS

5.1.1 ABP has received a significant number of submissions with respect to this application, the large majority of them positive, including a number from existing port customers, describing the specific importance for them of the project, if it proceeds as proposed. Other submissions in favour of the project come from relevant public bodies and agencies, business representative bodies, and others.

5.1.2 Some submissions have raised objections to the project; with respect to these I would make the following general comments:

5.1.3 A number of submissions have argued that the proposed investment is at odds with national policy with regard to ports, in that it involves Galway seeking to develop a role beyond its regional remit, or that it seeks to encroach on the remit of a Tier One port, or to take business from these Tier One ports. As has been demonstrated in DKM's and RBC's reports, this investment is designed to cater for identified business that relates to the port's existing customers or is natural to Galway's regional hinterland. No element of the projected business growth is drawn from other ports. Indeed, a number of identified growth opportunities are tied to substantial investments by port customers at Galway, or can only be catered for at Galway for commercial viability reasons. Failure to proceed with the project as proposed would see substantial business opportunities lost to Ireland.

5.1.4 More generally, a number of public policy documents have identified roles for Galway that will necessitate or be enabled by the proposed project. Importantly, at no point does Government allocation of Tier One/Tier Two status on ports confer monopoly status or exclusive rights on it or its customers. Such an interpretation of the National Ports Policy (NPP) would be clearly anti-competitive and as such detrimental to the wider economy. By the same token lack of Tier One/Tier Two status under the NPP does not proscribe development and investment.

5.1.5 We note further that GHC serves a regional strategic role in terms of petroleum storage, as it holds a proportion of the NORA strategic reserves, and the NPP states: "Galway Harbour Company is an important strategic regional hub for petroleum importation, storage and distribution"[6]. (p.32)

[6] http://www.dttas.ie/sites/default/files/node/add/content-publication/National%20Ports%20Policy%202013.PDF

5.1.6 The proposed harbour extension is in line with both the Regional Planning Guidelines for the West Region[7] and the Galway City Development Plan[8] as it is on a scale appropriate to its role as a regional port. In this regard the proposed development is also in line with the NPP which designates Galway as a port of regional significance. Policy 5.2 in the Galway City Development Plan relates to Enterprise and the following are the relevant references to Galway Harbour:

- 'Promote further sustainable development of the Harbour Enterprise Park and related harbour activities, subject to acceptability from the appropriate authorities
- Support further sustainable development of Galway Harbour subject to environmental, visual, economic viability and transportation considerations
- Support the development of cruise line tourism acknowledging the significant contribution and diversity it could add to the local and regional tourist economy'.

5.1.7 Some submissions assert that there has been no proper Business Case or Cost Benefit Analysis undertaken for the project, which is clearly at variance with the facts, as referred to in paragraph 1.2.1 above.

5.1.8 Others have argued that cruise tourism generates no regional economic benefit, is environmentally unsustainable, or could be catered for at Ros a' Mhíl. Our analysis clearly identifies the local and regional economic benefits of promoting cruise tourism. While this form of tourism does have environmental impacts, this is recognised and is being addressed by the industry. The fisheries harbour of Ros a' Mhíl lacks the landside facilities, the recognition factor and the ability to walk into a major urban centre that makes Galway attractive for cruise tourism. It is more remote than Galway, has poor road linkages bordering on NATURA 2000 sites, and has safety issues. In sum, it is not a credible alternative to GHC, for either cruise or bulk cargo-related business.

5.1.9 Others have argued that the project does not merit inclusion under the IROPI process, or have questioned whether the option of using Foynes to cater for traffic has been investigated. These points have been comprehensively addressed in the *GHC Harbour Extension Alternative Solutions* Report and in the *Consideration of Development* document referred to in paragraph 4 above, and they have concluded that (i) the IROPI process is justified, and (ii) Shannon-Foynes (and the other Tier One ports) are not viable alternatives, for a range of reasons, most notably the nature of the cargo involved, the commercial and environmental implications of using a more distant port, and potential implications for NATURA 2000 sites.

[7] http://www.cua.ie/gorm/planning/West%20Region.pdf
[8] http://gis.galwaycity.ie/devplanflipbook/pdf/DevPlan_20112017.pdf

5.1.10 It has also been argued that the assessment of environmental impacts of using more distant ports (specifically Foynes) does not take into account planned road improvements or the scope to use rail services. While road improvements will improve the accessibility of Foynes to customers along the affected routes, they will not reduce the distance travelled to any substantial degree. It is distance travelled that generates the environmental impact, and therefore the road improvements will not mitigate this. With regard to rail:

- This is only relevant to customers who are on or adjacent to a rail line.
- The current rail connection between Limerick and Foynes has been unused for some time.
- It is questionable whether the distance involved is sufficiently long for rail to be a commercially viable alternative to road.
- The rail journey in question will also generate negative environmental impacts.

In summary, it is not realistic to argue that freight rail services to Foynes can serve Galway's hinterland.

5.2 CONCLUSIONS

5.2.1 Analysis of the Business Case proposed project demonstrates that in the Base Case the project is profitable, and thus sustainable from a business point of view. A High Growth Case demonstrates the up-side and reinforces the profitability of the proposed project. This is based on projected substantial additional business at the port. It was important therefore to test our results against a range of negative scenarios, including ones whereby this additional business does not materialise. We therefore tested the Base Case against a number of more negative outcomes, namely:

a) Discount/interest rate +50%
b) Upfront capital expenditure +50%
c) Valuation of benefits -50%
d) Cruise & Marina business fails to grow.
e) We have also tested scenarios whereby expected future business growth fails to materialise.

5.2.2 The project's commerciality (in the Base Case) is vulnerable to scenarios b) and c), and to some instances whereby future business fails to materialise. However, the port itself remains highly profitable even under these negative scenarios.

5.2.3 The CBA demonstrates that the proposed project does in addition generate very substantial wider benefits, which are much larger than the benefits to the port itself. These include substantial employment during the construction phase and permanently in the tourism industry as a result of the increased cruise and marina business, as well as underpinning existing employment in the port, its suppliers and customers.

5.2.4 The CBA concludes that the project as proposed is highly worthwhile from a socio-economic viewpoint, even when testing for the same more negative scenarios as listed above. This gives comfort around the robustness of our results.

5.2.5 Most of these wider economic benefits are captured either by the port's customers or by the tourism sector. It is also worth keeping in mind that some significant positive impacts have only been qualitatively assessed, notably –

- The potential to service the oil and gas exploration business off the west coast;
- Elimination of Seveso issues around discharging oil products in the Inner Dock;
- Planning gain and urban renewal opportunities from release of Inner Harbour from commercial activities;
- Security of supply benefits related to storage of petroleum at Galway.

So in that respect the CBA results represent a conservative estimate of the total benefits.

5.2.6 To summarise the positive aspects of the proposed project:

- It addresses present severe constraints on the port's operations, which would otherwise raise questions over its continuation as a commercial port in the long run.
- The continued operation of a strong commercial port at Galway is a vital element of economic infrastructure and will benefit the city and region.
- The project will enable the fulfilment of national policy for the port, the city and the region.
- The project generates a positive commercial return for the port, and thus is sustainable from a business viewpoint.
- It generates significantly greater returns for port customers, and for the tourism sector via facilitating increased cruise tourism and leisure boating; in particular, it will facilitate significant growth of business for port customers, business which in a number of cases could not be catered for at other ports.
- It will sustain and grow employment in the city and region, at the port, among its customers, in the tourism sector and among the wider economy.
- It will enable the reintegration of the Inner Harbour with the city; this along with removal of Seveso sites from the city will generate planning gain and facilitate redevelopment.
- It is in accordance with EU environmental and transport policy with regard to shipping, and avoids significant road-related environmental damage compared to other ports (keeping in mind that the use of other ports in many cases would not be commercially viable).

5.2.7 Therefore this project is sustainable in the long term and there is a strong public interest and benefit in the project proceeding.

APPENDIX: CORRECTIONS TO PREVIOUS DOCUMENTS

CORRECTIONS TO *GALWAY HARBOUR EXTENSION ALTERNATIVE SOLUTIONS* REPORT (REFERRED TO IN PARAGRAPH 1.2.1 (B) OF THIS BRIEF

Section 4.1 of this document, starting at the top of page 17, should read as follows:

"Considering GHC specifically, the port handles bulk (high volume) cargo, servicing its hinterland. In the absence of GHE, most of the additional cargo would have to be transported by land to/from the nearest major port for shipping, i.e. Shannon-Foynes, which is approximately 130km from Galway. Some of the additional business may be lost to Ireland if GHE does not proceed.

We estimate that, taking account of volumes, vehicle weight and additional distance travelled to Shannon-Foynes, an additional 353 million tonne km per annum would be generated on Irish roads if the additional cargo had to be handled through Foynes, in the Base Case. Quite apart from the damage caused to roads, this would have a significant environmental impact.

Currently fuel usage for HGVs is estimated at 35 litres diesel/100km, which implies total additional fuel usage if GHE does not proceed of approximately 4.3 million litres per annum.

The Sustainable Energy Authority of Ireland (SEAI) indicates the following pollutant emissions per litre of diesel, and from that we can estimate the total additional emissions if the additional GHE cargo had to be handled in Foynes:

TABLE 4.1: TOTAL ADDITIONAL VOLUMES OF POLLUTANTS IF GHE DOES NOT PROCEED

	Tonnes per '000 litre Diesel	Total Tonnes generated per annum
Carbon dioxide (CO_2)	2.63037	7,842
Carbon monoxide (CO)	0.00417	6.21
Hydrocarbons (HC)	0.00050	2.22
Nitrogen oxides (NO_x)	0.00444	17.05
Sulphur oxides (SO_x)	0.00001	0.02
Particulates (PM)	0.00055	0.24

Source: SEAI, DKM estimates.

There is clearly a significant environmental impact if the project does not proceed, in terms of increased emissions, which will have implications in terms of climate change and human health. This is not to include the additional impacts on road damage, noise and congestion, which would also be significant, given the nature of the traffic being generated."

Likewise, the final three bullets on page (ii) of the same document should now read:

- "We estimate that an additional 353 million tonne km per annum would be generated on Irish roads if GHE did not proceed, in the Base Case.
- This would have a significant energy usage and environmental impact. We estimate total additional fuel usage of approximately 4.3 million litres per annum.
- This equates to an additional 7,800 tonnes of CO_2 per annum, and significant tonnages of CO, HC, NO_x, SO_x and particulates, all of which are subject to national and EU targets, and have implications for global warming and human health."

CORRECTIONS TO *GALWAY HARBOUR EXTENSION CONSIDERATION OF DEVELOPMENT IN CONTEXT OF ARTICLE 6(4) OF THE HABITATS DIRECTIVE AS TRANSPOSED INTO IRISH LAW* REPORT (REFERRED TO IN PARAGRAPH 1.2.1 (C) OF THIS BRIEF

Section 2.3.4 of this document, starting at Table 2.3 on page 21, should read as follows:

"TABLE 2.3: ADDITIONAL ROAD-BASED TRANSPORT IF GHC CARGO TRANSFERS TO OTHER PORT*

	Base Case		High Case	
	Cargo Transferred to Other Port		Cargo Transferred to Other Port	
	All	Additional	All	Additional
Total Cargo Tonnage ('000)	1,932	1,404	2,162	1,634
Additional Tonne KM of Road Transport ('000)	485,576	352,872	543,383	410,679
Additional **Diesel** usage ('000 litres)	5,860	4,259	6,558	4,956

*based on diversion to Foynes. Would be greater if moved to more distant ports.

- We estimate that an additional 353 million tonne km of road transport per annum would be generated on Irish roads, leading to additional fuel usage of 4.259 million litres per annum[9], if GHE does not proceed and the additional identified cargo is diverted to Foynes, in the Base Case. Diversion to more distant ports would have greater impacts.
- This would have a significant environmental impact. The additional 4.259 million litres of diesel equates to an additional 7,800 tonnes of CO_2 per annum, and significant tonnages of CO, HC, NO_x, SO_x and particulates, all of which are subject to national and EU targets, and have implications for global warming

[9] Assumes fuel efficiency of 35 litres diesel/100km, laden weight of 44 tonnes and unladen weight of 14 tonnes, and empty return journeys. Relates to 2028 when tonnages with and without the development projected to stabilise. More details can be found in Report entitled *Galway Harbour Extension Business Case & Cost Benefit Analysis*, dated 13th December 2013, which is contained in *Vol. 2C: Appendices to EIS – [Part 1 of 3 Parts]*, Appendix 2.2.1.

and human health. The table below indicates a very significant cost to society from these additional emissions.

- Environmental damage from additional emissions to air stabilises at €511,000 per annum. Over the period to 2035 (the period over which the Business Case and CBA were analysed) the present value of the pollution would be €3.9 million. Net of the Irish carbon tax, the equivalent damage costs would be €315,000 and €1.951 million respectively.
- To this must be added the additional impacts on road damage, noise and congestion, which would also be significant, given the nature of the traffic being generated.
- Another environmental benefit is that, with the movement of petroleum-related activities out of the Inner Dock as part of the proposed development, the Seveso-restricted area of the port will be moved away from the city centre. Apart from health and safety benefits and reductions in risk, this is likely to have a positive impact on future planning applications in the city centre by removing obstacles to redevelopment. It will also further improve local residents' living conditions in terms of visual impact, noise and air emissions, and allow for the existing harbour's use and development as a stronger civic amenity than at present. Thus significant social/community gain benefits can be expected to ensue.

TABLE 2.4: ANNUAL POLLUTION & DAMAGE COSTS IF ADDITIONAL GHE CARGO DIVERTED TO OTHER PORT* (BASE CASE)

	Additional Diesel usage ('000 litres)	Emissions per '000 Litres Diesel (tonnes)	Additional Emissions to Air generated (tonnes)	Damage Cost per Tonne €	Total Damage Cost €'000	Total Damage Cost Net of Carbon Tax €'000
Carbon dioxide (CO_2)	4,259	1.84126	7,842	55	431	235
Carbon monoxide (CO)	4,259	0.00146	6.21	2.70	0.0	0.0
Hydrocarbons (HC)	4,259	0.00052	2.22	811	1.8	1.8
Nitrogen oxides (NO_x)	4,259	0.00400	17.05	4,499	76.7	76.7
Sulphur oxides (SO_x)	4,259	0.00001	0.02	5,786	0.1	0.1
Particulates (PM)	4,259	0.00006	0.24	6,159	1.5	1.5
Total per annum					**511**	**315**
Total to 2035 (present value)					**3,876**	**1,951**

*based on diversion to Foynes. Would be greater if moved to more distant ports.

Notes: Damage costs are expressed in today's money. Carbon tax is assumed to be €25 per tonne of CO_2. Distance travelled is assumed to be extra-urban. Quantities of emissions are less than those presented in the Alternative Solutions report included in the EIS, as more appropriate data have been used in the current report. Discount rate = 4% real (net of inflation), for consistency with CBA report contained in EIS.

Sources: EU Commission, SEAI, DKM estimates.

Utilisation of the nearest other port – the Port of Foynes - would be significantly inferior from an environmental point of view to proceeding with the proposed development (quite apart from the fact that much of the business would not be

commercially viable if it had to transfer to a more distant port). Utilising a more distant port would have even more severe environmental impacts.

Likewise the third and fourth bullet points on page 31 of the report should read:

- "As indicated, we estimate that an additional 353 million tonne km per annum would be generated on Irish roads, if the cargo forecast to be shipped through Galway were diverted to the Port of Foynes, in the stabilised Base Case. This translates into approximately 4.3 million extra litres of diesel consumed in Ireland per annum.

- This will generate significant emissions to air. Net of the Irish carbon tax, environmental damage from additional emission to air comes to €315,000 per annum. Over the period to 2035 (the period over which the Business Case and CBA were analysed) the present value of the pollution (net of carbon tax) would be over €1.951 million in the base case."

DKM

ECONOMIC CONSULTANTS

CONTACT DETAILS

DKM ECONOMIC CONSULTANTS
Office 6 Grand Canal Wharf
South Dock Road
Ringsend, Dublin 4.
Telephone: 01 6670372
Fax: 01 6144499
Email:info@dkm.ie

www.dkm.ie