Appendix A.4.5

Coastal Route Options Report

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Galway County Council

N6 Galway City Transport Project

Coastal Route Options Report

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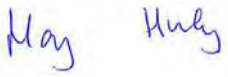
		Signature			
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Contents

1 Introduction

1.1 Overview

Arup was appointed to provide multi-disciplinary engineering consultancy services for delivery of Phases 1, 2, 3 and 4 of the NRA Project Management Guidelines (NRA PMG) for the N6 Galway City Transport Project. This appointment includes the examination of studies, documents and court rulings relating to the earlier unsuccessful scheme, followed by feasibility studies, route selection, design, and planning for a revised scheme.

The commission commenced at *Phase 1: Scheme Concept & Feasibility Studies*. As public funding will be required for any future potential scheme, a Preliminary Appraisal was undertaken during Phase 1. The purpose of this appraisal is to ensure that public funds are allocated in an efficient manner by establishing the merits of a proposal using a consistent and comprehensive framework. Phase 1 has now been completed and *Phase 2: Route Selection* has commenced.

1.2 Scheme Background

Consultants were appointed in 1999 to undertake feasibility studies, route selection, design and planning for the Galway City Outer Bypass scheme. The resultant scheme including the Compulsory Purchase Order (CPO) and Environmental Impact Statement (EIS) was submitted to An Bord Pleanála (ABP) in December 2006. This scheme consisted of 21.4km of mainline, 9km of link roads, associated intersections and a major bridge crossing of the River Corrib.

ABP granted approval for only part of the scheme, the section from the N59 east to the existing N6 and refused permission for the section of the scheme from the R336 west of Bearna to the N59. The ABP decision granting approval of the eastern section was appealed to the High Court. The High Court undertook a judicial review of the ABP decision. The High Court confirmed ABP approval but allowed an appeal to the Supreme Court. The Supreme Court sought the opinion of the Court of Justice of the European Union (CJEU) on an interpretation of the Habitats Directive. Following receipt of the CJEU opinion, the Supreme Court quashed the earlier ABP decision.

Therefore, the process of developing a transportation solution for Galway City and environs is commencing again.

1.3 Purpose of this Report

The current scheme is at Phase 2 - Route Selection stage. The objective of this phase is to identify a suitable study area for the examination of alternative routes and transportation solutions, to identify key constraints within this study area, to develop feasible route options and transportation solutions and to carry out a systematic assessment of these options leading to the selection of a preferred route corridor or transportation solution which will form the basis for the detailed design to follow. This phase also outlines the requirements for public consultation associated with the development of routes and alternatives. Both “on-line” and “off-

line" route options are to be considered during the planning and design of the preferred route for the scheme.

As part of this process the feasibility and applicability of a number of options and alternatives need to be considered for inclusion or otherwise in the route selection process. This technical note examines the feasibility of a route option along the coastline.

1.4 Route Options Description

Three options were investigated to the south of the city along the coastline. They all commence on the R336 at the junction of Grattan Road and Doctor Colohan Road and travel east towards the Claddagh area, crossing the mouth of the River Corrib at Nimmo's Pier in the docks. The options then cross Lough Atalia, traveling eastwards parallel to the Dublin to Galway railway line before branching off at different points to connect to the R446 as outlined below and as shown in **Figure 1** below.

Figure 1: Coastal Route Options

Option 1 (Green) continues east as far as the R446 overbridge on the railway line, and connects to the R446 at this point, just west of Oranmore.

Option 2 (Blue) diverges from Option 1 and connects to the Martin Roundabout on the intersection of the R338 Dublin Road and the R446 and then travels north along the R446. It leaves this road south of the existing Coolagh Roundabout and connects to the N6 to the east.

Option 3 (Pink) travels along the same route as the previous two options and diverges to go through the north-western part of Merlin Park Regional Hospital grounds. It then travels north-east, connecting to the N6 and the R446 at the Coolagh Roundabout.

2 Engineering Assessment of Coastal Option

2.1 National Road Network Connectivity

This project is intended to address the transportation issues within Galway City and its environs which are having a negative impact on the national and regional road network. The project brief states that one of the project aims is "*interconnection of the Galway City and environs road network to the national motorway network"*, and that *"junctions on the key routes around the city plus the radial routes into the city are operating above capacity"*.

Chapter 2 of the Regional Planning Guidelines (RPG) for the West Region 2010 - 2022 outlines the Strategic Vision for the West Region. It sets out eight Strategic Goals for the West Region, and outlines the following requirement among others in relation to the goal of Access:

"SG2: To put in place an integrated sustainable transport and access infrastructure that:

[…]

C. Provides a high level of service on major roads that minimises travel times and maximises safety and facilitates public transport by upgrading the network of national roads in the region in line with Transport 21 and NDP objectives.

These objectives are reflected in the Chapter 1 of the Route Selection Report for this project. To meet these aims, the proposed option should provide a connection to some or all of the national roads leading into the city, namely the N59, N84, N17, and N6/M6 to the east, in order to create an integrated national road network around the city.

These three options do not provide this connection possibility. They are all located on the southern side of the city, whereas the N17, N84 and N59 all terminate at the points where they intersect the N6 on the northern outskirts of Galway City. To reach these proposed options, traffic would have to travel from the existing national roads through the city centre, adding to congestion and worsening the current situation. If the options were to be continued further west, the introduction of a high quality and high capacity road in the residential and tourist area of Salthill would present a significant change in character to the area.

In addition, Option 1 does not connect to the N6, and by extension, the M6.

2.2 Lough Atalia and River Corrib Crossings

All three options cross the southern end of the Lough Atalia sea inlet and the River Corrib at the docks area. Construction of a road across here would cause considerable disruption to the business of the docks and the accessibility of Galway by sea.

The length of the river crossing, as shown below in **Figure 2**, would be approximately 260m, in addition to the crossing of the Lough Atalia inlet, which would be approximately 130m due to the angle of the crossing.

Bridge abutments would be required in South Park on the west and in two locations in the New Docks.

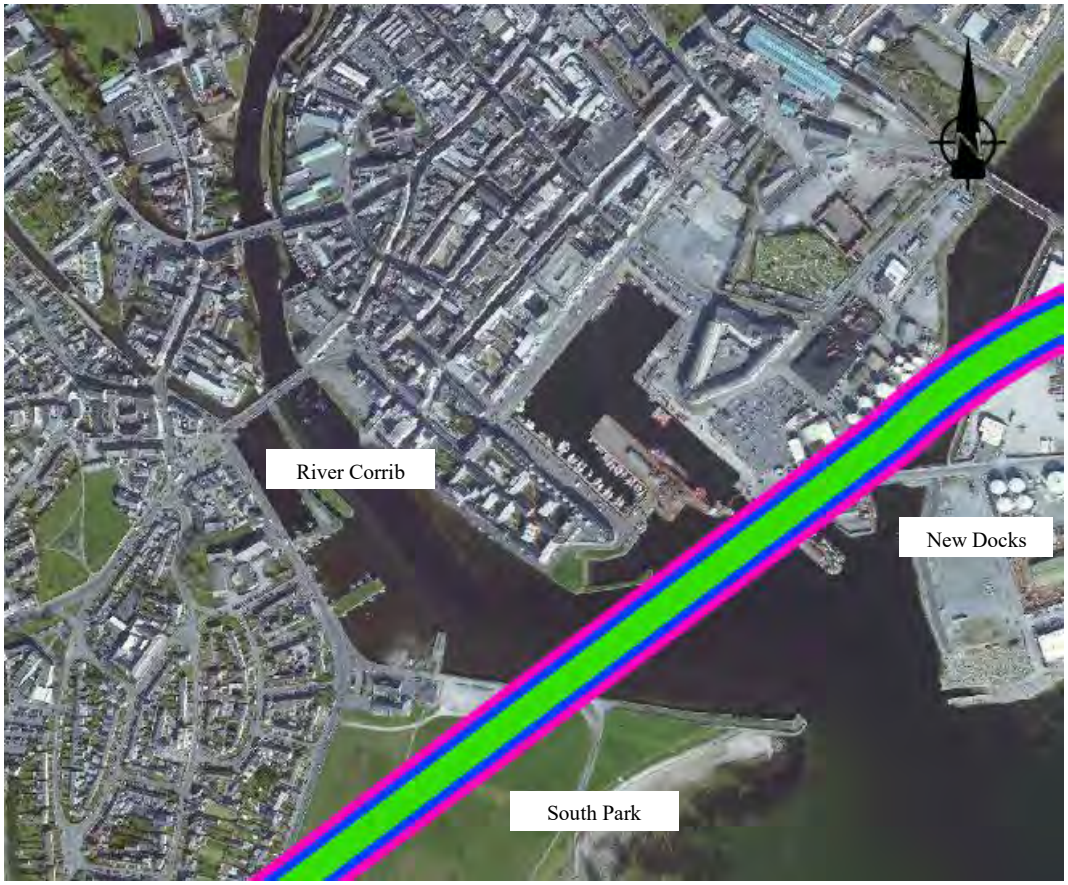

Figure 2: Bridge Crossing Location

The crossing length would require a significant structure in order to retain access for all the boats which currently berth at the quay walls along the Claddagh and to retain access to the dock areas by sea. Current traffic in this area includes quite large cargo and passenger vessels. A structure across this area would have to be high enough to maintain access for these vessels. It would also require a large substructure to resist accidental ship impact, and a deep structure to cater for the long spans.

A bascule or moving bridge could be provided, but this could limit the flow of traffic into the dock, which is already restricted in the current docks layout.

The visual intrusion in the scenic area of the Claddagh and on the Long Walk south of the Spanish Arch would be significant. This whole area is iconic in Galway; it has an extremely high amenity value and the presence of a significant road in this area is totally contrary to proper planning and sustainable development.

2.3 Dublin to Galway Railway Line

The railway line itself presents a constraint. Two of the three options require a crossing of the railway line to facilitate the crossing of the docks and the River Corrib. Available land adjacent to the railway is limited at Ballyloughane Strand, where the toe of the railway embankment is approximately 40m from the coastline.

The options at this location would impact on houses if located on the northern side of the railway and would be very close to the Galway Bay Complex candidate Special Area of Conservation (cSAC) and Inner Galway Bay Special Protection Area (SPA) if located on the southern side of the railway.

Option 1 (Green) could potentially avoid a railway crossing by remaining south of the railway line along its length. However, this would be very close to the Galway Bay Complex cSAC, as it would be along the beachfront at Ballyloughane. In addition, remaining south of the railway line would require demolitions of some of the military barracks buildings, and approximately ten dwellings. It would also have an impact on the land proposed for the Galway Harbour extension.

Options 2 and 3 (Blue and Pink, respectively) would require at least one crossing of the railway line. Both could follow the Green Option along the southern side of the line from the harbour area eastwards, crossing north at Prospect for Option 2 (Blue) and at Murrough for Option 3 (Pink). Alternatively, these options could cross to the north of the railway line in the harbour area, and then remain on the northern side. This avoids the barracks and ten residential houses, but could potentially impact on several housing estates, possibly requiring the demolition of between 20 and 30 houses.

3 Environmental Assessment

3.1 Ecology

Galway Bay Complex cSAC and Inner Galway Bay SPA are the principle constraints relating to the options outlined in **Section 1** of this report.

Galway Bay Complex cSAC would be crossed by all three options at Renmore Lough/Lough Atalia, at the mouth of the River Corrib, and along the coastline between the Claddagh and the R336. Option 1 (Green) would also cross the cSAC again between Ballyloughane and Roscam. Lough Atalia/Renmore Lough, the coastline between the Claddagh and the R336, and at Ballyloughane/Roscam, all support (or are likely to support) Qualifying Interest (QI) habitats of the Galway Bay Complex cSAC, including: coastal lagoons [*1150], mudflats/sandflats [1140], and salt meadows [1330 or 1410]. The presence of a road in the vicinity of Lough Atalia would also be likely to adversely affect how the area is used by the local Harbour seal *Phoca vitulina* population and Otter *Lutra lutra* – both of which are species listed as QIs of Galway Bay Complex cSAC. Any impacts to QI habitats or species are likely to result in a significant adverse effect on the integrity of Galway Bay Complex cSAC.

The close proximity of these options to intertidal areas used by wintering bird species listed as Special Conservation Interests (SCIs) of Inner Galway Bay SPA, has the potential to result in significant adverse effects on the integrity of this European site, through habitat loss and displacement of birds from foraging and roosting sites – as do any impacts to grassland sites in the vicinity of the shoreline used by SCI bird species (e.g. the Claddagh/Nimmo's Pier area).

All of the route options would also impact on areas of Annex I habitats, and habitats valued as being of county importance, within/adjacent to Merlin Park Woods. This impact would be greater for Option 1 (Pink) than for Options 2 or 3, as Option 1 bisects the woodland over the greatest distance (*c*.1km) comparatively affecting the largest area of woodland habitat in Merlin Woods (a mix of both semi-natural woodland and conifers) also affecting some areas of Lowland hay meadow [6510] habitat. Both Option 2 and Option 3 also affect areas of Lowland hay meadow between the R339 and the rail line.

3.2 Landscape and Visual

Any route option in this location will present very substantial challenges in terms of landscape and visual impacts and significant and profound negative impacts are set out below.

3.2.1 Construction Stage

The following are the principal aspects of the proposed route(s) that would give rise to the significant and profound landscape/townscape and visual impacts during construction:

- Profound landscape and visual impacts on the existing seafront/city coast from Salthill through the docks and Lough Atalia;

- Provision of significant new road infrastructure, including bridges on existing coastal and visual amenity, residential, community social, and important tourist environment;
- Impact on protected coastal views/scenic views; pedestrian and greenway walkways, effectively along the full extent of city centre/coastal section of the route options;
- Impact on setting of Menlo Castle and severance of castle from Menlough Village;
- Disturbance, excavation, earthworks, construction activity and traffic, lighting and related noise, dust effects etc.;
- Significant level of interim traffic management/re-allocation/diversion/ temporary works over many phases of construction programme;
- Long-term, intense nature of construction works directly adjacent to residential, community, social, amenity, recreation and tourist areas/uses;
- The construction of significant underground and overground structures – including bridging over docks/River Corrib; and
- All tie-in options at the eastern end require significant demolition of residential and other property, with consequent significant disturbance on residential properties and local community.

Whilst individual impacting aspects are outlined above it is considered that the collective effect of all of these construction aspects will give rise to locally pervasive and profoundly negative impacts on the townscape and visual character of the existing urban/coastal environment.

3.2.2 Operation Stage

The following are the principal aspects of the coastal route options that would give rise to the significant and profound landscape/townscape and visual impacts during operation:

- Provision of significant new road infrastructure, including bridges – with consequently elevated traffic, noise issues/barriers, illumination, road lighting etc. through an existing residential/coastal amenity/city centre setting;
- Provision of road infrastructure that would be directly contrary to stated objectives for the protection of views and coastal – city amenity/open space landscape designation;
- Provision of a major physical and visual barrier between established resident and tourist communities and existing coastal amenities, recreation facilities and attractive areas of distinct landscape and visual character; and
- All tie-in options at the eastern end will result in significant visual impacts on residential and other property.

Again whilst individual impacting aspects are outlined above it is considered that the collective effect of the scale of major infrastructure required to be provided will give rise to pervasive and profoundly negative residual impacts on the townscape and visual character of the existing urban/coastal environment.

4 Traffic Assessment

The Census 2011 data showed that Galway City currently has a population of approximately 75,500, an increase of 4.3% since the 2006 census. Galway County (including Galway City) has a population of approximately 250,000, an increase of 8.2% since the 2006 census. The population of Galway west of the River Corrib is approximately 77,000. Of this, 39,625 people live within the city boundary. Therefore, the areas west of the city have a population of approximately 37,375; this population is dispersed from Moycullen and Spiddal in the south to Leenaun on the Mayo boundary in the north.

As part of the scheme concept and feasibility studies an examination of the existing travel patterns and demand was undertaken. Part of this resulted in the production of desire line diagrams. Figure 4.1 below shows the desire line diagram produced for Galway City. This diagram shows traffic from east and west of the city travelling cross city and into the city and also details inner city movements. The following should be noted when interpreting **Figure 4**:

- Sectors are delineated by solid grey lines;
- Journeys from one sector to another sector are aggregated together and shown as a single line. The thickness of the line highlights the level of demand and includes both directions of travel;
- The aggregated journeys are shown from the centre of one sector to the centre of the destination sector(s);
- Journeys undertaken and completed internally within sectors are not shown;
- Desire lines shown are not road based;
- Green lines denote journeys which commence and end without crossing the River Corrib; and
- Red lines denote journeys which include crossing the River Corrib.

Figure 3 shows the demand towards the city, with a strong demand coming from all over the county to the city. It also shows many red desire lines which commence from sectors outside the city and terminate in sectors outside the city on the opposite side of the river, demonstrating the trips that are forced through the city to cross the river as part of their longer journey beyond the city.

A potential option along the coast will not alleviate any of the journeys which are currently forced into the city to cross the river. In fact, a coastal route will exacerbate the problem by drawing more traffic into the city centre.

A potential option along the coast will not intersect the key radial roads entering the city, i.e. R336, N59, N84 and N17, and therefore does not provide any relief to the existing junctions along the existing N6. At the outset of this project, delay at these key junctions was identified as a key performance indicator and a measure against which all potential route options will be examined. However, a coastal option will offer minimal opportunity to provide relief to these junctions and therefore offers limited benefit from a traffic perspective.

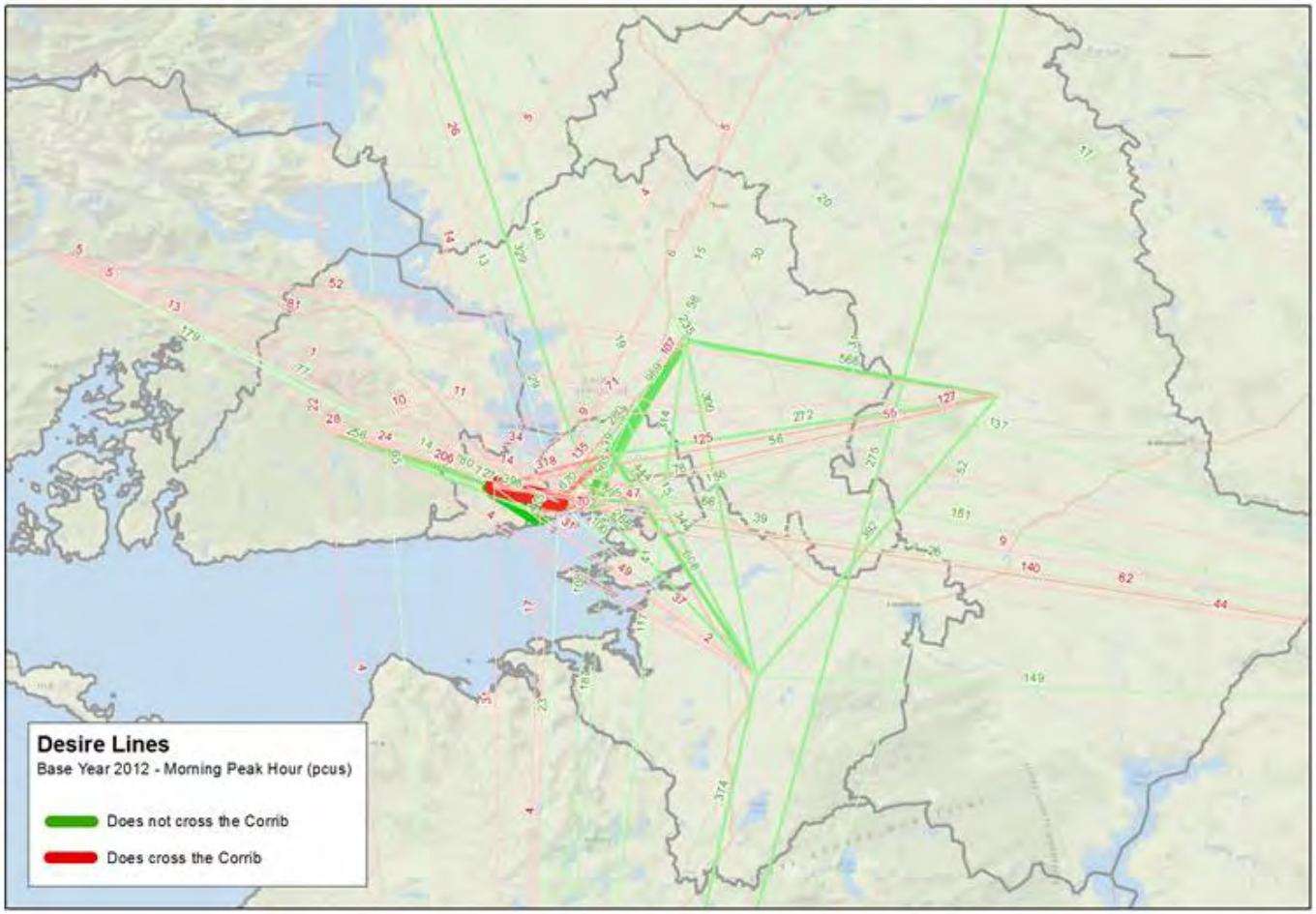

Figure 3: Desire Lines

5 Conclusion

A Coastal Option is technically feasible. It requires a significant bridge structure across the mouth of Galway Harbour which is likely to impact on boat traffic and the operation of the harbour and docks area. The bridge would be elevated and visible from all areas surrounding the harbour including the Claddagh, South Park and the Spanish Arch, all of which comprises an area of immense scenic beauty and high amenity. It would impact visually on the landscape of both the city and Galway Bay and requires at least one crossing of the Dublin to Galway railway line.

The ecological constraints associated with this option also make the Coastal Option unattractive. Galway Harbour has environmental importance including the Galway Bay Complex cSAC, and the Inner Galway Bay SPA.

As discussed in this report the coastal option does not meet one of the scheme objectives to provide a connection to some or all of the national roads leading into the city, namely the N59, N84, N17, and N6/M6 to the east, in order to create an integrated national road network around the city. This could potentially result in no improvement on journey times and journey time reliability which was one of the objectives set for this project.

Alternatives are available which potentially have a lesser impact on the environmental constraints whilst meeting the project objectives and hence, these options would all rank higher than a Coastal Option.

A Coastal Option would not meet the project objectives which are set out in the Chapter 1 of the Route Selection Report for the following reasons:

- This option may not provide journey time reliability;
- The crossing of the harbour would have a significant impact on designated Natura 2000 sites; and
- The crossing of the harbour would not take due cognisance of the importance of the existing landscape.

For the reasons outlined above, the further examination of a Coastal Option has been ruled out.