Narrow Water Bridge Project
ENVIRONMENTAL IMPACT STATEMENT



VOLUME 1 - NON TECHNICAL SUMMARY

February 2012

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Newry & Mourne An Iúr & Múrna

Narrow Water Bridge

Non-Technical Summary of the Environmental Impact Statement / Environmental Statement

TABLE OF CONTENTS

Part I
Background Information and General Description

1.0 INTRODUCTION

This Environmental Impact Statement/ Environmental Statement (EIS/ES) is for the proposed Narrow Water Bridge Project and has been prepared by Roughan & O'Donovan Consulting Engineers, on the instruction of Louth County Council in association with Newry and Mourne District Council (NMDC).

At present there is no direct link between the Cooley Peninsula in County Louth and the "Kingdom of Mourne" in County Down and no connection between the northern and southern shores of Carlingford Lough. Instead, to gain access around the Lough all vehicular traffic must cross the Newry River in Newry City. This involves a considerable journey away from the Lough and its environs and diverts traffic from the Carlingford area and toward the motorway system connecting Dublin and Belfast.

2.0 BACKGROUND TO THE PROPOSED DEVELOPMENT

Louth County Council, in the Louth County Development Plan 2009 – 2015, identified that linking the Cooley Peninsula and the Mourne District would unlock the tourist and leisure potential of the Carlingford Lough area.

The Development Plan supports the Narrow Water Bridge under Tourism policy TOU 6: "*To co-operate with the authorities in Northern Ireland in the provision of a road bridge between Cooley and south County Down."*

The following further explanation is provided:

"*The provision of a road link through the construction of a bridge between the Cooley Peninsula in County Louth and the southern portion of the Mourne Mountains in County Down at Narrow Water would make a valuable contribution to the development of tourism in Louth and the Mournes."*

The proposed Narrow Water Bridge aims to create a new cross border connection between the Republic of Ireland and Northern Ireland across the Newry River to the north of Carlingford Lough. It is intended that the proposed bridge will link the R173 Omeath to Newry Road in Co. Louth with the A2 Newry to Warrenpoint Road in Co. Down. The primary objectives of providing the Narrow Water Bridge are:

- Assist the social and economic development of the area;
- Facilitate access to the scenic beauty of Carlingford Lough;
- Enhance the tourist potential of the region;
- Improve the leisure potential of the region;
- Promote interaction between communities north and south of the border;
- Encourage pedestrian and cyclist activity.

3.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Location

The proposed Narrow Water Bridge will cross the Newry River approximately 400m south of the Narrow Water Keep (**see Fig. 1**). The bridge, which will connect the R173 Omeath Road south of Ferry Hill and the A2 dual carriageway at the existing roundabout, is situated approximately 1km and 2km northwest of Warrenpoint and Omeath, respectively. The bridge will pass close to the beacon near the southern shoreline.

The site is situated between the steep Cooley Mountains to the south and the drumlins of Down to the north. The Newry River flows through this valley before widening to form Carlingford Lough. The shoreline is flanked by roads on both sides and a former rail line occurs along the southern shore. In the immediate vicinity of Narrow Water the countryside pattern is of small fields bounded by hedgerows.

3.2 Proposed Scheme

Overview

The scheme will provide a new single carriageway link between Omeath and Warrenpoint. The proposed 6m wide carriageway will connect the R173 and the A2 dual carriageway across the Newry River at Narrow Water. A new roundabout will be constructed at the junction with the R173 Omeath Road and the existing A2 roundabout will be upgraded to accommodate the required additional arm. The total length of the scheme, including the required bridge crossing, is approximately 660m. (See **Fig. 2**)

Cable-Stayed Bridge with Opening Span

The proposed structure will comprise a cable-stayed bridge with a rolling bascule opening span. The structure is supported by asymmetric back-ward inclined towers, with the higher (86m) tower located on the southern side of the crossing. The lower (33m) twin towers on the northern side operate the rolling bascule opening span. The cable-stayed span is supported by a double plane of cable-stays which are anchored to an inclined vertical tower. (See Plate 3.1 below and **Fig. 3**)

Plate 3.1 Photomontage of Proposed Narrow Water Bridge

The superstructure is primarily constructed from stiffened steel plates whereas the abutments at either end consist of reinforced concrete. The tower will be constructed from structural steel, consisting of an outer and inner steel skin which will be infilled with concrete. The cable-stays are small diameter stays comprised of parallel wires with multiple layers of corrosion protection.

The bridge design was influenced by the requirement to allow continued navigation along the Newry River and the need to minimise the impacts on this sensitive receiving environment. The construction methodology of the cable-stayed bridge allows minimal interference with the in-river environment with slim supporting piers required at only one location and the bridge can completed in component sections from the foreshore embankments.

Navigation Beacon

The proposed bridge will interfere with the navigational beacon situated near Ferry Hill and therefore, the operation of the leading lights. Therefore, it is proposed to construct a new navigational beacon on the downstream of the proposed bridge as shown in Plate 3.1 above. The new navigational beacon shall mimic the existing masonry navigational beacons in shape, dimension, colour and surface finish however the requirements of Warrenpoint Harbour authority and Carlingford Loughs Commission will be adhered to in the construction and finishing of the proposed beacon.

Control Building

A control building is required to facilitate the opening of the bridge. It is preferable that the operators in the control building shall have a clear unobstructed view to the bridge and along the river. Therefore, the proposed control building is located at the edge of the river on the north side approximately 200m from the bridge.

The proposed control building is approximately 9.7m long and 7.4m wide single storey rectangular structure with a pitched roof. The wall nearest the river will be curved and contain a large bay window that will permit the bridge operators a clear unobstructed view of the river.

Pedestrian and Cyclist Facilities

The proposed Narrow Water Bridge includes for the provision of a combined cycle / footway between the proposed Cornamucklagh Roundabout on the R173 and the A2 roundabout. Both the Cooley Peninsula and the Mourne Mountains are popular among hill walkers and cyclists, therefore, it is important that the Narrow Water Bridge should cater for pedestrians and cyclists.

4.0 ALTERNATIVES CONSIDERED

As part of the development of the Narrow Bridge Project the scheme has gone through a number of development stages:

- Identification of Study Area;
- Identification of Constraints;
- Route Selection;
- Hydrodynamic Modelling;
- Bridge Design Options Appraisal and;
- Bridge Preliminary Design Report.

4.1 Identification of Study Area

In the recent past three studies have been carried out to determine whether a bridge or car ferry link between the Cooley Peninsula and the Mourne District was feasible. These studies are:

- 'Omeath to Warrenpoint, Feasibility Study', 1979, Nicolas O'Dwyer and Partners;
- 'Carlingford Lough-Ferry Feasibility Study', 1993, Jonathan Blackwell and Associates; and
- 'Omeath – Warrenpoint Road Link, Feasibility Study', 2001, M C O'Sullivan and Co. Ltd (now RPS Consulting Engineers).

The 1979 and 2001 studies determined that a bridge crossing located within the vicinity of the A2 roundabout was viable. The study area for the current project was subsequently developed based on the environmental, engineering and economic constraints previously identified and incorporating the crossing point already identified by previous studies as being viable.

4.2 Route Selection

Three initial routes (**Fig 4**) were developed based on site visits and information recorded in the constraints study. The route options examined were as follows:

- Route Option A: Southern Corridor (connects to A2 roundabout);
- Route Option B: Central Corridor (connects to A2 50m north of Narrow Water Keep);
- Route Option C: Northern Corridor (connects to A2 600m and 1km north of the Narrow Water Keep and the existing A2 roundabout, respectively.

Each of these three route options was assessed on the basis of environmental impacts, engineering requirements and economic grounds. Route Option A was subsequently ranked highest and most favourable of the three options (detailed information available in the Route Selection Report).

4.3 Bridge Design Options

Three design options were considered:

- Design Option 1 – Multi-span Bridge with Bascule Opening Span (**Fig 5**)
- Design Option 2 – Multi-span Bridge with Twin Swing Opening Span (**Fig 6**)
- Design Option 3 – Cable-stayed Bridge with Rolling Bascule Opening Span(**Fig 7**)

Hydrodynamics and Marine Modelling

Early consultations with the Loughs Agency and Warrenpoint Harbour Authority highlighted the importance of minimising the release of sediment during both the construction and operation of the bridge.

As a consequence of these significant concerns, AQUAFACT International Services Ltd. were commissioned to develop a computer model to assess the hydrodynamics of Newry River Estuary and to assess the effects of a proposed bridge on the water circulation patterns of the estuary. This detailed hydrodynamic assessment concluded that cable-stayed option would have minimal impact on water circulation patterns and therefore sediment release.

Bridge Design Option Selection

In addition to undertaking the hydrodynamic modelling exercise, the three feasible bridge design options were evaluated against the various engineering, environmental and economic issues. The Bridge Feasibility Report was completed in November 2008 and reviews each option against all environmental, engineering and economic issues identified. The parameters which were identified as the key environmental factors influencing the design choice were:

- Archaeology and cultural heritage;
- Aquatic Environment;
- Terrestrial Ecology;
- Socio-economic impact; and
- Landscape and visual amenity.

Each parameter was weighted and the bridge designs were subsequently assessed and scored in an assessment matrix. This process identified the preferred bridge option when weighed against the above factors as being Option 3 – the Cable-Stayed Option with Bascule Opening Span. The factors which weighted the decision in favour of Option 3 were the minimal impact this option will have on the aquatic environment and the archaeological and cultural heritage.

5.0 TRAFFIC AND TRANSPORT IMPACTS

The proposed Narrow Water Bridge will significantly improve connectivity between the Cooley peninsula and the Mourne District, thus enhancing the tourist potential of the region. The primary finding of the traffic assessment concludes that the bridge

and link road will be able to accommodate the predicted traffic levels. Other highlighted findings include:

- The proposed bypass is forecast to carry a design year traffic flow of between 1,036 and 3,767 AADT in 2033.
- The provision of a link results in an 18 minute journey time saving for traffic travelling between Omeath and Warrenpoint.
- It is expected that the road geometry will discourage HGVs from crossing the Narrow Water Bridge. The HGV traffic, which is likely to use the crossing, will result in a minimal increase of HGV traffic on the A2 dual carriageway.
- A 6.0m wide carriageway is the most suitable road type for the Narrow Water Bridge.
- The opening operation is estimated to take 20 minutes to complete.
- On the south side, queues can be accommodated between the wig wag signals and the Cornamucklagh Roundabout.
- On the north side, queues can be accommodated on the approaches to the A2 roundabout without blocking any accesses with the appropriate traffic management.
- On the north side, queues can be accommodated on the approaches to the A2 roundabout without blocking any accesses with a slight modification to the A2 roundabout southern approach and the appropriate traffic management
- In the unlikely event of a RORO ship arriving when the bridge is opening during the morning peak hour, the bridge shall not be opened until the ship is unloaded or peak hour traffic has dissipated. This procedure should be included in the Environmental Operating Plan.
- The segregated and combined pedestrian and cyclist facilities along the bridge and approaches provide a safe environment pedestrians and cyclists to utilise.
- The Narrow Water Bridge is beneficial as it improves road safety in the vicinity of the crossing;
- The peak truck traffic during the construction period is estimated to amount to 20 truck movements per day during the first 4 months of the construction period, and to then drop to 10 truck movements per day for the following 20 months.
- Construction near or adjacent the navigational channel shall be highlighted to approaching vessels.
- The navigational channel shall be closed during the installation of this opening span.
- An Environmental Operating Plan, which will include a Traffic Management Plan, will be put in place by the contractor during the construction phase of the scheme with regard to the NRA Guidelines for the Creation and Maintenance of an Environmental Operating Plan (2007). This EOP will include a Traffic Management Plan.

Part II
Significant Environmental Effects and Proposed Ameliorative Measures

6.0 SOCIO-ECONOMIC IMPACTS

This section examines the effects of the proposed development on human beings that are adjacent to, and are affected by, the proposed project; in particular focusing on socio-economic issues including land-use, population, economic activity, agriculture, tourism and residential amenity.

It is considered that the bridge will have a positive impact on tourism and economic activity, with the proposed signature structure having the potential to become an attraction and a landmark in its own right. The provision of footpaths and cycle lanes will enhance this experience for bridge users.

The project is also considered as having no negative community impacts. During the construction phase there will be a low level of nuisance and disruption, but due to the bridge design and construction method this will be minimal and temporary. In fact the enhanced community connectivity delivered by the project, through vehicular, bicycle and pedestrian access, will have a significant positive impact and will strengthen local community identity.

7.0 THE NATURAL ENVIRONMENT

7.1 General

The issues that are assessed in this chapter of the Environmental Statement are as follows:

- Terrestrial Ecology;
- Marine Modelling and Aquatic Ecology;
- Noise and Vibration;
- Air Quality and Climate; and
- Soils, Geology and Hydrogeology.

7.2 Terrestrial Ecology

The ecological impact assessment identified that the proposed road and bridge at Narrow Water is in an area of high nature conservation value. The area of foreshore is a candidate Special Area of Conservation in County Louth and an Area of Special Scientific Interest in County Down (refer **Fig 8**). Carlingford Lough Special Protection Area, which is designated specifically for birds, also occurs further up the lough. A Natura Impact Statement completed for the project finds that there is no impact on the features or integrity of these designated sites.

A number of detailed surveys were undertaken to record the habitats, bird usage and mammal presence. The primary potential impacts highlighted by the study include minor loss of poor quality saltmarsh habitat on the Omeath foreshore the temporary loss of a high tide waterbird roost site on the Omeath foreshore and the potential for avian collision against the bridge cables.

A comprehensive range of measures to avoid or reduce these potential impacts are proposed. These include measures to protect and re-establish salt-marsh vegetation, creation of a high tide bird roost slightly downstream from the development and up-lighting the bridge at night to prevent bird strike. Mitigation measures are also proposed to minimise any potential impact on badgers and bats which use the area. In addition, a project ecologist will be appointed to manage the implementation of all mitigation measures and there will be ongoing monitoring of bird numbers using the site.

7.3 Aquatic Ecology and Marine Modelling

The issues of concern in terms of aquatic ecology were identified as water quality / aquaculture and fish migration.

Water Quality and Aquaculture

Carlingford Lough is a designated shellfish production site and as such contains licenced shellfish beds. The quality of the water is thus protected by the EC (Quality of Shellfish Waters) Regulations 2006, the essence of which makes it imperative that the construction and operation of the bridge does not result in significant sediment release which could impair water quality.

The chosen cable-stayed bridge requires only one series of slim in-river piers and therefore has minimal impact on water velocity and sediment transport. In addition, the construction methodology allows the bridge to be built in segments from the embankments. This construction methodology and slim in-river piers combine to direct that there is no requirement for specific mitigation measures in this instance.

Fish Migration

The issue in this instance is the requirement to avoid preventing salmonids, eels or lamprey species migrating upstream. The sheet piling which is necessary in coffer dam construction could prevent this migratory movement. These operations will only be undertaken during normal working hours and as such will allow fish movement during at least half of the 24 hour tidal cycle. However in order to minimise any impact on fish movements, the construction and removal of the coffer dam and necessary in-river piling shall be undertaken outside of the main migratory periods. With respect to this, the contractor shall be required to submit their methodology and timing to and receive the agreement of the Loughs Agency.

7.4 Noise and Vibration

The Noise and Vibration Impact assessment identified that two properties in County Louth (location 1 and location 4) and one (currently vacant – location 11) property in County Down would suffer minor increases in noise levels as a result of traffic using the road and bridge.

The use of ‘low noise road surface’ will reduce the noise impact by between 3 and 5 decibels which in each case brings the noise levels to within the recommended limits.

It is recognised that during construction there is the potential for temporary noise impact. This will be controlled and limited through the adherence to a number of mitigation measures including the use of well maintained and serviced plant; noise monitoring and screening where necessary.

7.5 Air Quality and Climate

Neither the construction nor operation of the scheme will have a significant impact on the existing air quality or climate.

7.6 Soils, Geology and Hydrogeology

The assessment has been completed using a desk study of published information and field investigations of terrestrial and marine environments. Soils encountered are generally at least firm or medium dense with frequent cobbles and boulders along the river. Bedrock consists of sedimentary limestone, siltstone and sandstone which is often fractured. Modest height embankments and cuttings as well as piled foundations and construction methods are proposed. Overall, the road and bridge foundation construction requirements result in minimal impacts on soils, geology and hydrogeology receptors.

8.0 LANDSCAPE AND VISUAL IMPACT

The effects of the proposed development on the receiving landscape and visual environment are assessed and described. In order to do so all relevant planning policy documentation from both jurisdictions has been reviewed.

The assessment highlights that the proposal sits within an area of high scenic quality and within the vicinity of a number of protected and familiar monuments such as Narrow Water Castle.

While it is acknowledged that the issue of bridge design and bridge impact is influenced by highly subjective considerations and personal experiences, it is considered that the proposed development will not adversely or directly alter the inherent quality of the landscape, its significance or value. Indeed it is considered that this unique structure has the potential to add to the significance of its setting and to present focus and momentum towards realising local landscape and tourist related objectives.

Given the nature of the project, consideration of mitigation has been a significant aspect of the project design and as such the proposal incorporates a number of design elements to minimise the landscape and visual impact of the project. These elements include:

- An alignment that is near perpendicular to the river centerline, which is thereby shorter and a more visually natural bridging
- A tie-in to an existing roundabout on the A2 on the northern side of the river, thereby reducing impact on shore and surrounding area;
- Siting the bridge adjacent to and avoiding impact on the wooded promontory of Ferry Hill. In this way the wooded hill provides a visual foreground/background anchor for the main tower on the southern side of the bridge. This effect is clearly illustrated in the Photomontages;
- Minimising and down-sizing the number of piers and apparent mass of the structural components, thereby decreasing adverse visual impacts on views along the river/lough; and
- Incorporation of a signature bridge design with inclined towers and a unique opening mechanism.

As such cognisance was taken of the significance of the landscape setting and it was considered that the landmark bridge best:

- acknowledges and reflects the recognised scenic and visual qualities of its wider setting;
- provides an iconic structure that will assist in the development and realisation of co-ordinated and focused amenity, landscape and recreation objectives and policies for the significant landscape resource of the Cooley Peninsula and the South Down landscapes;
- marks a location of a clear transition between inland river valley and open coastal inlet;
- defines a boundary to westward extension of visually detracting port, port-related and mixed-use development along the shore towards Narrow Water Castle at Warrenpoint;

9.0 MATERIAL ASSETS

Agriculture

Four agricultural holdings will be affected by the proposed Narrow Water Bridge Project. However, there are no farms on which the agricultural impact will be severe or major. The impacts on the farm holdings are considered moderate to minor..

Measures to compensate farmers/landowners due to land acquisition, drainage works and loss of facilities will be agreed by the valuer as the project progresses.

Commercial

Warrenpoint Harbour and Carlingford Lough Commission

Access to Warrenpoint Harbour is provided by a series of buoys and leading lights which are the property of Warrenpoint Harbour Authority (WHA). The link road and southern tower in County Louth will have a significant impact on the operation of this leading light navigation system by interrupting and partly blocking the view of one of a pair of stone navigation beacons. To remedy this situation Carlingford Lough Commission and Warrenpoint Harbour Authority have been consulted with respect to the acceptability of replacing this leading light and on the proposed location and design of the new structure. Louth County Council proposes to construct a new structure and leading light to the satisfaction of WHA and CLC prior to the construction of the southern tower. This structure will be constructed immediately east of the bridge and in line with the two existing leading lights.

Carneyhaugh Properties Ltd.

Carneyhaugh Properties Ltd control received outline planning permission for a mixed use development on a site adjacent to the bridge on the northern shore. The proposed development as described within the outline application includes for provision of a hotel and restaurant, residential units and office and retail units. The property group have stated their full support of the project and have cooperated in the design of the Control Building and access as the proposed scheme will enhance their development. The design and location of the Control Building and the access has been agreed with Carneyhaugh Properties Ltd. The design and location of the Control Building and the access has been agreed with Carneyhaugh Properties Ltd.

10.0 CULTURAL HERITAGE

The location of the proposed scheme is in an archaeologically sensitive area with 14 recorded sites within a 1.5km radius. Recorded archaeological features within the area shows activity from the Prehistoric through the Early Christian, Medieval and Post Medieval periods. (See **Fig 9**).

Narrow Water is, as its name suggests, the narrowest point on the Newry River which would have been a major route into Ulster from Carlingford. Therefore, the area would have been naturally used as a crossing point throughout history.

Prominent local features include Narrow Water Castle and the associated Keep, the motte to the north of the A2 roundabout and the existing stone tower navigation beacons.

Given the archaeological sensitivity of the environs of the line of the proposed bridge, non-invasive pre-development testing has been carried out in accordance with mitigation measures as stipulated by the Heritage authorities in NI and ROI. This pre-development testing took the form of geophysical, non-invasive surveys within the riverine line of the proposed route and within the terrestrial line of the project. These surveys have been carried out by appropriate specialists who have made further recommendations including archaeological investigation of geo-physical anomalies and pre-construction top soil stripping to allow for the identification and preservation of undiscovered remains and artefacts.

11.0 CONSTRUCTION PHASE

The construction of the proposed road and bridge is estimated as taking 18 to 21 months.

During construction, measures will be put in place to minimise any temporary nuisance that may occur. This will include a dust management plan, traffic management at the tie-ins to the existing road network (the R173 and the A2), maintaining roads clear of mud and where necessary using screening to minimise noise levels.

A number of mitigation measures will be included in the contract to ensure that there is no contamination of the Newry River estuary or related drains or watercourses.

The contractor will be required to prepare a Waste Management Plan and an Environmental Operating Plan prior to construction commencing. In addition the appointed contractor will be required to prevent, as far as is possible dirt being released onto public roads. In the event that site traffic leaves dirt on the road the Contractor will be required to clean the road.

All of the above mitigation measures will be tied into all contract documents and it will be a requirement of the Main Contractor to adhere to all of these mitigation measures and any further measures required as part of the planning conditions.

12.0 INTERRELATIONSHIPS

Chapters 5 – 11 inclusive discuss the impacts of the proposed scheme on the various elements of the environment and highlight the measures necessary to mitigate these impacts. The mitigation measures could potentially impact on other elements of the environment, and the inter-relationships of the various measures proposed to mitigate the impact of the scheme have been assessed. In this instance traffic has been shown to interact with air quality and noise and vibration; and landscape and visual impact has been influenced by aquatic ecology and cultural heritage.

13.0 MITIGATION MEASURES

The principal mitigation measures proposed in the scheme are as follows:

- Pre-construction archaeological investigations and monitoring of topsoil stripping will be undertaken to ensure that any undiscovered archaeological remains are discovered and protected;
- A new high tide bird roost will be constructed;
- The bridge will be lit at night to prevent bird strike;
- All necessary vegetation clearance will be undertaken outside of the bird breeding season;
- Mammal fencing and underpasses shall be provided to avoid unnecessary road casualties;
- A bat fly-over shall be developed to ensure the continuation of bat foraging and commuting routes;
- To minimise any impact on fish movements, the construction and removal of the coffer dam and necessary in-river piling shall be undertaken outside of the main fishery migration periods.
- During construction, stringent restrictions will be imposed on the contractor to prevent pollution of the Newry River estuary;
- The completed scheme will be landscaped, where appropriate, with trees and shrubs to soften the impact of the engineered features;
- All suitable material excavated within the cut sections shall be used to the greatest possible degree as fill material on the development;
- Embankment and cut slopes which are considered at risk from erosion are to be topsoiled and seeded as soon as possible to prevent the deterioration due to weathering effects;
- Low noise road surface will be used to reduce the operational noise impact to within the recommended limits; and
- Boundary treatment / secure fencing shall be provided at the site to protect the public.

14.0 FURTHER INFORMATION

The full Environmental Statement will be on display and available for inspection and purchase for not less than 6 weeks from the date of publication at Louth County Council Offices and in the offices of Newry and Mourne District Council.

Please contact:

The Senior Engineer
Roads Department
Louth County Council
County Hall
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Dundalk

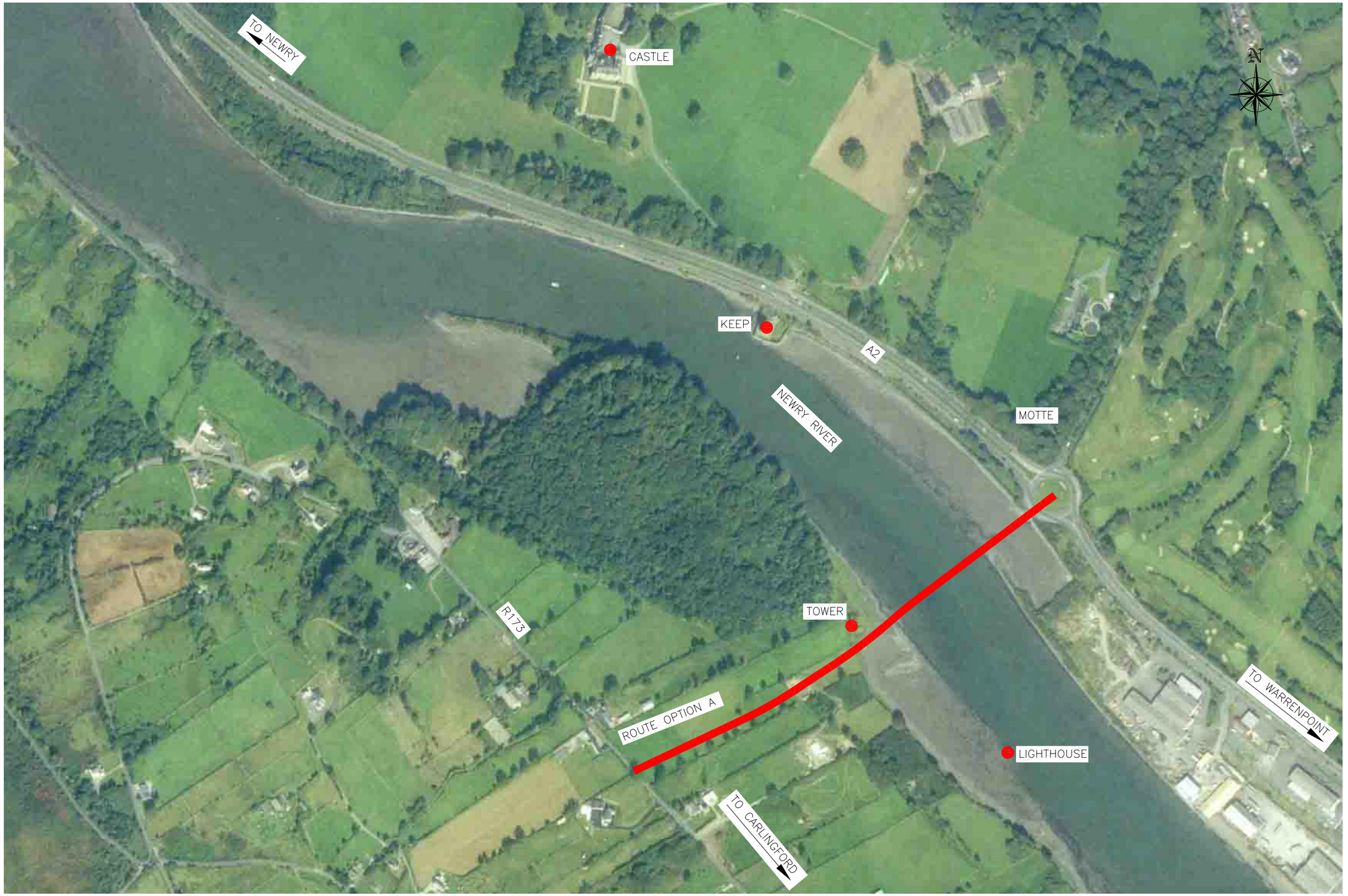
Phone: 00353 (0)42 9335457

The following additional reports will also be available for inspection upon request:

- Constraints Report
- Route Selection Report
- Bridge Feasibility Report
- Bridge Preliminary Design Report

15.0 WHAT HAPPENS NEXT?

Construction of the scheme is dependent on approval from An Bord Pleanála in the Republic of Ireland and The Planning Service in Northern Ireland. The planning application will be advertised locally and written submissions relating to the environmental effects can then be made to the planning authorities. These advertisements will indicate where the planning application, Environmental Impact Statement / Environmental Statement and other supporting documents can be viewed. Any written submissions will be considered by the planning authorities in making their decision on whether or not to approve the scheme with or without modifications.



LEGEND:

PREFERED ROUTE

PLAN

A1 SCALE 1:2500
A3 SCALE 1:5000

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Department of Transport, Tourism and Sport

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Project
NARROW WATER BRIDGE PROJECT

ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title
PREFERRED ROUTE

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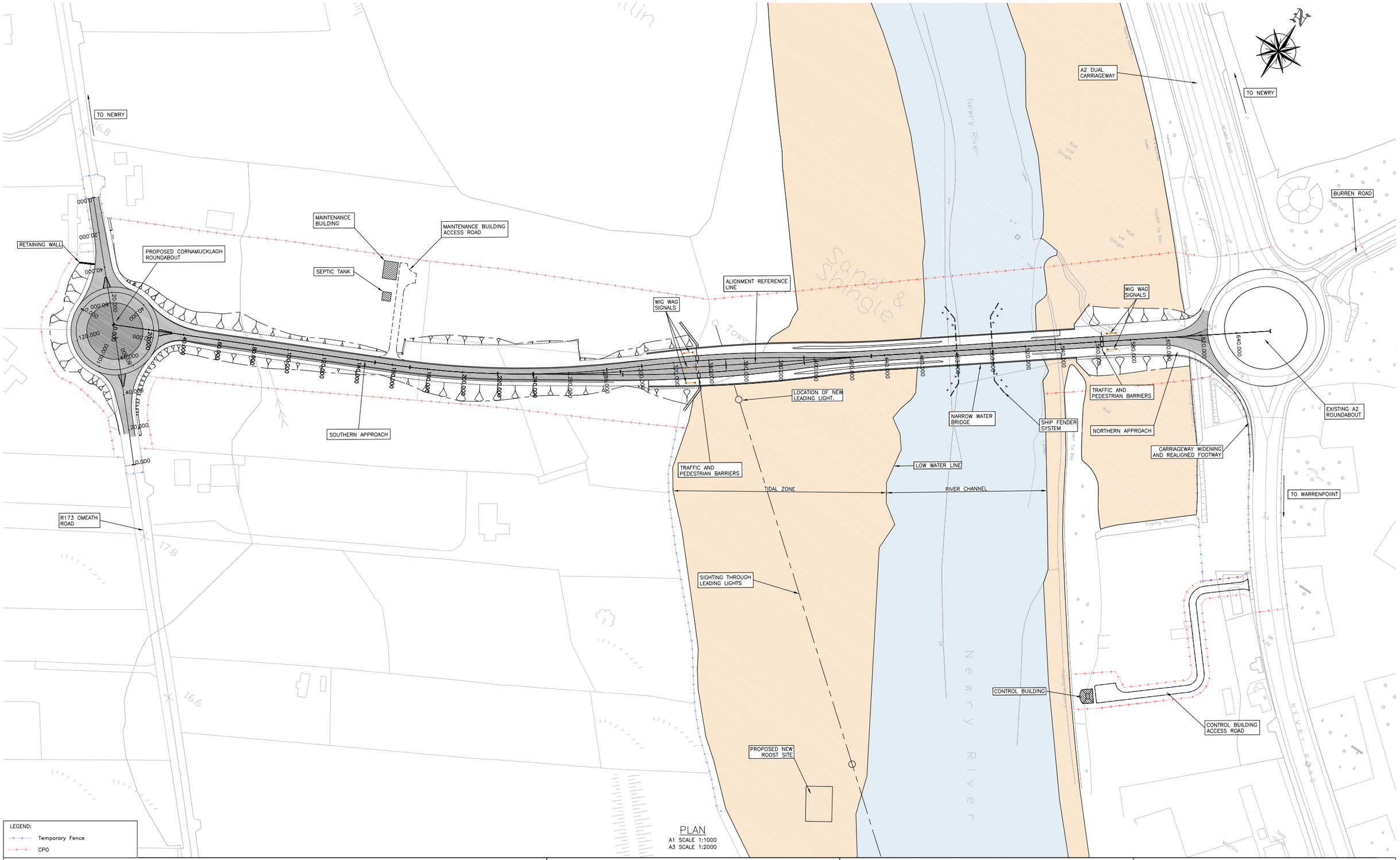

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A1 SCALE 1:1000
A3 SCALE 1:2000

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Department of Transport, Tourism and Sport

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Project
NARROW WATER BRIDGE PROJECT

ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title
PROPOSED ALIGNMENT PLAN

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PHOTOMONTAGE – 1

PHOTOMONTAGE – 2

PHOTOMONTAGE – 3

PHOTOMONTAGE – 4

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Department of Transport, Tourism and Sport

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Project
NARROW WATER BRIDGE PROJECT

ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title
CABLE STAYED BRIDGE WITH ROLLING BASCULE OPENING PHOTOMONTAGES

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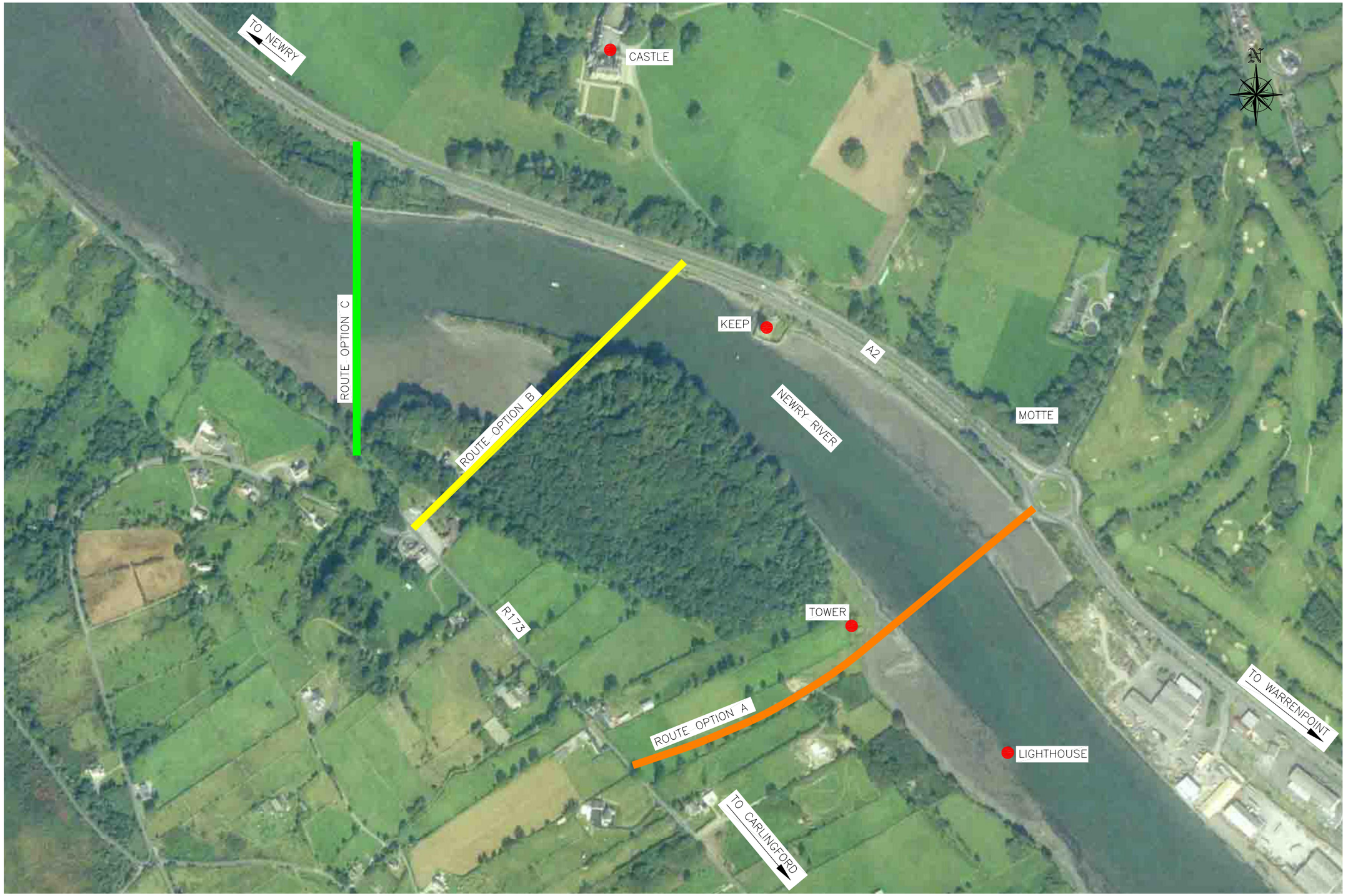

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C

PLAN

A1 SCALE 1:2500
A3 SCALE 1:5000

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NARROW WATER BRIDGE PROJECT

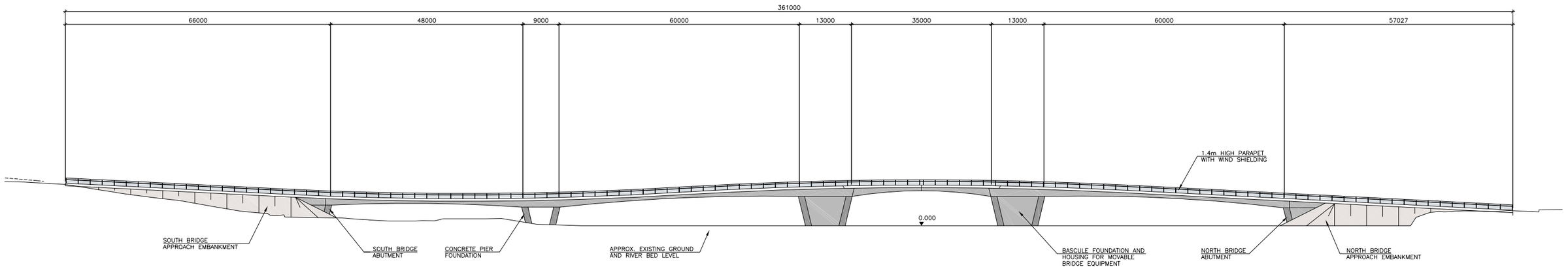
ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title
ROUTE OPTIONS CONSIDERED

Designed:	RMR	CAD File:	08.119 EIS	Status:	N.T.S.
Drawn:	RE	Job No:	08.119		
Checked:	BC	Scale:	AS SHOWN	Drawing No:	FIG 4
Approved:	TD	Date:	JAN 2012		Rev:

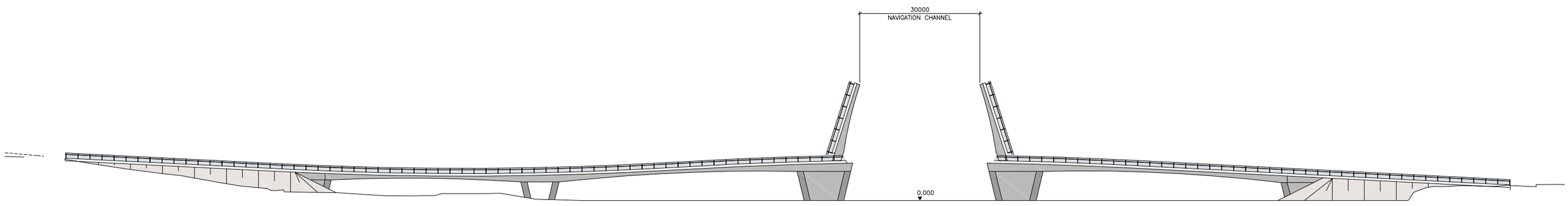
Drawing Location: L:\acaddwg\2008\08119\Drawings\EIS\NTS\Fig 4.dwg

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



BRIDGE ELEVATION – IN CLOSED POSITION

1:500



BRIDGE ELEVATION – IN OPENED POSITION

1:500

An Roinn Iompair Turasóireachta agus Spóirt
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Project
NARROW WATER BRIDGE PROJECT

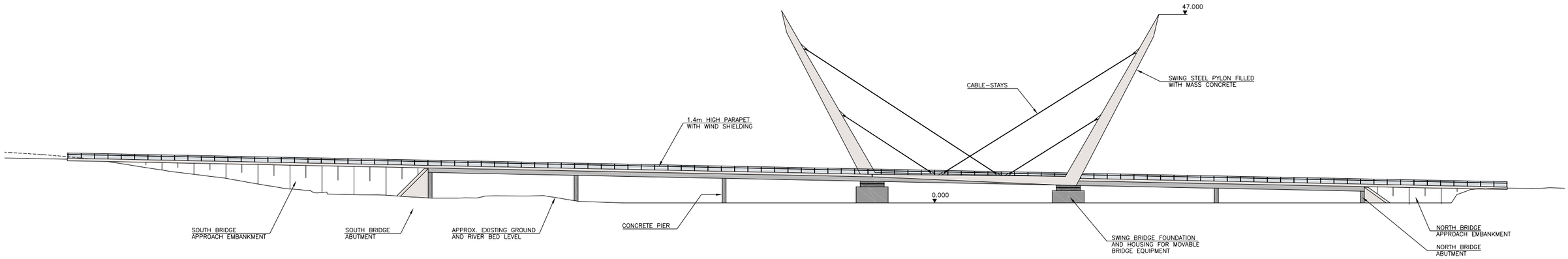
ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title
DESIGN OPTION 1
MULTI SPAN BRIDGE WITH BASCULE OPENING
BRIDGE ELEVATIONS - OPEN & CLOSED POSITIONS

Designed:	RMR	CAD File:	08.119 EIS	Status:	N.T.S.
Drawn:	RE	Job No:	08.119		
Checked:	BC	Scale:	AS SHOWN	Drawing No:	FIG 5
Approved:	TD	Date:	JAN 2012	Rev:	

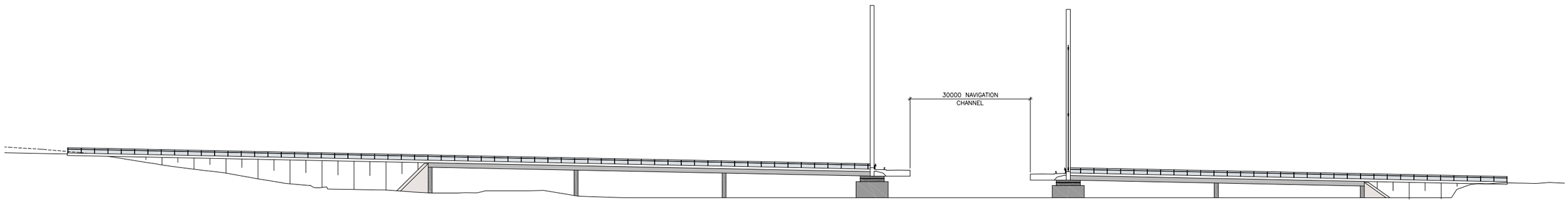
Drawing Location: L:\acaddwg\2008\08119\Drawings\EIS\NTS\Fig 5.dwg

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



BRIDGE ELEVATION – IN CLOSED POSITION

1:500



BRIDGE ELEVATION – IN OPENED POSITION

1:500

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NARROW WATER BRIDGE PROJECT

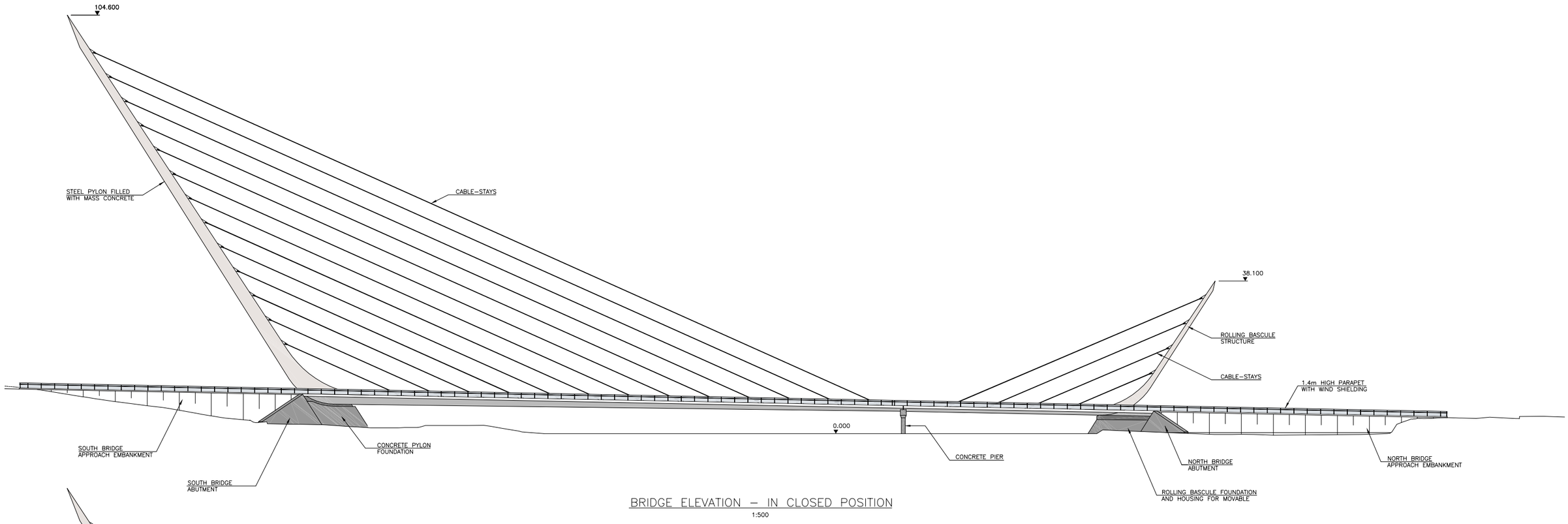
ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title
DESIGN OPTION 2
MULTI SPAN BRIDGE WITH TWIN SWING OPENING
BRIDGE ELEVATIONS - OPEN & CLOSED POSITIONS

Designed:	RMR	CAD File:	08.119 EIS	Status:	N.T.S.
Drawn:	RE	Job No:	08.119		
Checked:	BC	Scale:	AS SHOWN	Drawing No:	FIG 6
Approved:	TD	Date:	JAN 2012	Rev:	

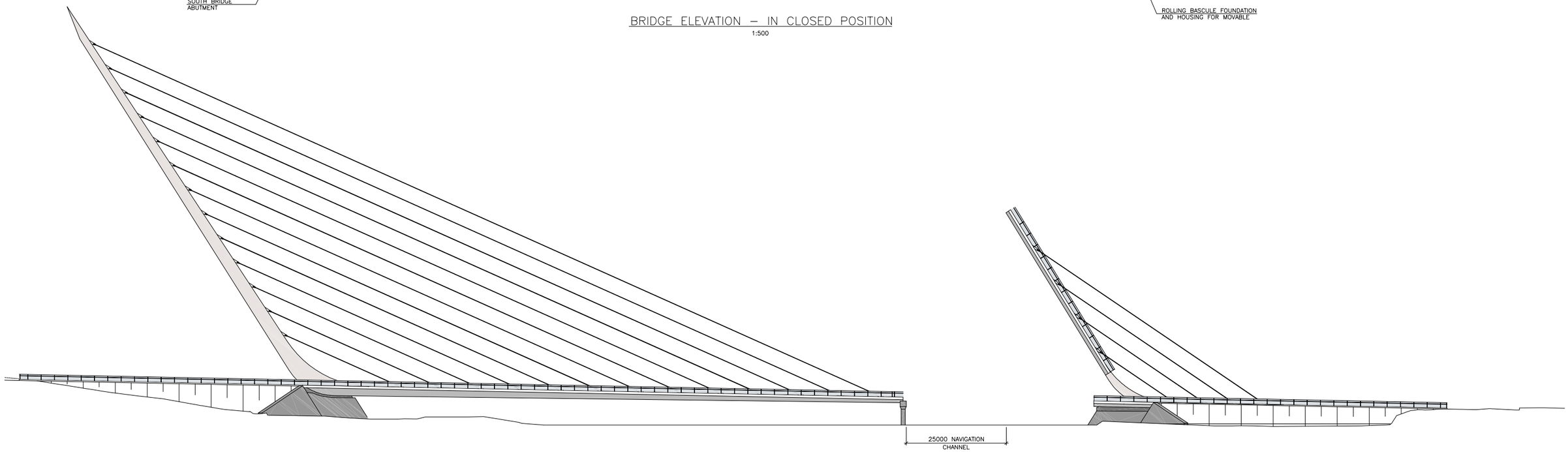
Drawing Location: L:\acaddwg\2008\08119\Drawings\EIS\NTS\Fig 6.dwg

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



BRIDGE ELEVATION – IN CLOSED POSITION

1:500



BRIDGE ELEVATION – IN OPENED POSITION

1:500

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NARROW WATER BRIDGE PROJECT

ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title

DESIGN OPTION 3 - CABLE STAYED BRIDGE
WITH RILLING BASCULE OPENING
BRIDGE ELEVATIONS - OPEN & CLOSED POSITIONS

Designed:	RMR	CAD File:	08.119 EIS	Status:	N.T.S.
Drawn:	RE	Job No:	08.119		
Checked:	BC	Scale:	AS SHOWN	Drawing No:	FIG 7
Approved:	TD	Date:	JAN 2012	Rev:	

Drawing Location: L:\acaddwg\2008\08119\Drawings\EIS\NTS\Fig 7.dwg

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LEGEND: DESIGNATIONS

- NHA
- SAC
- ASSI

PLAN
A1 SCALE 1:2500
A3 SCALE 1:5000

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Project
NARROW WATER BRIDGE PROJECT

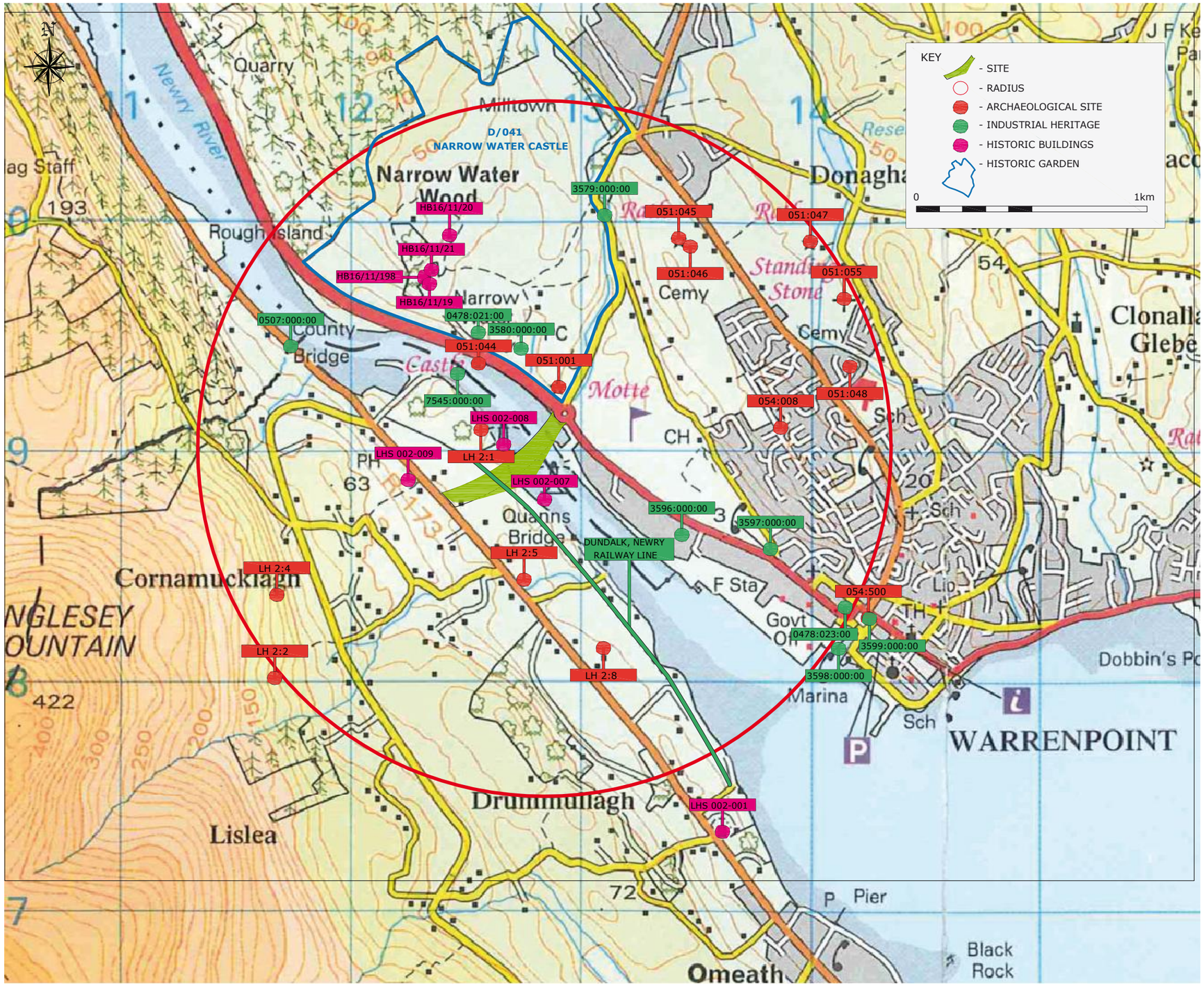
ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title
NATURE CONSERVATION DESIGNATIONS

Designed:	RMR	CAD File:	08.119 EIS	Status:	N.T.S.
Drawn:	RE	Job No:	08.119		
Checked:	BC	Scale:	AS SHOWN	Drawing No:	FIG 8
Approved:	TD	Date:	JAN 2012	Rev:	

Drawing Location: L:\acaddwg\2008\08119\Drawings\EIS\NTS\Fig 8.dwg

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



PLAN

A1 SCALE 1:2500
A3 SCALE 1:5000

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NARROW WATER BRIDGE PROJECT

ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL STATEMENT

Title
CULTURAL HERITAGE SITES

Designed:	RMR	CAD File:	08.119 EIS	Status:	N.T.S.
Drawn:	RE	Job No:	08.119		
Checked:	BC	Scale:	N.T.S	Drawing No:	FIG 9
Approved:	TD	Date:	JAN 2012		

Drawing Location: L:\acaddwg\2008\08119\Drawings\EIS\NTS\Fig 9.dwg

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