PREFACE

THIS ENVIRONMENTAL IMPACT STATEMENT CONSISTS OF THE FOLLOWING FOUR DOCUMENTS:

VOLUME 1
NON-TECHNICAL SUMMARY

VOLUME 2
MAIN REPORT

VOLUME 3
FIGURES

VOLUME 4
APPENDICES
# Table of Contents

**Volume 1**

**Non-Technical Summary**

1.0 Introduction  
2.0 The Altered Scheme  
3.0 Need for the Altered Scheme  
4.0 Environmental Impact Assessment  
5.0 Consultation  
6.0 Alternatives  
7.0 Description of the Altered Scheme  
8.0 Traffic  
9.0 Human Beings  
10.0 Flora and Fauna  
11.0 Geology, Hydrology and Hydrogeology  
12.0 Air Quality and Climate  
13.0 Noise and Vibration  
14.0 Landscape and Visual  
15.0 Cultural Heritage  
16.0 Material Assets  
17.0 Interaction of Environmental Impacts  
18.0 Summary of Environmental Commitments  
19.0 Further Information  

LIST OF FIGURES INCLUDED IN VOLUME 1

Fig. 1 Central Access Scheme for the City of Kilkenny - Altered Scheme
Fig. 2 Computer Generated Image of the Altered Scheme - View From St Canice's Tower
Fig. 3 Computer Generated Image of the Altered Scheme - View From Peace Park
Fig. 4 Computer Generated Image of the Altered Scheme - View From Peace Park at Night
1.0 Introduction


Following an Oral Hearing held in December 2008 and in a letter dated 7th July 2009, An Bord Pleanála informed Kilkenny County Council *inter alia*, that it is provisionally of the view that it would be appropriate to approve Phase 1 of the proposal, extending from St Canice’s Place to the Castlecomer Road incorporating a proposed bridge crossing of the River Nore, subject to certain alterations. This revised Environmental Impact Statement (EIS) relates to the road development as altered, in response to the Notification from An Bord Pleanála.

This EIS has been prepared by Malone O’Regan Scott Wilson (MORSW) on behalf of Kilkenny County Council.

2.0 The Altered Scheme

The altered Scheme consists of an urban street approximately 700 metres in length, which will link St. Canice’s Place on the west of Kilkenny City to the Castlecomer Road on the east of the City. The proposed urban street will incorporate a new bridge crossing of the River Nore. The location and layout of the altered Scheme is illustrated in Figure 1. Computer Generated Images (CGI’s) of the altered Scheme and the proposed River Nore bridge are illustrated in Figures 2 – 4 as follows:

- Figure 2: View from St. Canice’s Tower.
- Figure 3: View from Peace Park – Daytime.
- Figure 4: View from Peace Park – Nighttime.

The requested alterations which have been made to the proposed KCAS in response to the Notification from An Bord Pleanála are described below:

- The design of the altered scheme has been led by urban design principals to ensure the key objective of providing a new urban street for the City Centre would be achieved.
- The altered Scheme has been designed to provide a set of urban spaces, taking into account the characteristics of the existing urban environment east and west of the River Nore. Particular attention has been given to the integration of these spaces into the existing townscape of Kilkenny, including its historic core, and to the future integration of the altered Scheme into the re-development of adjacent brownfield sites.
- The level of the proposed River Nore bridge has been reduced and the proposed street leading to the proposed bridge has been kept as close to grade as possible. To facilitate the lower profile of the proposed bridge, supporting piers are proposed in the River Nore. The necessity for the piers and the potential impact has been discussed in detail with the Southern Regional Fisheries Board (SRFB) (amalgamated into Inland Fisheries Ireland (IFI) on 1st July, 2010) and an agreement has been reached to allow construction works in the River Nore, during specific months.
- Provision has been made in the design of the altered Scheme and the proposed River Nore bridge for public transport, cyclists and pedestrians thereby contributing to the achievement of a more sustainable modal split in the City. The proposed bridge has been specifically designed to be attractive to pedestrians and incorporates a viewing platform and access to riverside walks and amenity spaces. The altered Scheme will also facilitate access by buses and coaches to the historic centre of Kilkenny and will support the implementation of other traffic management proposals within the City Centre.
Proposed Kilkenny Central Access Scheme
Revised Environmental Impact Statement
January 2011

Volume 1 – Non Technical Summary

- The altered Scheme has been designed to integrate with and enhance the existing streets and townscape of Kilkenny City.
- The relationship between the altered Scheme and lands owned by Diageo has been completely reconsidered. The supporting structures for the proposed street, including retaining walls, have been designed to integrate into future urban development on the adjacent brownfield sites, the levels of the road have been reduced and the former proposal for an underpass has been removed.
- The formerly proposed cable-stay bridge has been replaced by a simpler elegant structure that will be closer to grade. The proposed bridge will sit comfortably in the urban environment rather than creating an icon for the City. Nevertheless the proposed bridge has been designed to be visually pleasing and suitable for its City Centre location.
- The altered Scheme provides for enhanced pedestrian linkages at the junction of Dean Street and St. Canice’s Place, designated in the Kilkenny City Centre Local Area Plan 2005 as a ‘City Centre Gateway’. It also provides direct access to the St. Canice’s Cathedral precinct from the eastern side of the City Centre.

3.0 Need for the Altered Scheme

Kilkenny City Centre retains much of its historic character and the street network largely reflects this historic appeal. Carriageway and footway widths on the road network vary markedly and are generally less than is considered desirable for streets carrying two-way through traffic, and therefore most of the narrow streets and lanes within the City Centre are unsuitable for the volumes and types of traffic that they currently carry.

The main traffic flows into the City Centre converge at the existing two bridges, Green’s Bridge and John’s Bridge, both of which are already operating at capacity at peak times. Green’s Bridge is a multiple arch stone bridge dating back to the 18th century that fails to provide the desirable minimum width for either pedestrians or vehicles. John’s Bridge, which was constructed in 1910, is wider than Green’s Bridge and is built of reinforced concrete in a single span that is approximately perpendicular to the line of the River Nore. However the approach to John’s Bridge from John Street is narrow, with a slight bend just east of John’s Bridge. Traffic is further impeded by junctions with Bateman’s Quay and John’s Quay at either end of John’s Bridge. The traffic congestion experienced on the existing two bridges at present acts as a constraint to travel between the east and west sides of the City Centre.

Taking into account the current constraints within the City Centre, the objectives of the altered Scheme are to:

- Develop a new River Nore crossing and an urban street for Kilkenny City;
- Reduce traffic congestion in the centre of Kilkenny City, including the numbers of heavy commercial vehicles, with consequent improvements to amenity;
- Reduce the levels of traffic using Green’s Bridge and John’s Bridge, which currently have inadequate capacity;
- Increase permeability for all transport modes within the City, including vehicles, cyclists and pedestrians;
- Facilitate the promotion of cycling and public transport;
- Improve traffic safety and convenience;
- Closely integrate the provision of the proposed River Nore bridge and streets with the existing historic townscape of Kilkenny; and,
- Facilitate the future development of brownfield sites in a manner that integrates and is sympathetic to the historic fabric of the City.
The need for the altered Scheme is reinforced within the following policy documents:

- **National Spatial Strategy 2002-2020 and National Development Plan 2007-2013** – The overall policy of both these plans with regard to Kilkenny is to promote an increase in population and economic activity. This policy will lead to increased traffic, and a need to cater, in an appropriate manner, for this traffic volume. The altered Scheme will provide a critical element of the necessary infrastructure to cater for this increase in traffic, and is therefore in support of the policies outlined in these plans.

- **Smarter Travel – A Sustainable Transport Future 2009-2010** – This is the Government’s transport policy for the period 2009-2020 and it sets out the vision, goals and targets for achieving a more sustainable transport future, and including a range of ‘softer’ measures to complement infrastructure improvements. The Kilkenny Local Authorities are committed to the principles underlying ‘Smarter Travel - A Sustainable Transport Future’ and have submitted a bid under the National Competition for Smarter Travel Areas promoted by the Department of Transport. A key objective of the bid is the development of “a ten minute walking and cycling city”. The realisation of the altered Scheme will enable the achievement of this objective by reducing traffic congestion and creating improved conditions for the implementation of sustainable transport measures for pedestrians and cyclists.

- **Kilkenny City and Environs Development Plan 2008-2014** – This plan identifies the Central Access Scheme for the City of Kilkenny as of strategic importance and fully supports its provision.

- **Kilkenny City Centre Local Area Plan 2005** – Within this Plan the Central Access Scheme for the City of Kilkenny is identified as a key measure which, “will provide for strategic vehicular movement around the City Centre”. The Scheme is also seen as essential to realizing the objective of creating additional pedestrian only areas.

### 4.0 Environmental Impact Assessment

This EIS has been prepared in accordance with the requirements of Section 50 of the Roads Acts 1993-2007, and amendments thereto conferred by the Planning Acts, 2000-2009 and other enabling legislation including Section 217(B)(4)(b) of the Planning and Development Act, 2000 as inserted by the Planning and Development (Strategic Infrastructure) Act, 2006.

This EIS is being submitted to An Bord Pleanála under Section 217(B)(4)(b) of the Planning and Development Act, 2000 as amended.

This EIS has also been prepared in accordance with all relevant guidelines including the Environmental Protection Agency (EPA) publications entitled ‘Guidelines on the Information to be Contained in an Environmental Impact Statement’, 2002 and ‘Advice Notes on Current Practice in the Preparation of Environmental Impact Statements’, 2003; and the National Roads Authority (NRA) guidelines entitled ‘Environmental Impact Assessment of National Road Schemes – A Practical Guide’, 2008.

Revised and updated assessments of the potential significant impacts of the altered Scheme on the following elements of the receiving environment has been undertaken within this EIS:

- Human Beings;
- Flora and Fauna;
- Soils and Geology;
- Hydrology and Hydrogeology;
- Noise and Vibration;
- Air Quality and Climate;
Updated baseline survey work took place where considered necessary to fully inform the environmental impact assessment process.

5.0 Consultation
Non-Statutory Consultations have been an integral component throughout the design and environmental impact assessment processes in order to inform and refine the alignment for the proposed KCAS. These consultations sought the views of statutory consultees, Elected Members, the affected landowners and the general public. In summary, these consultations have been undertaken in three distinct phases as follows:

3. July 2009 to January 2011 – as part of the preparation of the revised EIS.

On the 15th October 2009 a Consultation letter was issued to thirteen stakeholders including An Taisce, The Heritage Council, Kilkenny Archaeological Society, The Office of Public Works and the SRFB (now part of IFI). The letter invited the stakeholders to provide comments on the redesign of the altered Scheme.

A number of meetings were also held with stakeholders as part of the preparation of the revised EIS. In addition a meeting with the Elected Members of Kilkenny County Council and Kilkenny Borough Council was held in October 2010 where the Motion for submitting the revised EIS for the altered Scheme to An Bord Pleanála was put to the Elected Members, and the Motion was agreed and carried by the Elected Members.

6.0 Alternatives

Alternative Horizontal Alignments
The horizontal alignment is largely constrained by the end connection points at St Canice’s Place and the Castlecomer Road and the existing corridor of Wolfe Tone Street on the east bank of the River Nore. Regardless, the horizontal alignment of the altered Scheme was revisited within the context of An Bord Pleanála’s requirements and the following options were considered:

- Rerouting the alignment to the north of the original alignment;
- Rerouting the alignment to the south of the original alignment, but staying north of the River Breagagh; and,
- Rerouting the alignment to the south of the original alignment, and to the south of the River Breagagh.

Following this review, it was determined that the horizontal alignment as proposed in the original EIS was the most preferable in terms of urban design. This alignment was then reviewed further based on best practice urban design principles which resulted in some further design modifications.
Alternative Vertical Alignments
The vertical alignment of the altered Scheme was revisited within the context of the requirements of An Bord Pleanála, where they stipulated in their letter of 7th July 2009 that the altered Scheme “shall generally be at grade (allowing for necessary clearance over the river) from St. Canice’s Place to the River and across to Nore View Terrace and Michael Street and Wolf Tone Street.” In addressing An Bord Pleanála’s requirement that the vertical alignment be as close to existing grade as possible, there are a number of existing constraints which need to be considered and which limit options for possible vertical alignments. These existing constraints include the following:

1. Flood Levels: The vertical alignment is influenced by the need to ensure the proposed River Nore bridge maintains adequate clearance above flood levels predicted for the River Nore.
2. Facilitate Riverside Park and Walkways: The vertical alignment was also constrained over the banks of the River Nore where headroom had to be provided for riverside walks for use by pedestrians and cyclists on both banks of the river. There was also a requirement for sufficient headroom beneath the bridge to allow emergency and maintenance vehicles access to the east bank of the River Nore from Greensbridge Street.
3. Tie into the existing junction of Greensbridge Street and Michael Street to the east of the River Nore: The existing level of the junction of Greensbridge Street and Michael Street established the level for the proposed bridge at that location which in turn had implications for the vertical alignment across the river and west to tie-in with St. Canice’s Place.

Alternative Bridge Design
On review of An Bord Pleanála’s letter of 7th July 2009 it was decided to eliminate bridge types which involved supporting structures above the carriageway level, as they imposed on too many key views of the City. Based on an initial appraisal of bridge options that would not require supporting structures above the carriageway level, three such options were developed. Each of the three options comprised of clear span structures over the River Nore and are as follows:

- Bridge Option A: Three Span Concrete with Isolated Pier Supports;
- Bridge Option B: Five Span Concrete with Splayed Supports; and,
- Bridge Option C: Three Span Concrete with Central Arch Support.

Following an initial evaluation process, Option A was considered to be the preferred design option.

Alternative Design Developments Arising from Consultations
A key development that arose during the design process was a decision by the SRFB in December 2009 to allow construction works within the River Nore during specific months. This decision by the SRFB allowed the consideration of a structural arrangement with in-river supports. The use of in-river supports presented an alternative design solution, with the option of considering shorter spans and reduced dimensions for the deck structure. The preferred bridge option that was developed utilising in-river supports was a five span bridge option.

An architectural review of the proposed River Nore bridge design was held in March 2010. A review panel consisting of Architects with particular experience of urban design was selected by the Royal Institute of the Architects of Ireland (RIAI) at the request of Kilkenny County Council. The panel made a number of observations and suggestions, many of which related
to the integration of the proposed bridge with the existing and future urban fabric of the City and the opportunities to create new urban experiences in the context of the unique urban setting of Kilkenny.

All of the observations and suggestions from these consultations were considered in the redesign of the bridge, and of the altered Scheme in general, and informed the selection of the final design of the altered Scheme.

7.0 Description of the Altered Scheme

The altered scheme is illustrated in Figure 1 and described briefly in this section.

Urban Planning and Design

- All elements of the design including the proposed River Nore bridge, vertical and horizontal alignments and junction layouts have been evaluated based on best practice urban design principles.

Description of the Altered Scheme

- The altered Scheme has been designed for low-speed urban traffic. The character and physical elements of the proposed street have been designed to discourage speeds of above 30kph.

- The proposed cross-section of the street will consist of two 3.5m lanes for motor vehicles, two 1.5m lanes for cycles and 2m footways on either side for pedestrians. At the proposed River Nore bridge the width of the footways will widen as described below.

- Signalised junctions are proposed for the junctions at either end of the altered Scheme, namely those at Vicar Street and Castlecomer Road. Pedestrians will therefore be able to cross safely when traffic has been stopped. The junctions with Michael Street/Greensbridge Street and Wolfe Tone Street will operate as priority junctions where the traffic on the side road will have to yield to the traffic on the new street. Crossing points will be marked out for pedestrians. In addition 80mm high raised tables in the pavement will be used at all junctions except the Castlecomer Road junction. All dedicated pedestrian crossing points will be provided with ramped tactile paving as the transition between footpath and carriageway.

River Nore Bridge Crossing

- The proposed bridge is designed as a five span structure supported by abutments at each end and, in between banks, on four pairs of concrete piers over a total length of 118m.

- The proposed bridge supports a single carriageway with a single 3.5m wide traffic lane, a 1.5m wide cycle lane in each direction and a 3m wide footpath on each side of the proposed bridge, giving an overall paved width of 16m.

- There is provision for a viewing area on the south elevation of the bridge near the eastern bank, where the footpath zone widens to 6m. An independent elevated 3m wide walkway/footbridge over the Peace Park will link the viewing platform to the junction of Wolfe Tone Street with Michael Street.

- The proposed design will also cater for access to the riverside walkways. Steps are proposed from the proposed bridge to the riverbank on the west side of the River Nore. On the east side it is proposed that the existing stone steps will continue to be used to access the Peace Park and riverside walk.
8.0 Traffic
The traffic modelling and forecasting that was undertaken for the original EIS has been updated using the Kilkenny City Traffic Model (KCTM) to assess the impact that the altered Scheme would have on the road network in Kilkenny. Specifically the model was used to assess the impact that the removal of Phases 2 and 3, as proposed in the original EIS, would have on traffic levels on the altered Scheme.

Forecasts were undertaken for the following years:

- 2015 (proposed year of opening of altered Scheme);
- 2030 (design year of KCAS, 15 years after opening of altered Scheme).

For the purpose of the revised modelling, traffic growth levels predicted to occur between 2006 and 2030 were derived from three distinct elements. These are:

- Increases in traffic resulting from changes in socio-economic indicators such as population and employment levels and car ownership;
- Increases in traffic resulting from an intensification of existing development within Kilkenny; and,
- Traffic growth resulting from new development proposed within Kilkenny.

Due to economic uncertainty amid the current downturn in the economy a conservative approach was undertaken in predicting traffic growth levels. Therefore, for the period between 2006 and 2016 it was assumed zero growth would take place, while between 2016 and 2030 a moderate growth of 1.5% per annum was assumed.

The assessment of traffic modelling clearly demonstrates the need for the altered Scheme to alleviate traffic congestion within Kilkenny City Centre even taking account of reduced traffic volumes due to the economic slowdown. In the absence of the altered Scheme, the traffic congestion currently being experienced on John’s Bridge and Green’s Bridge will become worse. This congestion will also prevent proposed improvements to public transport and facilities for pedestrians and cyclists in the City Centre, which are currently being developed by the Local Authorities, from being implemented. In order to maximise a modal shift to other forms of transport and to reduce the predominance of the private car in the City Centre, it is essential that the altered scheme is constructed.

The results of the traffic modelling also clearly show that the additional capacity which would be provided by the altered Scheme, is required to allow any proposed one-way system to operate efficiently within the City Centre.

The traffic modelling also supports the need for both the altered Scheme and the proposed Northern River Crossing, which will involve an extension of the existing Ring Road on the north side of Kilkenny, crossing the River Nore and connecting to the Freshford Road on the outskirts of the City.

Economic Assessment
A COBA based economic assessment of altered Scheme has been undertaken using information from traffic forecasts undertaken both with (Do Something) and without (Do Minimum) the altered Scheme in place. The results of this assessment confirm that the altered Scheme shows a healthy positive Benefit to Cost Ratio (BCR) of 7.16 which indicates that the altered Scheme is economically viable.
There are other non-tangible benefits which will arise for the citizens of Kilkenny, through the improved access to and use of the riverside areas and other enhancements to the built environment of the City Centre, which have not been assessed through the above analysis but will clearly enhance the overall benefit value in relation to costs.

9.0 Human Beings

The altered Scheme will have a positive local impact in terms of facilitating the future development of Kilkenny City and Environ, in line with its role as a ‘Hub’ town within the National Development Plan and the National Spatial Strategy, and also at a local level by addressing issues such as alleviating traffic congestion, improving connectivity, facilitating future development, and facilitating alternatives to private car transport within the City Centre.

The proposed River Nore bridge will incorporate separate pedestrian and vehicular corridors to encourage pedestrian use of the bridge. The proposed bridge will also incorporate a cantilevered viewing platform on the eastern side, which has been designed to ensure optimum views of Kilkenny Castle. The viewing platform will link to a curved footbridge which will take pedestrians over the Peace Park to connect with Michael Street. It is therefore considered that the altered Scheme will have a positive impact on tourism in the City.

There may be some indirect disruption to local businesses during the construction phase, which may primarily arise due to the need to provide traffic restrictions during certain times of construction; however mitigation measures will be put in place to minimise any such disruption.

Although a portion of the Peace Park will be closed during construction works to facilitate the bridge construction, access to the Park and to the riverside will be maintained at all times. Temporary diversions will be in place on either bank of the River Nore as neither pedestrians nor cyclists will be authorised to traverse through designated work areas.

It is acknowledged that during the construction stage visitors to the City will be aware of the construction works proceeding when in close proximity to the works, i.e. along Dean Street, St. Canice’s Place, Vicar Street and in the Peace Park. However it is not envisaged that these works would be sufficient to deter visitors from these tourist attractions and access will be maintained to all tourist attractions in close proximity to the altered Scheme.

10.0 Flora and Fauna

Sites of Ecological Importance

The River Nore is within the River Barrow and River Nore candidate Special Area of Conservation (cSAC) (site code 002162) as designated under the EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Directive 92/432/EEC), known as the Habitats Directive. The River Nore cSAC is an important river corridor for upstream and downstream migration of salmon and lamprey, both of which are protected species. The Breagagh River, while not a designated site, is a significant salmonid nursery stream for the River Nore.

Terrestrial Flora and Fauna

Habitats

The majority of the habitats traversed by the altered Scheme are amenity grassland and built ground. The loss of such habitats is not considered to be of significance and the impact can
be described as neutral. The altered Scheme will result in the removal of 4 mature lime trees on the east bank of the River Nore as it opens on to Michael Street/ Wolfe Tone Street. In addition the junction with the Castlecomer Road will result in the removal of 10 young and semi-mature mixed species including 2 mature lime trees. These trees will be replaced and reinstated insofar as possible. This impact is rated as slight negative.

The banks of the River Nore at the proposed crossing point have been artificially modified (amenity grass, walls, etc.) and do not support riparian vegetation or marginal wetland habitats. Therefore, from the perspective of terrestrial ecology the impact of the construction of the altered Scheme in this area is considered to be neutral.

**Mammals**

The design of the proposed River Nore bridge will ensure that mammals such as otters can move freely along the river bank at all times. A total of four common bat species were noted within the study area, all feeding along the River Nore. It is possible that bat roosts are present in the buildings/ structures to be demolished. However all bat species identified on site are expected to remain within the study area and the overall impact of the altered Scheme in relation to bats is considered to be slight negative. In summary, there are not expected to be long-term significant residual impacts on mammal species as a result of the altered Scheme.

**Aquatic Flora and Fauna**

The proposed River Nore bridge will be supported on two sets of piers within the River Nore and a further two sets of piers and abutments located on the river bank at each side of the crossing.

Prior to finalising the design of the proposed bridge, consultations were held with the SRFB (part of IFI since July 2010) and the Department of the Environment, Heritage and Local Government in order to ensure these bodies would accept the proposed bridge structure. An agreement with the SRFB was subsequently ratified in a Memorandum of Understanding between Kilkenny County Council and the SRFB. In addition, in accordance with the Habitats Directive, an Appropriate Assessment (AA) Screening exercise and an AA have been prepared in respect of the altered Scheme and are contained in a Natura Impact Statement (NIS). The NIS is included in Appendix D of the EIS.

In the absence of mitigation, the following impacts on the River Nore have the potential to arise during construction and operation of the altered Scheme:

- Obstruction to upstream movement of fish within the River Nore during construction of the proposed bridge;
- Pollution of the River Nore and River Breagagh with suspended solids and other potentially polluting substances which may arise during the construction phase; and,
- Pollution of the River Nore with contaminated water draining from the altered Scheme when operational.

However, these potential impacts will be mitigated by the implementation of a number of measures as follows:

- In-stream construction works within the River Nore will only be undertaken during the period July to September inclusive.
- Preparatory and completion works related to the in-stream construction such as the creation and removal of temporary access platforms may be considered acceptable during June and October subject to agreement with IFI.
• All methods of construction will be developed in accordance with current recognised best practice. Contractors will be in possession of, and familiar with the contents of: "Control of water pollution from construction sites - Guidance for consultants and contractors" published by the Construction Industry Research and Information Association.
• The contractor will be required to ensure that temporary works required for construction using in-situ concrete within the River Nore will be installed and secured to ensure that any water likely to be contaminated by fresh concrete can be controlled and collected if necessary to prevent pollution of the River Nore. In order to achieve this objective it is proposed to construct a localised temporary containment structure within which any excavation works and the pouring of concrete will take place. These temporary structures will be removed immediately following the completion of the temporary works.
• Measures will be put in place to ensure that suspended solids in any runoff into the River Breagagh and River Nore from the construction area, machinery access routes or any other land based source does not exceed 25mg/l.
• A ‘closed’ drainage system will be installed for the altered Scheme which will prevent significant pollution entering receiving waters, i.e. the River Nore. There will be two outfalls to the River Nore, one on the east and one on the west side of the River. Using best practice design measures, oil pollutants and sediments in the runoff will be removed by oil and grit interceptors.
• To guard against pollution from an accidental spillage, a retention facility will be installed upstream of both of the outfall points to the River Nore. An automated shut off valve will be installed at the outlet from each retention facility which will shut automatically in the event of a spillage on the altered Scheme. Facilities to allow the tanks to be pumped out will also be provided.

Overall the residual impact on freshwater flora, fauna and habitats, and the River Nore cSAC can be described as not significant.

11.0 Geology, Hydrology and Hydrogeology

No rock excavation is anticipated during the construction of the altered Scheme, therefore no construction or operational impacts on the solid geology of the study area are anticipated.

The earthworks required for the altered Scheme are considered to be minor. Soils that will be excavated will either be re-used or taken off site in accordance with the relevant legislation. Suitable material will be imported for use from a local source where required. During the construction phase the potential exists for contamination of exposed soil with substances such as fuels, lubricants, waste oil etc. and appropriate mitigation measures will be put in place to prevent any such contamination issues arising. No significant impact on soils is envisaged.

During the construction phase there is the potential for contamination of groundwater as a result of localised point sources of pollution. However mitigation measures will be put in place to minimise the potential for pollution during the construction phase.

As the altered Scheme will not involve any major cuttings, it will have a negligible impact on groundwater vulnerability. In addition, there will be no direct discharge of surface water runoff from the altered Scheme to groundwater therefore the impact on groundwater quality can be described as neutral.
In summary, following the implementation of suitable mitigation measures, the residual impact of the altered Scheme on soils, geology and groundwater resources is considered to be not significant.

**Potential Flood Impacts**

As part of the EIA process, an assessment was undertaken on the potential impacts that the supports for the proposed bridge in the River Nore are likely to have on flood levels in the river, and if such an increase is likely to be significant in the context of flood risk. The impact was considered for the occurrence of a 1:100 year flood event which is standard practice for the assessment of flood impacts arising from rivers passing through urban areas.

In the case of the City of Kilkenny, flood defences were constructed in 2004 as part of the River Nore Drainage Scheme which was funded by the Office of Public Works (OPW). During the preparation of the design of these flood defences, the OPW had developed and calibrated a mathematical model of the flows in the River Nore channel. The original model was developed using the HECRAS software and was calibrated and validated using various historic flood data. This original model extended for a distance of 830 m upstream of the proposed bridge location and the related flood defence works provided protection to all properties considered vulnerable to flooding for flood levels equal to the predicted 100 year flood level plus a design freeboard of 300mm.

For the purpose of the assessment of the impacts arising from the proposed bridge piers, a copy of the model, which contained the final profiles of the river channel after construction of the Drainage Scheme in 2004, was obtained from the OPW. After an initial verification of the cross-sections of the river channel in the area around the proposed bridge, an additional cross-section was added to the HECRAS model which included the constraints imposed by the proposed bridge supports on the flows in the river at the proposed bridge. The resulting profile of the modelled 100 year flood levels, with the proposed bridge piers, was then compared to the modelled 100 year flood levels profile without the piers, in order to establish the predicted impact the altered Scheme would have on water levels in the River Nore.

The results from the HECRAS model for the 100 year flood event with the piers in place show an increase in water level of 40mm immediately upstream of the proposed bridge location which dissipates to zero within the reach covered by the original OPW model and the resulting flood defence works constructed in 2004. Downstream of the proposed bridge location the flood level profile of the river remains at the same levels as would be the case without the influence of the proposed bridge. A walkover of the localized area within which the model indicates an increase in the water level confirmed that there will not be any significant increased risk of flooding from the modelled 1:100 year storm event.

Based on the design freeboard of 300mm it is considered that an increase of up to 40mm in flood levels over a localized area for the 100 year flood event will not have a significant impact on the flood risk to properties in the vicinity of the proposed bridge.

**12.0 Air Quality and Climate**

**Air Quality**

The air quality impact assessment was undertaken in accordance with the methodology outlined within the National Roads Authority (NRA) document entitled ‘Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes’, and the Design Manual for Roads and Bridges (DMRB). Using traffic data for the opening year of 2015 and the design year of 2030, the assessment ascertained the predicted changes in concentrations of traffic related pollutants along the existing road network in...
scenarios with and without the altered Scheme in place. The assessment took place at a number of representative receptors in close proximity to road links where traffic increased by 10% or more with the altered Scheme in place.

Overall, the altered Scheme will provide for a reduction of traffic flows on a higher number of road links than will experience a 10% or greater increase in traffic flows, which will result in an overall positive impact in terms of air quality.

On road links where traffic will increase by 10% or more with the altered Scheme in place, the modelling showed that the altered Scheme will increase ambient concentrations for some traffic derived pollutants on these road links in future years, however the levels will not exceed the ambient air quality standards, and overall the predicted impacts can be described as slight adverse impact.

Climate
In terms of climate, Carbon Dioxide (CO₂) will be emitted as a result of the combustion of fuel from vehicles travelling on the altered Scheme. However, the altered Scheme will redistribute traffic around the City, reducing congestion and reducing hard acceleration. Therefore no adverse impact on climate is envisaged.

13.0 Noise and Vibration

Traffic Noise
The NRA document entitled ‘Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1, October 2004’ outlines a methodology for the assessment of noise and vibration in national road schemes. While these guidelines are not directly applicable to the assessment of non-national, urban road projects such as the altered Scheme, the assessment methodology outlined in these guidelines has been used to calculate the $L_{den}$ values for 2015 and 2030, both with and without the altered Scheme in place. The assessment was undertaken at a number of representative receptors in close proximity to road links where traffic will increase by 10% or more with the altered Scheme in place.

The Noise Action Plan prepared by both the City and County Councils of Kilkenny has established a noise level of 70dB $L_{den}$ for the assessment of noise mitigation measures within areas which qualify for noise mapping. Accordingly, it is considered that this is a suitable design goal for the onset of noise mitigation measures in respect of the altered Scheme.

It is proposed to use a low noise road surface along the length of the altered Scheme which will give an average noise reduction at sensitive receptors of 3dB in comparison with the road surface utilised in the noise model. This surfacing will reduce the need for further mitigation at those sensitive receptors where the design goal of 70dB $L_{den}$ was reached with the altered Scheme in place, and will also be of benefit to all receptors along the altered Scheme.

In summary, considering the urban nature of the receiving environment, the traffic noise impact of the altered Scheme on the receiving environment can be described as not significant.
Short Term Construction Vibration

Construction vibration levels will be controlled in accordance with the criteria outlined in the NRA Guidelines and BS 5228 (2009) Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 1: Noise.

Where activities such as piling will take place in the vicinity of dwellings or sensitive historic buildings, vibration monitoring will be carried out during construction to ensure the levels of vibration are maintained within the recommended levels.

14.0 Landscape and Visual

The altered Scheme passes through the central area of Kilkenny City where the character is entirely urban or urban-edge in nature. The majority of the route passes through structurally weak or undeveloped lands such as the Diageo Brewery lands and the former Kilkenny Mart site.

The area falls within the context of the urban and / or visual setting of some key features of Kilkenny City, including St. Canice’s Cathedral and its precinct, Kilkenny Castle, the River Nore and the City Centre in general. With the exception of the River Nore, the altered Scheme avoids direct physical impact on these significant features.

The altered Scheme will result in the removal of 4 mature lime trees on the east bank of the River Nore as it opens on to Michael Street/ Wolfe Tone Street. In addition the junction with the N77 Castlecomer Road will result in the removal of 10 young and semi-mature mixed species including 2 mature lime trees that are considered ‘worthy of protection’ in the current Kilkenny City and Environs Development Plan. To mitigate against the removal of these trees, new semi-mature lime tree planting will be used to reinstate and enclose insofar as possible the existing tree-lined boundary at the Peace Park. While at the proposed Castlecomer Road junction, new semi-mature avenue-style lime tree planting will be used to frame the junction and to extend the line of existing mature trees. The junction will be also be enclosed by returning a section of limestone wall back along the altered Scheme to form a clean and appropriate entrance to the altered Scheme.

The altered Scheme and particularly the proposed River Nore bridge will be a significant and prominent visual structure. The proposed bridge will sit prominently in views along the eastern corridor of the River Nore from John’s Bridge to Green’s Bridge, and as such will have a significant visual impact. However, the under-stated design of the proposed bridge, which does not compete with nearby Green’s Bridge is considered appropriate within the historic context of Kilkenny. The proposed bridge will also open up new vistas along the River Nore, south towards John’s Bridge with the Castle in the distance, north towards Green’s Bridge and also west towards St Canice’s Cathedral. The altered Scheme in the short term will also open up views of Evans Turret and St. Francis Abbey, located in the grounds of the Diageo Brewery, albeit that these views will be constrained by existing buildings within the Diageo Brewery lands, and proposed boundary treatments along the altered Scheme.

Furthermore the altered Scheme has been designed as a ‘future’ urban street, to be viewed in the context of potential urban development on lands which are currently within the ownership of the Diageo Brewery, and the presently undeveloped former Kilkenny Mart site. Construction of the altered Scheme, will have the effect of reducing congestion within the City Centre and allowing for an improvement in the urban streetscape and visual environment of the commercial and tourist heart of the City.
15.0 Cultural Heritage

A detailed assessment of the potential impact of the altered Scheme on cultural heritage has been undertaken and the potential impacts on archaeology, architectural heritage, industrial archaeology and underwater archaeology have been assessed. For the purpose of this assessment a direct impact is assigned where sites and their zones of influence are within the landtake of the altered Scheme, and an indirect impact is assigned where sites are adjacent to the altered Scheme and whose setting is potentially compromised.

In total, 7 sites of archaeological potential have been identified as being affected by the altered Scheme, 3 of these impacts are direct and 4 are indirect.

Any ground works associated with the altered Scheme will potentially have a direct impact on the archaeological heritage of Kilkenny City Centre (site A6). The altered Scheme will have a direct impact on the site of a 12th century mill stream (site A1) at the Peace Park. The altered Scheme will also have a direct impact on a possible early medieval enclosure (site A5) within the Dean Street/ St. Canice’s Place area.

The altered Scheme will have an indirect impact on site A2 a 12th century mill located at mill lane, site A3 a portion of Kilkenny town wall and Evans Turret, site A4 the remains of a 16th century inn at St. Canice’s Place and site A7, the site of St. Maul’s Chapel at Greensbridge Street.

In total, 7 sites of architectural heritage have been identified, 5 of these sites are directly impacted and 2 are indirectly affected. The altered Scheme will involve the demolition of a number of structures which are of local historical importance.

There will be a direct negative impact on Numbers 20 to 22 Vicar Street (AH5-AH7) which date predominantly from the 19th century, but could potentially incorporate earlier re-used stonework of late medieval or an early modern date. A survey of the houses found no masonry that appears to predate the 18th century or any other evidence to suggest the buildings predate the 18th century. Materials salvaged from these buildings will be retained and utilised in other elements of the development e.g. boundary wall treatments etc. The remaining two sites which will be directly affected are boundary walls on Wolfe Tone Street, AH2 and AH4.

Two sites of industrial archaeology have been identified. IA1, a smithy site which is directly affected, and IA2, the ruins of a factory which is indirectly affected.

The underwater archaeology assessment of the river bed at the proposed River Nore bridge concluded that the gravels which form the surface deposits in this section of the River Nore no longer appear to retain material of archaeological interest. Previous dredging works within the River Nore undertaken as part of the River Nore Drainage Scheme have removed much of the archaeological potential of the river bed. This dredging extended to a natural clay substratum that is archaeologically sterile. It is therefore concluded that the construction of the two sets of piers within the river will not impact on any archaeology. However, construction of the piers on the river bank, which will involve piling to a depth of at least 15m, will have a potential direct negative impact on deeply buried subsurface remains in these areas.

The impacts on archaeological or architectural sites will be monitored and mitigated through the use of pre-construction archaeological investigative excavation in the form of trial trenching, architectural survey and photographic recording, bankside inspection and salvage of architectural fragments.
During the construction of the altered Scheme, archaeological monitoring will be undertaken during all groundworks and demolition works. In the event of archaeological features or material being uncovered during the construction phase, full archaeological excavation and recording of such remains will be carried out.

The Kilkenny Local Authorities are committed, where possible, to retain and reuse architectural elements salvaged during the construction phase of the altered Scheme in the proposed boundary walls and other suitable locations along the length of the altered Scheme.

16.0 Material Assets

The altered Scheme has been designed as far as possible to avoid direct impact on buildings and property. Compensation payments for lands to be acquired as a result of the altered Scheme will be agreed between the relevant landowners and Kilkenny County Council. Where part of the property or land surrounding the property is to be acquired, replacement boundary treatment will be provided. Where access to a property is affected the access will be reinstated in agreement with the relevant landowners.

17.0 Interaction of Environmental Impacts

The cumulative impact of the above interactions has been addressed in the specialist chapters of Volume 2 of this EIS. The following interactions of environmental impacts have been considered:

- Geology, Hydrology and Hydrogeology: Terrestrial and Aquatic Flora and Fauna; Noise and Vibration.
- Air Quality and Climate: Traffic, Human beings.
- Material Assets: Groundwater; Landscape and Visual and Cultural Heritage.

18.0 Summary of Environmental Commitments

Chapter 14.0, Volume 2 of this EIS contains a summary of the environmental commitments which will be put in place with regard to each environmental aspect outlined above. These commitments are an integral part of the application for Approval of the altered Scheme.

19.0 Further Information

The revised EIS will be available for inspection at the following locations:

1. Kilkenny County Council – County Hall, John Street, Kilkenny.
2. Kilkenny County Council – Road Design Office, Dean St., Kilkenny.

The revised EIS will be uploaded on the Kilkenny County Council website [www.kilkennycc.ie](http://www.kilkennycc.ie). A hard copy of the revised EIS may also be purchased from Kilkenny County Council for the fees listed below:

- Non-Technical Summary (Volume 1) – €10.00.
- Complete EIS (Volumes 1 to 4) – €100.00
Figure 2: Computer Generated Image of the Altered Scheme - View From St Canice’s Tower
Figure 3: Computer Generated Image of the Altered Scheme - View From Peace Park
Figure 4: Computer Generated Image of the Altered Scheme - View From Peace Park at Night