Declan Brassil + Company

Environmental Impact Assessment Report

Non-Technical Summary

To accompany a planning application for

Residential Development

At

Heuston South Quarter
St. John's Road West, Dublin 8

Submitted on Behalf of

HPREF HSQ Investments Ltd
32 Molesworth Street, Dublin 2

October 2021

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(I) INTRODUCTION

This document provides a non-technical summary of the Environmental Impact Assess Report (EIAR) submitted with an application for a Strategic Housing development in Heuston South Quarter, Dublin 8, County Dublin. The proposed development comprises 399 no. Build to Rent apartments, a retail unit of 102 sqm, indoor and outdoor communal areas, ancillary car, and bicycle parking and supporting service infrastructure.

This document provides a summary in plain English and free of technical jargon, describing the likely environmental impacts and inter-relationships between environmental factors as a result of the proposed development. This summary reflects the findings of the main EIAR document that accompanies the planning application submitted to An Bord Pleanála.

Table 1. below lists the competent experts who have prepared each section.

The EIAR presents an evaluation of the likely significant environmental impacts and applicable mitigation and monitoring measures associated with the construction and operation of the proposed development. It is the document which HPREF HSQ Investments Limited is required to submit to the Board to inform the Board's Environmental Impact Assessment (EIA) of the Proposed Development. This EIAR has been completed in order to comply with and exceed the requirements of all relevant legislation and guidance.

The EIAR addresses all of the issues listed in Schedule 6 of the Planning and Development Regulations 2001 (SI No. 600 of 2001) (as amended) (the PDRs), having regard to the requirements of Article 5(1) and Annex IV of Directive 2011/92/EU as amended by Directive 2014/52/EU (the EIA Directive), and assesses the following;

- Population & Human Health
- Biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive Soil, land, and Geology
- Water
- Air, Dust and Climatic Factors
- Noise and Vibration
- Material Asset: Traffic & Transport
- Material Asset: Water Supply, Drainage & Utilities
- Cultural Heritage: Archaeology Heritage
- Cultural Heritage: Architectural Heritage
- Landscape & Visual Impact Assessment
- The interaction between the factors mentioned above

Table 1. Competent Experts Responsible for the Preparation of this NTS.

Section Title	Author
(I) Introduction	Declan Brassil & Company Limited
(II) Site Location and Context	Mr. Declan Brassil
(III) Description of Development	Ms. Sinéad O'Connor
(IV) Consideration of Alternatives	

Section Title	Author
(XVI) Interactions with the foregoing (XVII) Mitigation Measures	
(V) Population and Human Health	Future Analytics Mr. Stephen M. Purcel
(VI) Biodiversity	Biosphere Environmental Services Dr. Brian Madden
(VII) Lands, Soils and Geolog7 (VIII) Water (XI) Material Assets: Traffic And Transportation (XII) Material Assets: Water Supply, Drainage and Utilities	Cronin Sutton Consulting Engineers Mr. David Rehill Mr Robert Fitzmaurice Mr. Gordon Finn
(XII) Material Assets: Water Supply, Drainage and Utilities	IN2 Engineering Mr. James Redmond
(IX) Air and Climate (X) Noise and Vibration	TMS Environment Ltd. Dr. Imelda Shanahan
(XIII) Cultural Heritage and Archaeology	Archaeological Projects Ltd. Ms. Claire Walsh
(XIV) Cultural Heritage: Architectural Heritage	Howley Hayes Cooney Architects Dr. Niamh Marnham
(XV) Landscape and Visual Impact Assessment	Doyle & O'Troithigh Mr. Daithi O'Troithigh Mr. Dave O'Sullivan

Construction and Operational Phase Overview

Construction of the proposed development is expected to take place over 24-30 months, commencing in Q2/Q3 2022. A detailed construction plan and schedule has been developed to ensure that the construction phasing allows for maximum efficiency while minimising the potential for environmental impact and this plan.

During the operational phase of the Proposed Development the scheme will accommodate a residential population of approximately 886 persons, based upon an estimated occupancy rate of 2.22 persons per

unit (CSO Average Household Size, 2016). The scheme will be maintained and managed by a private management company to ensure the safety and security of the development and its residents.

Vulnerability to Risks of Major Accidents and/or Disaster

The EIA Directive requires that the proposed development is assessed in respect of its potential to cause accidents/disasters, and the vulnerability of the proposal to accidents/disasters. These risks can be from both man-made and natural disasters and there is a requirement to build resilience into projects and to invest in risk prevention. Principle risks that have been evaluated include; accidental spillages, ground instability, collapse of existing structures, landslides, flooding, major traffic accidents, and work-place construction accidents. None of these risks are considered to be significant.

(II) SITE LOCATION AND CONTEXT

The subject site of 1.08 hectares (10,825 sqm) forms part of the larger Heuston South Quarter development site that is bound by St. John's Road West (to the north); Military Road (to the east and the Royal Hospital Kilmainham (RHK) and its attended grounds to the west.

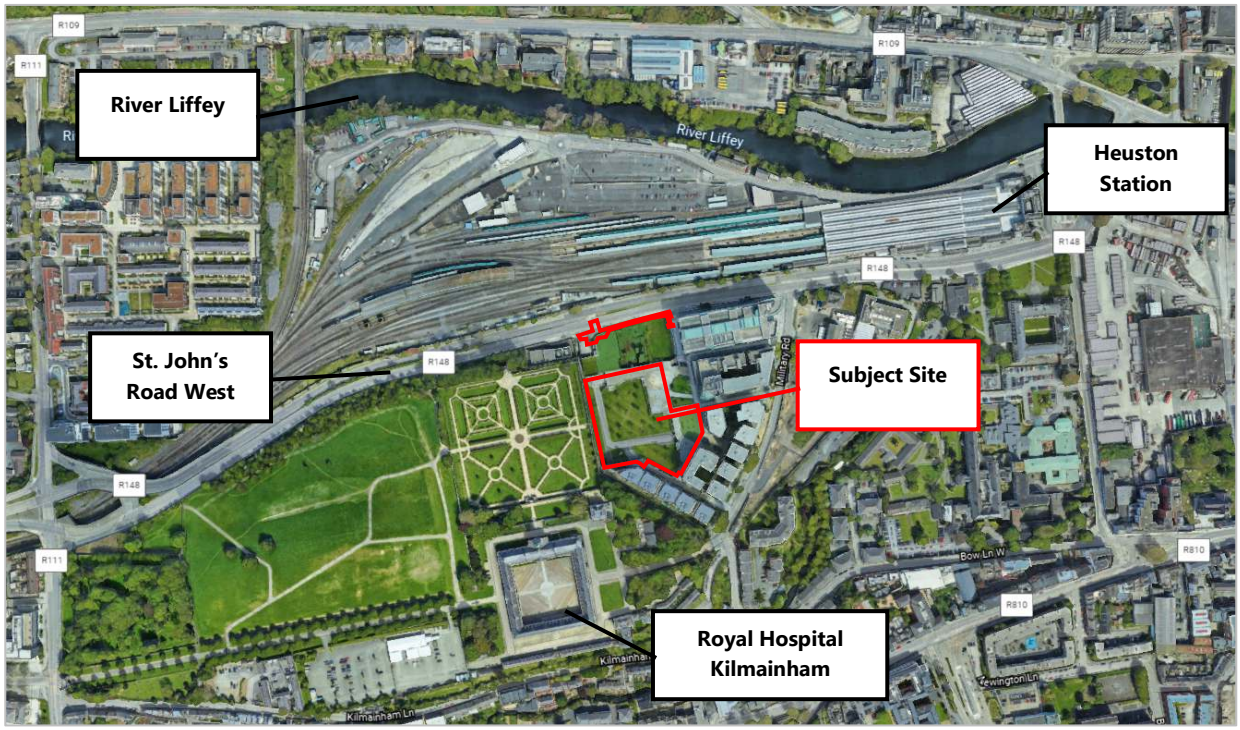
The HSQ site is in close proximity to Heuston Rail Station and the LUAS Red Line service and enjoy excellent connectivity to the City Centre. HSQ adjoins and is immediately accessible to major national and international tourist and cultural attractions including the Royal Hospital Kilmainham, IMMA, the Guinness Brewery and Collin's Barracks.

The character of the HSQ site is defined by the established cluster of mixed-use buildings in office use, residential use, cultural use and with retail at street level. The buildings are diverse in terms of built forms, façade treatments and material. The existing buildings address a network of open spaces areas, including urban hard landscaped areas and pedestrian routes and open space areas (local residential squares) and a Civic Plaza.

The planning history for the wider HSQ site dates back to September 2004 when the Parent Permission was granted under An Bord Pleanála Ref. PL29S.206528 (DCC Ref. 2656/03). After this grant of permission, a number of permissions for modifications of the parent permission and other planning permissions have been granted.

At present, the subject site is landscaped in accordance with Planning permission Reg. Ref. 2724/13, permitted by Dublin City Council on 19 November 2013. The works provide for an interim landscaping strategy and site resolution works to mitigate the visual impact of unfinished building works, to enhance the aesthetic of the site and its relationship with the Royal Hospital Kilmainham Gardens, and to make temporary spaces that function within the context of the scheme.

Figure 1. Site Location in Context (source: google maps)



(III) DESCRIPTION OF DEVELOPMENT

The proposed development will consist of 399 no. Build to Rent apartments, comprising 46 studios, 250 no. 1 bed apartments, and 103 no. 2 bed apartments. The apartments are arranged in 5 blocks (Blocks A to E) that vary in height from 3 storeys to 18 storeys in height over double basement level / podium level. The application site extends to 1.08 ha or 10,825 square metres (sqm).

- Block A is a rectangular shaped block that occupies the north-eastern corner of the application site. This block rises in height to 18-storeys above podium level and includes a lower ground floor level to provide a total of 154 no. apartments (comprising 12 no. studios; 108 no. 1 beds and 34 no. 2 beds). Block A has a Gross Floor Area (GFA) of 11,814 sqm.
- Block B is a rectangular shaped block that occupies the south-eastern corner of the application site. This block is part 8- and part 12-storeys in height above podium level and includes a lower ground floor level to provide a total of 81 no. apartments (comprising 9 no. studios; 60 no. 1 beds and 12 no. 2 beds). Block B has a Gross Floor Area (GFA) of 5,446 sqm, which includes a retail unit at the northern end of the block at podium level of approximately 120 sqm (GFA).
- Block C is situated between Block B to the east and Block D to the west. Block C varies in height up to a maximum of 12-storeys above podium level and includes a lower ground floor level to provide a total of 86 no. apartments (comprising 19 no. studios; 45 no. 1 beds and 22 no. 2 beds). Block C has a Gross Floor Area (GFA) of 6,024 sqm,
- Block D is a 5-storey over basement level rectangular block that occupies the south-western corner of the application site. It accommodates a total of 35 no. apartments (comprising 1 no. studio; 16 no. 1 beds; 6 no. 2 bed /3 person and 12 no. 2 beds). This block has a Gross Floor Area (GFA) of 2,786 sqm.

- Block E is a part 3-, part 5-storey over basement level rectangular block that occupies the north-western corner of the application site to the west of Block A. It accommodates a total of 43 no. apartments (comprising 5 no. studios; 21 no. 1 beds; 7 no. 2 bed / 3 person and 10 no. 2 bed / 4 person units). This block has a Gross Floor Area (GFA) of 3,321 sqm.

Site clearance and localised demolitions to remove part of the podium and Basement Level -1 reinforced concrete slabs at the interface of the proposed Blocks A and B, together with the incorporation of part of the existing double basement level structure extending to approximately 7,613 sqm over two levels (excluding an area of 3,318 sqm that will be backfilled at Basement Level -1) within the proposed development.

It is proposed to provide a Retail unit of 120 sqm at podium level in Block B. The Retail space has a small garden to the east with an area dedicated for outdoor seating (150 sqm).

Indoor communal facilities with a total area of 533 sqm are proposed as follows; a shared co-working area / lounge (178 sqm) and gym (102 sqm) at lower ground floor level, and lounges on either side of a residential foyer at ground floor / podium level within Block A (196 sqm), and a TV Room / lounge (57 sqm) at ground floor / podium level within Block C.

Communal Outdoor Amenity space is provided for residents in the form of rooftop terraces (totalling 1,179sqm), and lower-level communal courtyards between blocks (totalling 960sqm). Hard and soft landscaping works are proposed at podium level which includes the extension and completion of the public plaza to the east of Block A; the provision of footpaths; a MUGA (Multi Use Games Area) and informal play areas for children (totalling 1,670sqm).

A double basement is provided that will be integrated within the existing basement levels serving the wider HSQ development and will be accessed from the existing vehicular ramped accesses/egresses onto/off St. John's Road West and Military Road to the north and east, respectively. Basement level -1 provides: a refuse store; 80 no. car parking spaces (including 4 no. disabled spaces and 8 car club spaces); 4 no. motorcycle parking spaces; and, secure bicycle parking / storage in the form of 251 no. double stacked cycle parking spaces providing capacity for 502 no. secure bicycle storage spaces for residents. An additional 49 no. Sheffield type bicycle stands are provided at basement level -1 to provide 98 no. visitor cycle spaces (inclusive of 8 no. designated cargo bike spaces, that will also be available for the shared use with residents of the scheme) and a further 55 no. Sheffield type bicycle stands are provided at podium level to provide 110 no. cycle parking spaces (108 no. visitor cycle parking spaces (inclusive of 6 no. designated cargo bike spaces) and 2 no. cycle parking spaces in connection with the retail unit). All bicycle parking at basement level is accessed via a dedicated cycle lift from podium to basement level -1 that is situated to the south of Block B.

Works proposed along the St John's Road West frontage include the omission of the existing left-turn filter lane to the vehicular ramped access to the HSQ development and re-configuration of the pedestrian crossings at the existing junction together with the re-configuration of the existing pedestrian crossing over the westbound lanes of St. John's Road West leading to an existing pedestrian refuge island. Re-alignment of the existing footpath along the site frontage onto St John's Road West to tie into the reconfigured junction arrangement and provision of a link to a new lift to provide wheelchair access from St John's Road West to the HSQ podium.

A double ESB substation/switch room at ground / podium level within Block A, and a single substation/switch room at ground / podium level within Block B together with associated site

development works, which includes the infilling of an existing vehicular access ramp at the southern end of the site between basement levels -1 and -2.

Figure 2 Proposed Site Plan

(IV) CONSIDERATION OF ALTERNATIVES

This Chapter provides 'a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects' as required by Schedule 6 of the Planning and Development Regulations, 2001-2019.

Alternative Development Locations

The proposed development provides for the delivery of residential development on available, serviced and appropriately zoned lands within Dublin City Centre. The Heuston Gateway area is identified as a Strategic Development and Regeneration Area (SDRA 7) in the Dublin City Development Plan, focused

on the nation's busiest public transportation interchange. The SDRA area will develop as a Western Cluster and a counterpart to the Docklands at the eastern end of the City.

The Development Plan was the subject of Strategic Environmental Assessment (SEA). The issue of alternatives is a critical function of the Strategic Environmental Assessment (SEA) process and is necessary to evaluate the likely environmental consequences of a range of alternative development strategies for the county within the constraints imposed by environmental conditions. The SEA for the Development Plan considered alternatives at an early stage of the process and through an iterative process the most appropriate scenario for the growth of the city was selected.

The subject site forms part of an unfinished development permitted under An Bord Pleanála Ref. PL29S.206528 (DCC Ref. 2656/03). Under DCC Reg. Ref. 2724/13 permission was granted for temporary landscaping works to improve the visual impact of the undeveloped areas of the site, including the current subject site. Condition 2 of Reg. Ref. 2724/13 limits the duration of the permission to 8 years (2021)

It is considered that the use of this site for residential development is preferable to the use of any undeveloped or greenfield site as much of the fundamental basement works have already been completed at the subject site. Undertaking these works at another site would involve unnecessary use of building materials and the disposal to landfill of soils.

Based on the foregoing, it was not considered necessary to appraise any alternative locations for the proposed residential development.

Alternative Construction and Methods

The residential development is envisioned as a single-phase development. In terms of construction methods, the design team considered prefabrication of various elements of the building, precast and modular construction.

Alternative Layouts & Design

Four alternative design iterations are described as follows:

- **Design Iteration 1:** Full Residential Scheme
- **Design Iteration 2:** Full Commercial Scheme
- **Design Iteration 3:** Mixed Use Scheme
- **Design Iteration 4:** Current Residential Scheme

The alternatives considered have been based on the guidance in the Development Plan, including the need to respect the cone of vision from the Royal Hospital Kilmainham (RHK). The interface between the RHK and its gardens informs the urban design, form, massing, height and design quality of the proposed development. Alternative heights, materiality and rhythm were assessed by the Design Team to ensure the development respects the historic significance of this place.

During the design process, the layout and design of the proposed development evolved in response to historical, architectural, and visual requirements and several iterations of the site layout and alternative designs were considered. Any difficulties from an architectural, landscape or environmental viewpoint were assessed and, where necessary, the design was amended to address the issues encountered. Furthermore, the final scheme has been directly influenced by the technical and specific issues raised in the Board's Opinion.

(V) POPULATION AND HUMAN HEALTH

This section addresses potential impacts of the proposed Strategic Housing Development could have on population and human health. The purpose of this assessment is to identify the potential health and wellbeing effects on the surrounding population.

Analysis of potential impacts resulting from the Project are described in relation to a number of assessment themes, which were determined at Scoping stage, these including.

A. Population Characteristics;

B. Household Characteristics;

C. Education;

D. General Human Health;

E. Economic Activities and Employment;

F. Social Infrastructure and Amenities; and

G. Recent Development and Planning Applications.

Following the sections above, the analysis of predicted impacts comprises of a study of the key assessment themes as well as consideration of the construction phase, with a conclusion reached in relation to the proposed Strategic Housing Development on the baseline characteristics described above.

Receiving Environment

A character study of the area was undertaken as part of Chapter 5 of the full EIAR. This study has analysed data within the Study Area and the Dublin Region. This analysis identified differing trends in the distribution of the population in various age cohorts. The Study Area has a noticeably larger portion of its population in the 25-29 years cohort and a smaller portion between the ages of 45-59, compared to the Dublin Region figures. Identified within the population and household statistics, the Study Area characteristics highlight a majority of young adult population, with a tendency to live in a single person or co-living household.

A shift in demographics is however noticed with an increase in the number of the older adult population (40-65+ years). This trend is also seen in the change in family cycles, with an increase in early school, pre-adolescent, and empty nest families in the intercensal period, and a subsequent 5% increase in average household size from 2.11 (2011) to 2.22 (2016).

The character study has also researched the social infrastructure facilities within the Study Area. There are 3 no. primary schools located within the Study Area, 1 no. post-primary school and 7 no. childcare facilities. The social infrastructure study identified that there is a wide range of facilities, services and amenities that caters for different age groups in the area. There are 150 no. social infrastructure facilities ranging from education facilities, childcare facilities, health facilities and services, sports clubs, and public transport stops.

Furthermore, the character study includes data analysis on general human health. The data analysis concluded that 53% of the Study Area population is in ‘very good’ health. However, there has been a general decline in health as noted by the number of people in ‘very good’, ‘good’, and ‘fair’ health has declined in intercensal period.

As part of the character study for the Study Area, an economic and employment data analysis was conducted. This data analysis identified a steady decline of 32.6% in unemployment. Employment in the Study Area increased by 11.9% from 2011 to 2016. This equates to 62% of the 15 years and older population in the Study Area are working.

The character study included research of recent development and planning applications. The record of planning applications from 2015-2020 indicates that 8 no. residential planning applications within 1km of the Proposed Development were granted (for 1,171 units). 7 developments have been constructed, totalling to 127 no. new units. Construction has started on 246 units.

Mitigation Measures

The Proposed Development may have specific, direct and indirect impacts during both the construction and operational phases. Mitigation measures required to alleviate any such effects are listed in Chapter 17 of the full EIAR. Potential impacts are assessed under the following headings:

- Population and Human Health
- Economic Activity and Employment;
- Childcare/Creche facilities;
- Primary and Post Primary Schools;
- Amenities and Open Space
- Water;
- Local Attractions and Tourism Activities;

Identification of Likely Significant Impacts

The construction phase of the Proposed Development may give rise to short term impacts to the locality such as, construction traffic and surface contaminants, dust, exhaust emissions, noise and littering. All details of the expected impact of the construction phase will be assessed in the relevant topic assessments in the applicable chapters of this EIAR, including Chapter 9 'Air, Dust & Climatic Factors' and Chapter 10 'Noise & Vibration', from which the subsequent impact on human health has been considered. The operational stage of the Proposed Development is unlikely to cause any adverse impacts on the existing and future residents of the locality in terms of human health. The design of the development will provide a safe environment for future residents and visitors.

The construction of the Proposed Development is likely to have a moderate positive effect on economic activity and employment. In the short term the Proposed Development will provide an increase in construction related employment. The construction phase will also provide for indirect positive impacts through spending in local businesses around the site. During the operational phase the Proposed Development is likely to contribute to a moderate positive effect for economic activity and employment. The Proposed Development will increase the population and is expected to generate an additional working population. This additional working population will provide further spending in the local shops and restaurants. The increased number of residents could also create added demand for services in the area, such as barbers, salons etc.

The Proposed Development may temporarily impact nearby childcare and creche facilities during the construction phase by construction noise, traffic and emissions. All detail of the expected impact of the construction phase on childcare facilities are assessed in the relevant topic assessments in the applicable

chapters of the full EIAR. During the operational phase, the Proposed Development will likely contribute in a positive not significant manner to the local childcare and creche facilities in the medium term. The Proposed Development is expected to generate 7-11 no. additional children who will require a space in a childcare/creche facility. It is, however, expected that the existing facilities in and surrounding the Study Area will be able to cater for this additional demand.

In relation to the impacts the proposed scheme may have on the primary and post primary schools in the area, it is expected than the effects may be minimal. All detail of the expected impact of the construction phase on education facilities are assessed in the relevant topic assessments in the applicable chapters of the full EIAR. During the operational phase of the Proposed Development, the potential effects are expected to be positive but slight. It is estimated that the Proposed Development will generate 12 no. children between the 5-12 age cohort and 8 no. children between the 13-18 age cohort. However, this will occur overtime and this demand will not occur instantly. Therefore, it is expected that the existing schools will be able to generate the expected demand from the Proposed Development.

The construction of the Proposed Development is expected to impact the landscape in a not significant negative manner temporarily under the construction phase. Any impact will be short term until construction is finished and the proposed high-quality landscaping matures. Chapter 15 'Landscape & Visual Impact Assessment' assesses the impact on the landscape character in further detail. The amenity and open space impacts likely to arise from the Proposed Development are likely to be significant positive over the long-term, as the proposal will improve the existing character and aesthetics of the site.

During the construction phase mitigation measures will be set in place to minimise potential adverse impacts to the water environment. These mitigation measures are set out in Chapter 8 Water: Hydrogeology & Hydrology' and Chapter 12 'Material Asset: Water Supply; Drainage & Utilities' of the full EIAR.

During the construction phase of the Proposed Development it is likely that there will be a temporary slight negative effect on the local/tourist attractions closest to the development site. The implementation of mitigation measures is detailed in Chapters 9 and 10 of the full EIAR. During the operational phase the Proposed Development is likely to have a significant positive effect over the long term. The Proposed Development will increase the footfall of resident and visitors to the nearby local/tourist attractions. This is likely to increase spending into tourism and other related services.

Residual Impacts

Following implementation of the mitigation measures outlined in relevant sections of the full EIAR, the impact on population and human health during the construction phase is considered to be short-term, temporary and neutral. The predicated impacts of the Proposed Development during the operational phase are predicated to be long term and positive to population and human health.

(VI) BIODIVERSITY

The application site has a total area of approximately 1 ha. It is currently built ground and has been landscaped as an interim measure to improve the aesthetics of the site pending future development (see Plate 6.1). The application site adjoins to the north a previously excavated and partly built concrete

structure, which is part of the overall HSQ site. Existing residential and commercial developments occur immediately to the east and south (also part of overall HSQ site).

The subject site is a previously developed site which is presently a landscaped area with road access to an adjoining underground car park. The site does not support any natural or semi-natural habitats. Fauna species associated with the site are all species commonly found in urban environments. The site is not part of, and does not adjoin, any designated site for conservation.

There are no streams, open drains or natural habitats on site. Natural drainage of the site is towards the River Liffey, which is approximately 250 m to the north (with St John's Road and the Heuston Station facility occupying the intervening area).

The site is considered to have an ecological rating of Local Importance (lower value).

Sites designated for conservation

The subject site is located approximately 8 km from the Dublin Bay system, with four European sites, as follows; North Dublin Bay SAC (code 00206); South Dublin Bay SAC (code 00210); South Dublin Bay & River Tolka Estuary SPA (code 04024); and North Bull Island SPA (code 04006).

It is located approximately 1 km north of the Royal Canal proposed Natural Heritage Area (code 002104) and approximately 3 km south of the Grand Canal proposed Natural Heritage Area (code 002013).

The Liffey Valley proposed Natural Heritage Area (code 00128) is located along the banks of the Liffey approximately 4.5 km west of the HSQ site.

Identification of Likely Significant Impacts

All of the habitats on site have been created in the last decade and have negligible ecological interest. The effect by the loss of the habitats as a result of development is considered to be not significant. During the construction phase the effect of the impact of the proposed development in respect of existing habitats is considered to be not significant. During the operational phase the effect of the impact of the proposed development in respect of existing habitats is considered to be not significant.

While some fauna species pass through the site, and some bird species may nest (see section 6.4.3.2), these are all common and widespread species and the effect by the loss of habitat for these species is considered to be not significant (subject to appropriate mitigation for nesting birds). During the construction phase the effect of the impact of the proposed development in respect of existing birds is rated considered to be not significant (subject to appropriate mitigation for nesting birds). During the operational phase the effect of the impact of the proposed development in respect of existing birds is considered to be not significant.

The site has very limited potential to support mammal species, including bats, and has no suitable habitats for amphibians or reptiles. The effect of the impact of the proposed development in respect of existing mammal species is considered to be not significant.

In the absence of mitigation, there is potential for contaminated water emanating from the HSQ development site to enter the River Liffey system and ultimately the aquatic and intertidal environment of Dublin Bay, during the construction and (to a lesser extent) operational phases of the proposed development. The significance of any subsequent effect on the qualifying interests/special conservation interests of the Natura 2000 sites would vary depending on the type of pollutant, as well as the magnitude and duration of the event. As the conservation objectives of the four identified Natura 2000

sites could potentially be affected adversely, measures are required to avoid or reduce harmful effects of the proposed project (i.e. mitigation measures).

The subject site does not have any linkages with the three identified proposed Natural Heritage Areas (see Section 6.4.4) identified within the hinterland of the site and hence the proposed project could not have any impacts on these pNHAs. During the construction phase the proposed development does not have potential to have impacts on any nationally important site. During the operational phase the proposed development does not have potential to have impacts on any nationally important site.

This assessment concluded that in the context of the overall HSQ development, the present residential application will not contribute an in-combination effect on any European site. Overall, the cumulative impacts during the construction phase are considered to be not significant. Overall, the cumulative impacts during the operational phase are considered to be not significant.

Summary of Mitigation Measures

Mitigation measures during the construction phase are as follows:

- Remove trees outside of the restricted nesting season (March-August)
- Implementation of Outline Construction Management Plan including the following provisions:
    - Management of suspended solids in run-off
    - Control of concrete run-off
    - Management of accidental spills and leaks

Mitigation measures during the operational phase are as follows:

- Surface water drainage design in accordance with principles of SuDS is to be implemented as proposed.

Residual Impacts

With mitigation measures implemented as recommended, it is considered that the proposed project will not have any significant adverse residual impacts in terms of ecology and biodiversity.

Monitoring

Mitigation as recommended will be monitored by the Environmental Officer working with the main Contractor. A written log of site inspections for environmental issues will be maintained during the entire construction phase and will be available for inspection by relevant third parties

(VII) LANDS, SOILS AND GEOLOGY

Receiving Environment

Prior to development of Heuston South Quarter from c2003, the site operated as a storage depot and yard for Eir (formerly Eircom). The subsequent commencement of the development works in 2003 involved the installation of a perimeter pile wall around the entire site. The secant pile wall was embedded into the boulder clays. Following the installation of the cut-off wall, the eastern portion of the development was constructed, with a double level basement and buildings ranging in height from seven to twelve stories.

The construction works ceased in 2008 as a result of the financial crisis. The subject site comprises part of the undeveloped area of the site that has been landscaped as an interim measure to improve the aesthetics of the site pending its complete redevelopment.

Summary of Mitigation Measures

Mitigation measures during the construction phase include the following:

Sampling and testing soil samples to determine the appropriate waste facility for disposal;

- The material generated from the demolition shall be segregated and divided into material re-use, material re-cycling and waste material streams in accordance with current guidelines and best practice.
- Dust suppression measures will be implemented to minimise dust generation during extended dry periods.
- The existing perimeter secant pile wall extends to the relatively impervious clay layers, and this mitigates the risk of contaminated water from the development entering the local groundwater network.
- Monitoring regimes shall be established to ensure limits relating to noise, dust and vibrations are not exceeded.
- The disposal of groundwater shall be in accordance with the licensed requirements of Dublin City Council and will be on a short-term basis

Identification of Likely Significant Impacts

There is no predicted long-term impact on the soil, geology and hydrogeology environments associated with the operational phase of the proposed development.

The proposed development works can be assessed cumulatively with existing and permitted development, and the proposed future development of the commercial site to the north. The existing perimeter secant pile wall, which was constructed around the entire site in 2003, isolates the overall development in geotechnical terms from posing a risk of contamination to the external environment. Similarly, the proposed construction work within the existing secant pile 'box' can proceed with neutral effect on existing or proposed development. The cumulative effects of the proposed development in conjunction with adjacent future planned development are therefore imperceptible.

Overall, the residual impacts arising once the mitigation measures are implemented are imperceptible.

(VIII) WATER

The assessment considered the potential impacts on the surface water environments during the proposed construction & operational phases. The main water body relevant to the proposed development is the River Liffey.

The assessment also takes into account Dublin City Council's Development Plan, in particular the requirement to implement Sustainable Drainage Systems into the proposed design to ensure that surface water quality is enhanced prior to ultimate discharge into Dublin Bay. The proposed stormwater drainage system has been designed in accordance with Dublin City Council's Regional Code of Practice for Drainage Works and the Greater Dublin Strategic Drainage Study.

The subject lands were also reviewed against Dublin City Council & national guidelines for potential flooding from a variety of sources. These included an assessment of potential flooding sources such as tidal, fluvial, pluvial, groundwater, and infrastructure failure.

All aspects of the proposed development contained within the hydrology chapter were also analysed with regard to the potential impacts of climate change. The scheme assessment reviewed the proposed development to ensure that what has been proposed will not impede or be adversely affected by the predicted future climate change challenges. The receptors looked at the Rivers Liffey & Camac and the potential to affect the overall water quality of same, during construction and operational phases.

Identification of Likely Significant Impacts

The magnitude and significance of the potential impacts for the proposed development were deemed to be long term and slight. Upon completion of the development, Dublin City Council will have responsibility for the monitoring and maintenance of the public storm water system, while the development's management company shall maintain the private drainage systems.

The residual impacts of the proposed development are neutral, slight, and long term.

Cumulative effects have been considered, with no additional significant residual effects predicted following the implementation of mitigation measures.

Summary of Mitigation Measures

Mitigation measures during the construction phase are summarised as follows:

- Prior to construction the Contractor will be required to develop an Environmental Management Plan.
- All batching and mixing activities will be located in areas away from watercourses and drains.
- Protection measures will be put in place to ensure that all materials used during the construction & demolition phase are appropriately handled, stored and disposed of.
- Surface water drainage around the batching plant will be controlled and washout from mixing plant will be carried out in a designated, contained impermeable area.
- Spills of concrete, cement, grout or similar materials will not be hosed into drains.
- Rainwater that accumulates on site will be discharged to the DCC sewer system, under an appropriate discharge licence.
- The Contractor will comply with the following guidance documents: CIRIA – Guideline Document C532 Control of Water Pollution from Construction Sites (CIRIA, 2001), and CIRIA – Guideline Document C624 Development and Flood Risk - guidance for the construction industry (CIRIA, 2004).
- Dewatering and surface water discharges on the site, during construction and prior to completion will be controlled. All necessary facilities will be incorporated such as settlement ponds/tanks, oil/grit interceptors with shut down valves, bunded oil storage tanks adjacent to a petrol interceptor for storage of any recovered oil. A monitoring programme including sampling for water quality before discharge to the Council sewer during construction will be carried out to ensure that only clean surface water is discharged to the receiving systems.

Mitigation measures during the operational phase are summarised as follows:

- The provision of a reduced storm water discharge rate will mitigate against off site flooding form the development.
- The provision of flow control with storm-water attenuation will ensure the rate of discharge of surface water is limited to greenfield run-off rates.
- Incidental surface run-off from underground basement car parks, compactor units and waste / service yard areas will be discharged into the foul drainage system.

(IX) AIR AND CLIMATE

The proposed development will consist of 399 no. Build to Rent apartments arranged in 5 blocks (Blocks A to E) that vary in height from 3 storeys to 18 storeys in height over double basement level / podium level. The application site extends to 1.08 ha (10,825 sqm). The application sites form part of a larger development site known as Heuston South Quarter (HSQ).

The HSQ site is bounded by St John's Road West and is close to Heuston Rail Station and the LUAS Red Line service. This corridor is the main road and rail artery to the west of the country. The dominant influences on air quality in the area are emissions from commercial energy and heating sources, domestic heating and especially traffic.

The potential air quality and climate impacts on the surrounding environment that requires consideration for a proposed development of this type includes two distinct stages, the short-term construction phase and the long-term operational phase.

Construction Phase Impacts

The impact assessment that was completed shows that the most significant potential impacts are those associated with demolition work which is very dependent on weather conditions. Damp weather and low wind speeds will reduce the level of impact experienced at the receptor locations. There will be a short-term, slight impact on the closest receptors during the demolition programme and a short-term, not significant impact on the closest receptors during the construction works. Construction traffic impacts will be not significant and experienced in the short-term. In the absence of mitigation measures, the overall impact of dust arising during the construction phase is considered to be short term in duration and its significance will vary from not significant to slight.

Potential emissions from construction traffic using the local road network have been assessed to contribute less than 5% change to the existing air quality emission levels. It can therefore be concluded that the additional transport will not generate significant emissions in terms of local air quality and no material change in air quality relative to the existing situation is predicted.

In the absence of mitigation measures the construction phase activities will range from an imperceptible to slight impact on local air quality depending on the activities occurring and in all cases will be short-term in duration.

Operation Phase Impacts

The only predicted air quality impacts associated with operation of the development are emissions to atmosphere from heating sources and traffic associated with the proposed development.

Traffic Flow data were used to assess the likely change in emissions to air as a result of changes in traffic numbers. The change in traffic volume at the key junctions for the opening year for the With

Development scenario and for the design year was less than 3.5% increase. The potential impact on air quality associated with a traffic volume change of this magnitude is considered not significant in a local context and imperceptible in an overall context particularly considering the advanced developments made in cleaner and more efficient vehicle engines

The operational phase activities will have a not significant impact on local air quality and will be long-term in duration.

Climate Impact

The operation of the proposed development will result in indirect emissions of Greenhouse Gases (GHGs) including carbon dioxide (CO_2) and methane (CH_4) resulting from energy generation required for space heating and road traffic.

The CO_2 released due to energy usage is directly reduced by enhancing the energy efficiency of the proposed development. In this respect, the selection of ASHP and District Heating using natural gas is the optimum strategy. The proposed design considers these factors and contributes to the overall objective of minimising GHG emissions.

The scheme has been designed to provide thermally efficient buildings which will reduce the consumption of fossil fuels within each individual unit. This will reduce the impact the operational phase of the development will have on the micro and macro climate.

Due to the size, nature and design of the development, greenhouse gas emissions resulting from the development will be imperceptible in the national context. There will therefore be no adverse impacts on climate and no significant contribution to Irelands greenhouse gas budget.

The construction phase activities will have a not significant impact on climate and will be short-term in duration while the operational phase activities will have an imperceptible impact on climate and will be long-term in duration.

Cumulative impact assessment

The cumulative impacts of this proposed development on the SHD site together with the proposed commercial development on the adjoining site have been considered in conjunction with known other developments in the immediate area. The air quality impacts associated with the commercial site development and other unrelated developments, will be similar to the air quality impacts associated with the subject site. The magnitude of the potential impacts will be the same and the assessment considered the duration of impact to be the four year projected period for completion of both the SHD and the commercial developments.

Mitigation Measures

A Dust Management Plan will be formulated for the construction phase of the project, as construction activities are likely to generate some dust emissions. The principal objective of the Plan is to ensure that dust emissions do not cause significant nuisance at receptors in the vicinity of the site.

The design of the construction programme and the location and layout of the construction compound and the storage of materials will be carefully planned to ensure that air quality impacts are minimised.

Residual Impacts

Due to the size and nature of the development and the nature and volume of the potential emissions, the construction phase activities will have a not significant impact on air quality or climate and will be

short-term in duration while the operational phase activities will have an imperceptible impact on air quality and climate and will be long-term in duration.

(X) NOISE AND VIBRATION

The proposed development will consist of 399 no. Build to Rent apartments arranged in 5 blocks (Blocks A to E) that vary in height from 3 storeys to 18 storeys in height over double basement level / podium level.

The potential noise and vibration impacts on the surrounding environment that requires consideration for a proposed development of this type includes two distinct stages, the short-term construction phase and the long-term operational phase.

During the construction phase the main site activities will include demolition, site clearance and excavation, foundations, building construction. This phase has the greatest potential for noise and vibration impacts on the surrounding environment but this phase will be of short-term impact.

During the operational phase of the proposed development, no significant sources of noise or vibration are expected from within the development. The primary source of noise in the operational context relates to any changes in traffic flows along the local road network and any operational plant noise.

Predicted Impact of Construction Noise

A variety of items of plant will be in use for the purposes of site clearance, demolition, preparation and construction activities. There will be no blasting techniques used during construction, and it is not envisaged that rock-breaking will be required as part of the site clearance works. Piling will be required for the foundations.

The actual noise level produced by construction work will vary at the nearest sensitive receptor boundary at any time depending upon a number of factors including the type of plant in use, plant location, duration of operation, hours of operation and intervening topography.

The results indicate that the predicted construction noise levels associated with site works will not exceed the assessment criteria for construction works of 70dB $L_{Aeq,1hr}$ for the works assessed. It should be noted that the construction noise levels are short-term impacts and are transient in nature and therefore the likely noise impact is considered to be Imperceptible to Moderate.

Predicted Impact of Construction Traffic

The traffic information in Chapter 11 of this EIAR calculates that during peak construction activity, the construction traffic will be modest in relation to existing traffic levels in this area. The additional traffic generated as a result of the construction phase of the proposed development results in a very small increase in peak hour traffic. Therefore, the noise contribution from site traffic during the construction phase will not be perceptible and can be classified as "not significant" and it will be short term in duration.

Operational Phase Impacts

The proposed residential development will consist of private dwellings and will also include car parking spaces within the curtilage of associated dwellings, pedestrian/cycle and vehicular access together with all ancillary, infrastructure, landscaping and boundary treatments. The only predicted contributions to

the noise environment in the vicinity of the site will result from increased traffic movements as a result of the increased activity in the area.

For the purposes of assessing potential noise impact, the relative increase in noise level associated with traffic movements adjacent to the proposed development with and without the development was considered.

Overall, the noise climate in the area would be expected to remain very similar to the present situation as currently the predominant source of noise is passing traffic unrelated to the Scheme. There is no significant change in traffic patterns predicted for the area and overall traffic volumes are predicted to increase slightly from current levels hence there is no observable change to the noise climate predicted.

In summary, the predicted change in noise levels associated with vehicles is neutral, long term and not significant.

Cumulative impacts

The cumulative impacts of this proposed development together with other developments proposed by the Applicant have been considered in conjunction with known other developments in the immediate area. The noise impacts associated with near-by developments, the proposed Commercial development and other unrelated developments, will be similar to the noise generated by the subject site. Construction noise impacts associated with the near-by developments being constructed at the same time as the subject site will contribute to a higher noise environment at the nearest noise sensitive locations during certain periods of construction. However, the assessment considered a four year construction phase and concluded that cumulative noise and vibration impact as a result of the adjacent developments is likely to be both temporary in nature and not significant in an overall context.

Mitigation Measures

Whilst the construction phase is not expected to give rise to significant negative noise impacts at sensitive receptors, the guidance on the control of noise and vibration from demolition and construction activities presented in BS 5228 will be followed. In addition site-specific mitigation measures have been proposed for selected activities to ensure that impacts are minimized.

The contractor shall prepare a Noise and Vibration Management Plan (NVMP) which will deal specifically with on-site activities in a strategic manner to remove or reduce significant noise and vibration impacts associated with the construction works.

The contractor shall appoint a community relations officer who will deal on a one-to-one basis with local stakeholders and will notify them before the commencement of any works forecast to generate appreciable levels of noise or vibration, explaining the nature and duration of the works.

Residual Impacts

During the construction phase of the proposed development there will be some noise impacts experienced at the nearest receptors to the subject site. It is predicted that the mitigation measures proposed will ensure that noise and vibration impacts are kept to a minimum. The predicted noise and vibration impacts on the receiving environment during the construction phase are considered to be moderate and temporary and over a short time-period.

The potential for noise generation during the operational phase of the proposed development is limited to additional vehicles on the surrounding road network. The change in vehicle numbers predicted is not

significant in an overall context. The predicted noise and vibration impacts on the receiving environment during the operational phase are considered to be not significant and long-term.

(XI) MATERIAL ASSETS: TRAFFIC AND TRANSPORTATION

Impacts Assessed

This chapter of the EIAR assesses and evaluates the likely impact of the proposed development on the surrounding road network, with a particular focus on the operation of nearby existing road junctions. Both the development's construction phase and its operational phase are considered, and proposed mitigation measures are identified.

Relevant Receptors

In the context of this chapter, environmental receptors susceptible to being affected by the proposed development comprise elements of the surrounding road network (adjacent streets and their junctions), as well as nearby public transport services.

Baseline Scenario

Assessment of the three existing road junctions closest to the development site (including the two existing access junctions to the Heuston South Quarter complex) shows that all three junctions currently operate efficiently and within their design limits.

The development site benefits from proximity to good quality public transport services, being within a 10-minute walk of Luas tram stops, Heuston railway station, and numerous bus routes. Existing surrounding pedestrian facilities are generally of a good standard, and an advisory cycle lane is in place on St. John's Road West.

Traffic Impact Assessment

The methodology employed for assessing the development's impact on nearby road junctions comprises the following:

- A traffic survey to establish baseline vehicle traffic movements.
- The application of growth factors to scale these flows up to future year levels.
- Calculation of the development's vehicle trip generation during peak hours (as well as those of nearby committed and planned developments), using a database of past traffic surveys.
- Distribution of these vehicle trips across the local road network in accordance with existing traffic patterns.
- Computer modelling of nearby junctions to determine their operational performance under existing and future traffic conditions.

Construction Phase Mitigation Measures

The lead contractor appointed for the construction of the development will be required to prepare a site-specific Construction Management Plan (CMP), which will outline measures to be taken to mitigate the effects of construction traffic on the surrounding road network. A Designated Community Liaison Officer (DCLO) will be nominated for the subject development, who will work with DCLOs on other active

sites to coordinate construction activities. The DCLO will also act as a point of contact for local residents, Dublin City Council, An Garda Síochána.

The final site-specific CMP will include a plan for the scheduling and management of construction traffic, so as to:

- avoid heavy construction traffic travelling via unsuitable roads and junctions;
- avoid construction traffic parking, queueing, or loading/unloading the public road;
- schedule most construction traffic outside peak hour times; and
- keep the public roads around the site clean.

Construction personnel will be encouraged to make use of the available high-quality public transport links to the area and/or to commute by bicycle, to minimise private car trips to and from the site. To avoid problems of parking overspill on surrounding streets, however, limited essential staff parking shall be provided within the site. In parallel with this, parking restrictions and management measures on surrounding streets will be reviewed and implemented as necessary in agreement with local residents and Dublin City Council.

The impact of construction personnel using public transport for travel to and from the site will be minimal, given the high capacity of nearby public transport services and the fact that most construction personnel will travel outside of background peak hours. Nonetheless, as an additional mitigation measure, the lead contractor appointed to the project will be required to make provisions for the alternative group transport of construction personnel by:

providing a charter bus service to/from suitable collection areas; and

facilitating car sharing among construction personnel.

The above measures will be subject to public health guidance applicable at the time of construction.

Construction Phase Impacts

The subject development will generate vehicular trips to and from site during the construction phase. Temporary access restrictions will also be required during construction, resulting in the diversion of some light vehicle traffic that currently uses the northern access junction of the HSQ complex. An assessment of junction performance found that nearby junctions will operate efficiently under these conditions. During its construction phase, the subject development is therefore predicted to result in a short-term slight adverse impact on the operation of junctions on the surrounding road network. This impact will be confined to the duration of construction activity on site and will therefore be entirely reversible.

There is also potential during the construction phase for construction-related activity to impact upon the surrounding road network in other ways, for instance through surrounding roads being temporarily obstructed by stopped/parked construction vehicles or by delivery/loading operations, or being fouled by dirt/debris originating from the construction site. In the absence of mitigation measures, these impacts will be adverse in nature, short-term in duration, and significant. The construction phase mitigation measures previously described are however intended to prevent and minimise these impacts, and these measures will be strictly adhered to.

Given the high capacity of nearby public transport services and the fact that most construction personnel will travel outside of background peak hours, the adverse effects of construction personnel using public transport for travel to and from the site will be imperceptible and short-term.

Future Do-Nothing Scenario

The Do-Nothing scenario relates to the design year 2039 (15 years after completion of the subject development). This allows for general increases in background vehicle traffic over this period, as well as additional vehicle traffic that will be generated by nearby other committed and planned developments. Vehicle traffic generated by the subject development itself is not included.

Under these conditions, assessment shows that the existing junction of Military Road with St. John's Road West (R148) will experience traffic flows higher than designed for and, unless upgraded in the interim, will cease to function effectively by the year 2039. Both existing HSQ access junctions will continue to operate effectively but the northern access junction will approach the limit of its design capacity.

Under a Do Nothing scenario, whereby the subject development is not constructed, the operation of nearby public transport services and adjacent pedestrian/cyclist facilities will nevertheless be affected by prevailing trends in travel habits, changes in service provision and transport infrastructure, and the influence of other nearby developments. It is however not possible to quantify these effects over the medium or long term.

Operational Phase Mitigation Measures

The development shall incorporate several design and management elements intended to mitigate the impact of the development on the surrounding road network during its operational phase. These include:

- a reduced car parking provision, which shall discourage higher vehicle ownership rates and excessive vehicular trips to the development (by residents and visitors);
- a high provision of secure bicycle parking, which shall serve to encourage bicycle journeys by both development occupants and visitors; and
- an internal car-share club providing 8no. shared cars for the sole use of the development's residents, which shall support a reduced level of car ownership and help to discourage unnecessary car journeys.

A Residential Travel Plan Coordinator shall be appointed for the proposed development, with the remit to implement and oversee an ongoing Residential Travel Plan (RTP). This shall assist development occupants and visitors in making the most of sustainable transport opportunities and in avoiding single-occupant car journeys to and from the development site where possible.

Cumulative Operational Impacts

In its operational phase, the subject development shall generate regular vehicular trips on the surrounding road network, increasing traffic flows at nearby existing junctions. An assessment of nearby junctions was conducted under the predicted traffic conditions for the design year 2039 (15 years after completion of the subject development), including traffic generated by the subject development, and this was compared to the Do-Nothing scenario previously described. As under the Do-Nothing scenario, additional vehicle traffic that will be generated by nearby other committed and planned developments was included in the operational phase assessment, representing a cumulative impact assessment. This

analysis showed that the traffic flows generated by the subject development will produce slight increases in vehicle queues and delays at nearby junctions but will not have a pronounced effect on their operation.

During its operational phase, the subject development is therefore predicted to result overall in a long-term slight adverse impact on the operation of junctions on the surrounding road network. This impact should be considered reversible to a degree, as any future measures that reduce local vehicular traffic volumes (e.g. improvements in public transport or cycling infrastructure, junction redesign, or changes in general traffic flow restrictions) have the potential to improve local traffic flows generally, as well as to reduce vehicle trips to/from the subject development.

In its operational phase, the development also has the potential to affect the operation of adjacent public transport services, pedestrian and cyclist facilities. Given the high capacity of public transport services within easy reach of the subject site (including the Luas Red Line, mainline rail services, and numerous bus services), the proposed development is likely to have a long-term imperceptible adverse effect on the operation of these services. The proposed development is also likely to have a long-term imperceptible adverse effect upon the operation of adjacent pedestrian and cyclist facilities.

Monitoring

The lead contractor appointed for the construction of the development will be required to prepare a site-specific Construction Management Plan (CMP), which shall outline measures for monitoring the impact of construction traffic on the operation and condition of the surrounding street network, including remedial actions to be taken in the event of construction traffic causing damage to road infrastructure.

The lead contractor will also be required to monitor the travel habits of construction personnel and to tailor supports for public and shared transport use accordingly. Surrounding streets will be monitored to ensure that no nuisance parking associated with construction activity takes place.

Post-development monitoring of the surrounding street network's performance is not required or proposed in this case. Within the scope of the Residential Travel Plan (RTP) to be implemented for the development, however, the Residential Travel Plan Coordinator shall be responsible for monitoring the travel habits of development occupants and visitors. The Residential Travel Plan Coordinator shall gather data on travel patterns, for instance by conducting periodic travel surveys of development occupants.

Residual Impacts

With full implementation of the identified mitigation measures, the residual traffic-related impact of the proposed development during its construction phase will be limited to the short-term and slight adverse effects of construction traffic on the operation of nearby road junctions, which will be confined to the duration of construction activity on site. The adverse effects of construction personnel using public transport for travel to and from the site will be imperceptible and short-term.

The residual traffic-related impact of the proposed development during its operational phase will be that described under 'Cumulative Operational Impacts'; such residual effects are considered to be adverse in nature, long-term in duration, but slight in significance. In its operational phase, the proposed development is likely also to have a long-term imperceptible residual adverse effect on the operation of nearby public transport services and upon the operation of adjacent pedestrian and cyclist facilities.

(XII) MATERIAL ASSETS: WATER SUPPLY, DRAINAGE AND UTILITIES

The potable water and wastewater section of the Material Assets Chapter reviewed the requirements of the proposed development against the current Irish Water infrastructure in the area. The proposed development will install and commission, to Irish Water standards, new potable water and wastewater infrastructure to facilitate the scheme. Irish Water have issued their *Confirmation of Feasibility* and their *Letter of Design Acceptance* for the proposed development, and have indicated that the scheme can be accommodated by their current network without local or regional upgrades.

The proposed foul drainage system and potable water system have been designed in accordance with the relevant Irish Water codes of practice, notably the Code of Practice for Wastewater Infrastructure and the Code of Practice for Water Infrastructure. The magnitude and significance of the development's impacts on the potable water and foul drainage systems will be slight and long-term.

As Irish Water has assessed the regional requirements for both water and wastewater services, and shall monitor and have operational responsibility for these services going forward, no short term construction or long term operational issues have been identified.

The proposed development will connect to the local ESB MV (Medium Voltage) electrical network. There will be 3no. LV substations provided throughout the development. The substations have been sized to supply the full load of the development and to meet the requirements of ESB Networks.

The proposed development site will not include a new gas supply connection. The heating and hot water to the SHD development will be provided from a district heating connection to the existing Heuston South Quarter energy centre. This energy centre is powered by existing gas fired boiler plant which has sufficient spare capacity to serve the SHD development without any additional reinforcement.

Receiving Environment

The review of Dublin City Council's & Irish Water's records found that the site is served by the following:

- A 300mm diameter dedicated foul public sewer along St. John's Road, flowing west to east. There is an existing connection from the subject lands to this sewer;
- A long the eastern boundary of the larger HSQ site, adjacent to military Road, there is a 450mm diameter HPPE public watermain in place. This watermain has an existing connection into the subject lands.

The extent of existing Electrical, Gas and Telecoms utilities infrastructure to the site has been determined through reference to record drawings from each of the relevant Utilities authorities including ESB, Gas Networks, Eir and Virgin media. There are ESB ducts in the existing HSQ development that will be utilised in the proposed development. There is no existing gas networks infrastructure within the site boundary however, none is required to serve the proposed development. There is existing Eir and Virgin Media telecoms infrastructure adjacent to the development site serving the existing HSQ development residential and commercial buildings. There are Meteor and Vodafone Telecoms masts within the immediate vicinity of the proposed development 3 Mobile and Vodafone infrastructure within the wider environs of the site approximately 200m from the proposed buildings

Identification of Likely Significant Impacts

During the construction phase, the impacts of the proposed development on foul water and potable water infrastructure has been assessed to be short term and slight. Construction phase impacts on

electricity supply, gas supply and telecoms supply has been assessed to be short term and slight, while impacts on the gas network were found to be short term and imperceptible.

During the operational phase, the impacts of the proposed development on foul water and potable water infrastructure has been assessed to be long term and slight. Impacts of the proposed development on electricity supply is considered long term, positive and slight, and the operational phase impact on gas supply and telecoms is long term and slight.

Cumulative effects have been considered, with no additional significant residual effects predicted following the implementation of mitigation measures.

The residual impacts for the foul water & potable water have been deemed to be long term and imperceptible. Following the implementation of all mitigation measures, residual impacts on electricity supply, gas supply and telecoms are slight and imperceptible.

Summary of Mitigation Measures

Mitigation measures during the construction phase are summarised as follows:

- Temporary discharge utilising the existing or permitted sewerage network will be in agreement with Dublin City Council & Irish Water. All necessary health and safety measures and best practice will be undertaken to ensure the safety and welfare of construction personnel, the public and road users during construction of the foul infrastructure.
- The contractor will make all necessary arrangements for a temporary water supply in agreement with Irish Water & Dublin City Council. A water meter will be installed to monitor water consumption on the site and to enable early detection of any potential leaks. Inspection and acceptance of connections will be required prior to services being allowed.
- Good site governance to ensure storm generated on site is disposed into the storm system and foul into the temporary foul system so that no miss connections occur.
- The contractor will engage with ESB to facilitate the installation of the required infrastructure. Site ductwork and sub-stations will be constructed to ESB technical standards and will remain locked and under full control of the ESB once power is provided to the site.
- Prior to excavation the Contractor will carry out additional site investigation, including camera survey of existing ducts, in order to determine the exact location of the electricity network in close proximity to the works area.
- All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB Networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines
- Where new services are required, the Contractor will apply to ESB Networks for a connection permit where appropriate and will adhere to their requirements
- Prior to any excavation adjacent to gas services the Contractor will carry out additional site investigation to determine the exact location of the gas network in close proximity to the works area. This will ensure that the underground gas network will not be damaged during the construction phase.

- All works in the vicinity of Gas Network Ireland (GNI) infrastructure will be carried out in ongoing consultation with GNI and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live gas mains.

Mitigation measures during the operational phase are summarised as follows:

- The proposed foul network when completed will not be vested to Irish Water. As such the management company will have responsibility for the on-going maintenance and operation of the service. Private drainage areas, such as the various apartment blocks, will be maintained by the units maintenance company. Any issues going forward will there for be addressed and mitigation against.
- The proposed potable water network when completed will not be vested to Irish Water. As such the management company will have responsibility for the on-going maintenance and operation of the service. Private drainage areas, such as the various apartment blocks, will be maintained by the units maintenance company. Any issues going forward will there for be addressed and mitigation against.
- Ringsend WwTP, is currently the subject of up-grade works to ensure its fitness for purpose. The up-grade works will ensure that future capacity for the greater Dublin region is available.

(XIII) CULTURAL HERITAGE AND ARCHAEOLOGY

The chapter described the archaeological background to the site and appends the report (including specialist reports) of the archaeological excavation undertaken in 2002 -2004.

The potential impact of the development on the archaeological heritage was discussed. The report is conclusive that there will be no impact on the archaeological heritage as the site has been fully excavated.

There is no requirement for mitigation, or monitoring or works, as the site has been fully excavated-mitigation and monitoring was undertaken in the 2000s as part of the development of the larger site of which this current application forms a part.

Receiving Environment

The application site forms part of a larger development site bounded by St John's Road, Military Road and the Royal Hospital Kilmainham. The larger site of which It forms a part was fully archaeologically excavated in the early 2000s by the present writer under licence 02E0067 (extension) from National Monuments.

In the course of this full archaeological work in 2000s, a truncated cremation cemetery of the early Bronze Age was uncovered and fully excavated. All soils, features and other associated with this site have been fully archaeologically excavated. This excavated site will be included on the next edition of the Record of Monuments and Places (DU018-112).

Following the archaeological excavation in 2002 and later, the perimeter piling was installed around the larger site (to included piling and underpinning of the boundary walls of the Royal Hospital garden. The ground level was substantially reduced through natural gravels and subsoil. No archaeological soils therefore remain on any part of the subject site, nor indeed on the larger site of which it forms part.

Identification of Likely Significant Impacts

The chapter states that there is no impact on the archaeological resource in completion of development of this part of the larger site.

Summary of Mitigation Measures

There is no mitigation necessary in terms of the Cultural Heritage, Archaeology in respect of this development.

There are no environmental impacts on the Cultural Heritage, Archaeology, of this development. All mitigation has been undertaken as part of the larger site works in 2002 -2004. The results of the excavation are given in the chapter on Cultural Heritage, Archaeology.

(XIV) CULTURAL HERITAGE: ARCHITECTURAL HERITAGE

The application sites form part of a larger development site known as Heuston South Quarter (HSQ). This existing mixed-use development consists of 403 apartments, office space and retail. The HSQ site is bounded by St. John's Road West, to the north, Military Road to the east, and by the formal gardens of the Royal Hospital Kilmainham (RHK), to the west and south.

Receiving Environment

The HSQ lands are in close proximity to Heuston Rail Station and the LUAS Red Line service and are within easy reach of the City Centre. The HSQ site is immediately adjacent to the classical formal garden setting of the internationally significant Royal Hospital Kilmainham complex (RHK) (RPS 5244/NIAH 50080072), and within the vicinity of a number of nationally or regionally significant cultural or historic complexes or protected structures, including Kilmainham Gaol (NIAH 50080047) and Kilmainham Courthouse (RPS 4232 /NIAH 50080050), St. Patrick's Hospital (RPS 856/NIAH 50080086), Heuston Station (RPS 7576/ NIAH 50080035), the Guinness Brewery and Dr Steevens Hospital (RPS 7840 / NIAH 50080083)

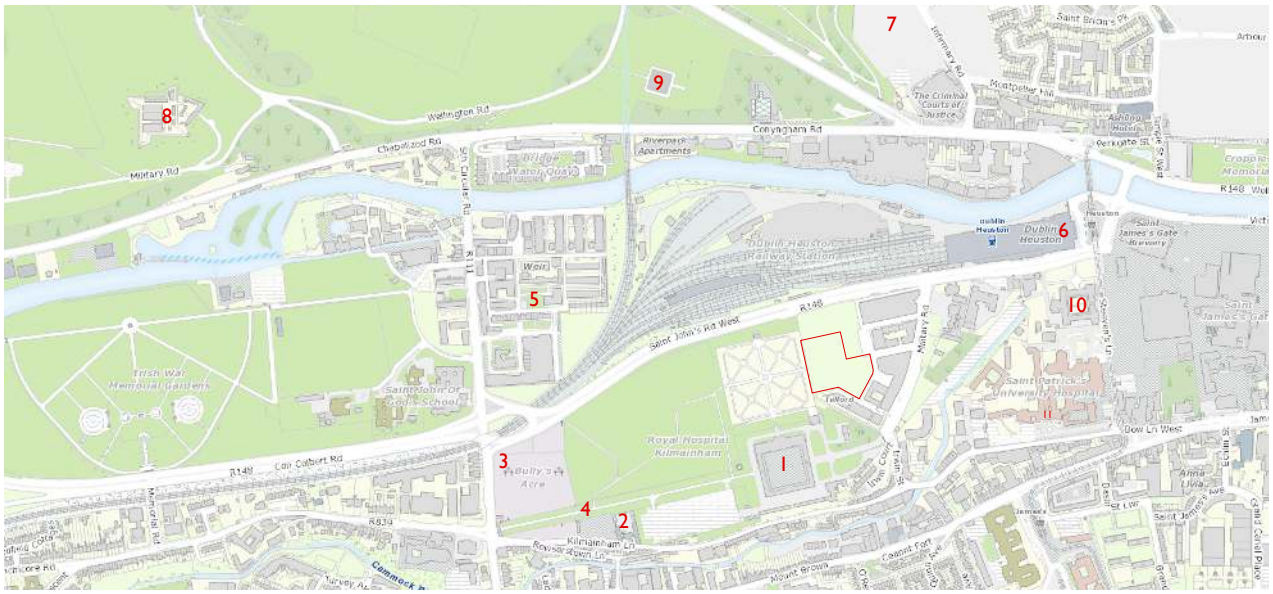
Table 2. Structures or groups of structures potentially impacted by the proposed development related to the map (Figure 3)

Key	RPS No.	NIAH Reg. No/Rating	Address	Description
1	5244	50080072 / International	Military Road, Dublin 8	The RPS entry includes: the former Adjutant General's office, former Deputy Master's offices, steel house, tower at western gate, garden house in formal gardens, garden features, entrance, gates and walls. The principal range of the RHK is considered to be one – if not the – finest public buildings in Ireland. The NIAH ascribes an 'international' rating to this principal range. and its wider complex comprises a variety of structures and places that have been ascribed a variety of ratings (set out below this table).

Key	RPS No.	NIAH Reg. No/Rating	Address	Description
				Its historic setting has been comprehensively altered over the years by the advent of the railways, incremental development of variable quality, and by the construction of phase 1 of the HSQ development which stands asymmetrically at odds with the RHK and its formal garden setting.
2	4256	50080065/ Regional	Kilmainham Lane, Dublin 8	Garda Station: All buildings. The broader RHK grounds provide the principal – and highly significant - setting of this historic complex.
3	N/A	59980052/ Regional	Bully's Acre Graveyard, off South Circular Road	Graveyard bounded by historic stone wall that incorporated part of St. John's Priory. The broader RHK grounds provide the principal –- setting of this historic complex. The construction of the South Circular Road has compromised the approach to the Bully's Acre but the large boundary walls largely screen this.
4	N/A	50080053	Off St. John's Road West, Dublin 8	Military cemetery for RHK established c.1680 (incorporating earlier graves associated with St. John's Priory). The broader RHK grounds provide the principal –- setting of this historic complex. The construction of St. John's Road has somewhat compromised the approach to it but the large boundary walls largely screen this.
5	1851	NIAH Multiple Entries / Regional	Former Clancy Barracks, South Circular Road, Islandbridge, Dublin 8	Multiple former barracks buildings, warehouses etc, now incorporated into a new mixed use development which integrates a number of large scale blocks which have altered the historic scale and grain of the setting of the designated architectural heritage of the complex.
6	7576	50080033 / National	St. John's Road West, Islandbridge, Dublin 8	Heuston Station. A number of more recent infrastructural and large scale commercial developments have altered the setting of the principal edifice of the complex, which is a protected structure.
7	3993	50080082 / Regional	Infirmary Road, Dublin 7	Department of Defence (formerly Gandon's Royal Infirmary): stone wall and 3-storey brick & stone building. A large 1930s pastiche extension has

Key	RPS No.	NIAH Reg. No/Rating	Address	Description
				compromised the composition of Gandon's building and is now the most prominent form to be seen in views from the RHK, which have been altered considerably in the last 150 years by the advent of the railway and more recent development of variable quality.
8	6760	50060115 / National	Military Road, Phoenix park, Dublin 7	Magazine Fort. Views to and from the fort have been comprehensively altered in the intervening years since it was constructed by the arrival of the railway and associated infrastructure, and more recent development variable quality. Mature tree growth also screens this view.
9	6762	50060116 / National	Wellington Road, Phoenix Park, Dublin 7	Wellington Monument. The Phoenix Park provides the principal setting for the monument but views towards the RKH have been altered and encroached upon by more recent development such as phase 1 of the HSQ development and the redevelopment of Clancy barracks. The top of the WMis now just visible above a screen of mature trees.
10	7840	50080083 / Regional	Steevens' Lane, Dublin 8	Dr Steevens' Hospital (original building). Building fronts onto St. John's Road West. The historic setting of Dr. Steevens' Hospital has been considerably compromised over the years by the advent of the railways, the construction of St. John's Road West, Phase 1 of the HSQ development together with the car park in front of it.
11	856	50080086 / National	Bow Lane West, Dublin 8	St. Patrick's Hospital: original building, original wall & gates and gatehouse. The setting of St. Patrick's Hospital has been compromised by the addition of poor quality later additions, the car park and its view towards the RHK altered by the construction of phase 1 of the HSQ development.

Figure 3. Architectural Heritage potentially impacted by the proposed development



Key: Please note: the numbers on the map relate to structures or groups of structures – such as the RHK – potentially impacted by the proposed development. Some of these are on DCC's RPS, some are on the NIAH, and some are on both and they are described in the Table. The proposed site boundary is outlined in red.

There are no protected structures or structures recorded on the NIAH within the proposed development site so the principal potential impacts on built heritage standing outside the site will be visual. Views of the proposed development to and from surrounding locations of architectural heritage have been considered through assessment of verified three dimensional views.

Computer Generated Images have been prepared by Modelworks from 24 locations in the area surrounding the proposed development but only views relevant to the architectural heritage have been assessed. These provide an indication of the likely visual impact of the proposed development both individually and within the wider urban context. Views 1-3 are more distant views, whereas 4-13 are near views taken within the immediate setting of the Royal Hospital and its garden. Views 14-18 are taken from the wider grounds of the RHK and views 19-24 are longer distance views, mostly taken from the north side of the Liffey and the Phoenix Park. There are, however, no potential visual impacts in proposed views 3,16 and 24.

Visual Impacts/Cone of Vision

Generally speaking, views eastwards from the terraces and formal gardens of the RHK will be impacted by the proposed new development. The existing buildings that form Phase 1 of the HSQ development are, however, currently clearly visible from these vantage points, and the proposed new development will largely screen these buildings, creating a more formal and contextual backdrop. A three metre high limestone wall [replaced in the nineteenth century] forms the current boundary between the formal gardens of the RHK and the site. Beyond this wall the ground drops steeply into the site, and there is currently a temporary landscape treatment. Formally clipped evergreen oak trees line the boundary on the RHK garden side and protrude just above the wall. The existing phase

1 HSQ buildings are visible above this boundary wall and from most parts of the garden. Views north-eastward

The taller elements of the proposed design will be visible from a range of locations around the vicinity but not from within the courtyard of the RHK. The 'Cone of Vision' view northwards from the north (principal) elevation of the RHK to the Magazine Fort, Wellington Monument and Gandon's former Royal Military Infirmary, as described in the Development Plan, will also be impacted by the proposals. The proposed development screens the irregular forms of the first phase of the HSQ development and other large more recent structures in the cone of vision, and responds to the formality and materiality of the historic setting, while maintaining the visual link between the Royal Hospital and the Gandon Cupola from the central axis. Accordingly, there is no adverse impact on the cone of vision.

Construction Phase Impacts

The erection of cranes, scaffolding and site lighting columns will be the initial visible elements of the development works and more of the development will become visible as it is constructed. The visual impact of the construction phase on the architectural heritage of this area will be short-term in nature.

Operational Phase and Cumulative Impacts

The height of the proposed SHD development rises from 5 storeys addressing the formal gardens, to 12 and 17 storeys respectively. The proposed buildings will be visible from a range of near and far locations.

24 computer generated photomontages (provided in Appendix 14A) have been prepared to illustrate the character of the proposed residential scheme within both its immediate setting and in more distant views. The current or existing view is rendered together with that of the proposed for comparative purposes and include both relevant winter and summer views.

Mitigation Measures

Mitigation measures are proposed to reduce and remove significant impacts arising from the proposed development:

Construction phase mitigation measures are as follows:

- There is potential to discover further elements of architectural or archaeological note during this stage. Monitoring of the construction site will occur during groundworks.
- A full record of the RHK boundary wall, which is in close proximity to the development site will be taken in the form of photographic survey and stone accurate survey drawings prior to construction. A suitably qualified Conservation Architect will review this record to ensure it is sufficiently detailed. Protection measures for the wall will be developed ahead of the works, to ensure that there is no damage from construction debris etc. A suitably qualified Conservation Architect will review the protection measures to be put in place. Careful vibration monitoring will be undertaken during the construction phase to ensure that there is no vibration impact on the wall. Should monitoring be required on any other structures within the RKH grounds, this will also be undertaken during construction.
- There will be minimal, and short-term visual impact during the construction phase. The contractor will implement the agreed CEMP to minimise visual impact during construction.

Operational phase mitigation measures are as follows:

- The proposed landscaping plan will be implemented. This scheme incorporates design and planting of the highest quality, to create meaningful public realm which would help soften and leaven the proposed development and help create good placemaking as mitigation.
- The proposed lighting plan is to be implemented as proposed to prevent/minimise light spill into the adjoining RHK gardens.
- Signage within the site should be of the highest quality of design and fabrication.

Residual Impacts

There will be residual visual impact as outlined in our assessment of the views, in table 14.5.2.2.1. These residual visual impacts are the result of high density residential / commercial development at the subject site, and have been minimised where possible through the design, modulation, proportions and materiality of the proposed development and the implementation of green roof terraces.

(XV) LANDSCAPING AND VISUAL IMPACT ASSESSMENT

The Strategic Housing Development (SHD) site at Military Road Kilmainham is part of the Heuston South Quarter (HSQ) Strategic Development Regeneration Area (SDRA -7). The main aim of the Heuston SDRA is to develop a high-quality area for living, working and socialising. This aim is to be achieved by means of high-quality sustainable urban architecture which incorporates the prioritisation of public space and interconnects sympathetically with the existing architecturally sensitive area.

The proposed site lies between the relatively recently developed first phase of the HSQ which bounds Military Road to the east and the Royal Hospital Kilmainham (RHK) which lies to the west of the site. The first phase of the HSQ development created a series of buildings on the eastern and southern sides of the site and a plaza area on the western side, accessed off Military Road. This area was temporarily landscaped with grass and a tree screen at the edge of the open edge of the car park. A partly developed section of the wider site is located to the north of this application bounding St John's Road West and will become a commercial development in a following 3rd HSQ phase.

In this SHD application it is proposed to create a series of residential buildings set around formally landscaped courtyards with an east west pedestrian formally planted path that links into the RHK at the edge of the formal gardens. Given the sensitivity of the RHK building and its formal gardens which adjoin the site, it is proposed to step the building heights with the low 5-storey buildings over basement (i.e., 3 storeys over the RHK garden level) bounding the RHK formal gardens stepping up to 18 storeys adjoining the existing HSQ Phase 1. The architectural treatment of the building façade and fenestration facing the RHK gardens is designed to complement the formal gardens and planting along the building parapet and roof terraces visually link the development with the RHK gardens. The landscape design for the development will include the use of high-quality materials across the site and with a strong emphasis on a diverse planting palette from clipped semi mature trees, clipped specimen hedging, shrub planting with year-round appeal to grouped native species planting to encourage biodiversity on the site.

Identification of Likely Significant Impacts

The LVIA reviewed the visual impacts of the proposed development along with the cumulative impacts of the proposed later commercial development 3rd phase. A series of 24 No. photomontages was set

up around the site in conjunction with comments from Dublin City Council to evaluate the visual impacts of the development. A visual analysis of the photomontages, based on the Environmental Protection Agency (EPA) Significance Criteria, was carried out and this analysis showed that visual impacts would range from imperceptible to moderate negative during the construction phase depending on location with the most visually negative impacts for views from the south and west, i.e., where there was little existing screening. In the operational phase visual impacts ranged from imperceptible (views from the east) to slight negative tending to imperceptible (views from the west) where there was little existing screening. While there are existing views of the Phase 1 HSQ from the RHK terraces and gardens, the proximity of the proposed buildings to the RHK would have a slight negative visual impact but this would tend towards imperceptible as the building and newly installed landscape matured.

The cumulative visual impacts of the proposed 3rd Phase commercial development to the north of the SHD site was also evaluated, even though the buildings are not yet fully designed, the height and massing of the buildings was visually analysed. The analysis showed that views from the east and south as imperceptible neutral as the Phase 1 and proposed SHD buildings screened the majority of views towards Phase 3. Views from the southwest and west of the RHK ranged from slight negative to moderate negative as more of the building was visible. The cumulative impact of other proposed buildings in planning or under construction was also considered based on available information.

Overall, the visual impact from the proposed development can be described at worst as moderate negative in the construction stage and slight negative tending to imperceptible in the operational stage.

Summary of Mitigation Measures

In respect of landscape and Visual impact, the mitigation measures proposed are summarised as follows:

- Provision of secure hoarding / tree protection measures for existing retained trees.
- Use of screening and webbing to prevent materials falling from a height endangering local residents / office staff / visitors.
- Directing site lighting away from existing residents / office / retail / creche.
- Phasing of development in order that the buildings and surrounding landscape works are completed as soon as possible.
- Landscape Architect to ensure a competent experienced landscape contractor is appointed to undertake the work
- Landscape Architect to oversee soil preparation, planting and hardworks commissioning to be as specified in the in the Landscape Drawings and Landscape Hardworks and Softwoks specifications.
- Implementation of the landscape maintenance scheme.
- Site administration to organise reviews of the hardworks, and softworks and update / repair / replant as required to mitigate against public liability issues which may arise.

(XVI) INTERACTIONS WITH THE FOREGOING

Chapter 16 of the EIAR provides an assessment of the interactions and interrelationships of the different environmental factors / impacts that will occur as a result of the proposed development including synergistic and cumulative impacts.

All environmental topics are interlinked to a degree such that interrelationships exist on numerous levels. The comprehensive assessments undertaken as part of this EIAR has revealed that the proposal will not result in any significant adverse effects on the environment. Mitigation measures have been proposed to avoid, remedy or reduce identified impacts.

This assessment of interactions arising concluded that the proposed development will not result in any significant synergistic interactions or cumulative adverse impacts on the environment.

In all instances, mitigation measures have been proposed to avoid, remedy or reduce identified impacts. Mitigation measures are proposed and outlined within individual EIAR chapters to ensure that any potential adverse impacts that may arise as a result of the proposed development are minimised/neutralised.

(XVII) MITIGATION MEASURES

Chapter 17 of the EIAR compiles and lists the mitigation measures and monitoring requirements described in the previous chapters of the EIAR. The mitigation measures described in the EIAR are summarised in the sections above.