8 Environmental Interactions & Cumulative Impact

8.1 Introduction

This Chapter of the EIAR deals with likely significant interactions between predicted environmental effects of the proposed development, as identified in the EIAR Chapters.

The principal interactions between each of the environmental topics assessed within this EIAR are summarised below, under Table 8.1. Further discussion is provided in the Sections that follow within this Chapter.

The proposed impacts determined within Chapters 5.1 – 5.14 have taken into account of the significant interactions listed below. The consideration of any cumulative impacts arising from the below interactions is also outlined under this Chapter.

Table 8.1: Matrix of Interactions between Environmental Factors (During Construction, Demolition and Operational Phase)

	Population & Human Health	Cultural Heritage – Architectural Heritage	Cultural Heritage - Archaeology	Material Assets – Transportation	Landscape & Visual Impact	Biodiversity	Soil & Geology (including 'land')	Water	Air - Noise & Vibration	Climate & Climate Change – Air Quality	Climate - Daylight Analysis	Climate - Sunlight Analysis	Material Assets – Waste Management
Population & Human Health		✓	x	✓	✓	x	✓	x	✓	✓	✓	✓	✓
Cultural Heritage – Architectural Heritage	✓		x	✓	✓	x	x	x	✓	x	x	x	✓
Cultural Heritage - Archaeology	x	x		x	x	x	✓	x	x	x	x	x	x
Material Assets – Transportation	✓	✓	x		✓	x	✓	x	✓	✓	x	x	✓
Landscape & Visual Impact	✓	✓	x	✓		x	x	x	x	x	x	✓	x
Biodiversity	x	x	x	x	x		✓	✓	✓	x	x	x	x
Soil & Geology (including 'land')	✓	x	✓	✓	x	✓		✓	✓	x	x	x	✓
Water	x	x	x	x	x	✓	✓		x	x	x	x	x
Air - Noise & Vibration	✓	✓	x	✓	x	✓	✓	x		x	x	x	x
Climate & Climate Change – Air Quality	✓	x	x	✓	x	x	x	x	x		x	x	✓
Climate-Daylight Analysis	✓	x	x	x	x	x	x	x	x	x		x	x
Climate - Sunlight Analysis	✓	x	x	x	✓	x	x	x	x	x	x		x
Material Assets – Waste Management	✓	✓	x	✓	x	x	✓	x	x	✓	x	x	

Where there is an Interaction = ✓ No interaction = x

8.1.1 'Population & Human Health' with 'Cultural Heritage: Architectural Heritage'

There is an interaction between these environmental topics during Demolition and Construction Phase of the proposed development. The local population passing through area will be aware of the construction activity and the enjoyment of the cultural heritage will be temporarily impacted during this phase.

During Operational Phase, the Proposed Development seeks the adaptive re-use of 8no. Protected Structures as part of the development of Parnell Square North. These buildings, which otherwise would remain closed to the general public, will now be renewed and incorporated into a modern 21st century library facility. The creative reuse of the principal historic buildings adjoining and forming part of the new library is a significant positive impact.

Further interactions occur during the Operational Phase of the development where members of the resident, visitor and working populations can enjoy and experience the refurbished Protected Structures integrated within the Proposed new library building. This is seen as a long-term positive effect to the population at Local and City Level.

There is the potential for general wear and tear throughout the building arising from the use of the building by the population. As part of operational phase monitoring, areas creating the greatest usage is to be controlled and managed. Alterations to room functions should be the subject of a control system to ensure they remain within the usage they were designed for. Details of this mitigation measure and monitoring is described under Chapter 5.3: Cultural Heritage – Architectural Heritage.

8.1.2 'Population & Human Health' with 'Material Assets: Transportation'

During Demolition and Construction phase, the resident, visiting and working population utilising transportation in the vicinity of the application site will be keenly aware of the construction activity.

Transportation will continue to operate along Parnell Square North, however, it will be reconfigured during the construction phase to accommodate the temporary construction compound for Heavy Goods Vehicles (HGV).

General movement and permeability around the development site will be managed in accordance with an approved Outline Construction Management & Waste Management Plan. An outline of this plan accompanies this EIAR under Volume 2, Appendix 3.1.

An assessment of the additional traffic movements associated with the proposed development during the construction and operational phases is presented in Chapter 5.5: Material Assets – Transportation.

The impact of traffic generated by the proposed development on human health in relation to air quality and Air - Noise & Vibration during both the demolition and construction phases of the proposed development is dealt with in Sections 5.2.5.2 & 5.2.5.3 and Chapters 5.10: Air- Noise & Vibration & 5.11 Climate & Climate Change – Air Quality of this EIAR. These types of interactions are also further outlined within this Chapter below.

8.1.3 'Population & Human Health' with 'Landscape & Visual Impact'

There is an interaction between Population & Human Health with Landscape & Visual Assessment.

The report titled 'Health Impacts on the Built Environment: A Review' (The Institute of Public Health in Ireland, 2006) states that deteriorating physical features of the urban environment can harm health. Architecture Ireland have also shown the link between the Built Environment and Mental Health (Architecture Ireland, 2015). The World Health Organisation (WHO) has undertaken research that shows urban environments that are aesthetically pleasing and landscaped encourage people to explore and access their local community by foot or bicycle when compared to the same urban space prior to renovations (WHO, 2016).

At Demolition and Construction Phase, there will be moderate temporary negative townscape impacts due to the erection of construction scaffolding, cranes, hoardings etc. These impacts however will be short term in duration. This type of activity will be visible to the resident, visitor and working population at the local level. There may be an element of positive expectation in respect of the reuse of this site and regeneration in this area, signalled by visible construction works.

At Operational Phase, the new city library and public realm works cultural quarter will contribute positively to the form and function of Parnell Square and will strengthen this area as a cultural centre of the city. The improved townscape and visual settings will result in a

positive impact on population and human health in area. Works to facilitate easier pedestrian and bicycle access should result in increased physical activity of the local population and visitors alike. This will result in a positive, significant and long-term effect on human health in the local area.

It is submitted that proposed development will ultimately alter the visual character of the environment in this area in a manner that is consistent with emerging trends.

8.1.4 'Population & Human Health' with 'Soils & Geology (Including 'Land')

During Demolition and Construction Phase, there is a potential for residual nuisances (dust, dirt etc.) arising from the extraction of soils and demolition waste from the site.

Implementation of the Outline Construction Management & Waste Management Plan Volume 2, Appendix 3.1 of this EIAR, which includes wheel washing, dust prevention, road sweeping, etc, will mitigate these potential impacts by ensuring that the contractor employs a best practice construction and site maintenance approach.

There is no interaction between these topics during the operational phase of the proposed development.

8.1.5 'Population & Human Health' with 'Air: Noise & Vibration'

During the Demolition and Construction Phase as detailed in Chapter 5.10 Air - Noise & Vibration, the primary sources of construction vibration are believed to emanate from piling and ground/rock breaking.

The range of vibration levels is typically below a threshold which would cause any disturbance to occupants of the nearest residential dwellings highlighted in Section 5.10.3 of Chapter 5.10: Air – Noise & Vibration. Any rock breaking undertaken as part of the construction activities onsite will be required to operate below the recommended vibration criteria set out in Table 5.10.1 of Chapter 5.10: Air – Noise & Vibration.

This should ensure no predicted significant adverse impact arising from vibration during construction, provided works are carried out so as to fall under the relevant vibration criteria. It has been determined that the ICF Clinic in the Rotunda Hospital is located at

such a distance so as not to be at risk of vibration impacts during the demolition and construction phase of the project.

Noise emissions associated with the construction phase of the development are predicted to be above the adopted criteria at distances of 10m or less. Thus, a negative noise impact on nearby sensitive receptors is likely. A number of avoidance, remedial and reduction measures are included in Section 5.10.6 of Chapter 5.10 Air Noise & Vibration. As the source of construction noise moves beyond the 10m range, the impact will reduce.

There is therefore expected to be a short term, negative, significant impact on sensitive receptors within 10m of construction works. As works move further away, the predicted noise levels would be within the "moderate, negative and short term" category (Ref. Section 5.10.7.1 of Chapter 5.10: Air – Noise & Vibration.).

During Operation Phase - As detailed in Chapter 5.10: Air – Noise & Vibration, careful design ensures that the locations of external noise emitting plant will be screened by vertical elements. This will ensure that any noise emission will spread vertically, mitigating hemispherical noise spread to adjacent properties. In addition, acoustic attenuation will be provided, where required to keep within existing background noise levels in surrounding occupied, and in particular residential, areas.

Operating external plant will be designed and located so that emissions will be within the noise criteria set for day and night-time periods. It is not therefore expected to generate any significant impact at any noise sensitive locations during the operational phase.

No other significant noise or vibration sources are anticipated during the operational phase of the development.

8.1.6 'Population & Human Health' with 'Climate & Climate Change: Air Quality'

In order to reduce the risk to health from poor air quality, National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. The limit values are set for the protection of human health including the most vulnerable to health impacts due to poor air quality i.e. the infirm, elderly and children.

These limit values provide short term (i.e. 24 hour or 1 hour) and long term (annual mean) limit values below which EU member states must keep the specified pollutants. Air pollution is the single largest environmental health risk in Europe. Heart disease and stroke are the most common reasons for early death and are responsible for 80% of cases. Health effects also include asthma, acute bronchitis, lung cancer, damage to nasal passages and respiratory tract inflammation.

Links to cancers of the bladder, kidney, stomach, oral cavity, pharynx and larynx, multiple myeloma, leukaemia, Hodgkin's disease, and non-Hodgkin's lymphoma have also been linked to urban air pollutants. The pollutants of most concern in Dublin with respect to human health are NO_2 and PM_{10} as they are the two pollutants most likely to exceed the annual mean limit values (40 µg/m3).

Air quality monitoring programs have been undertaken in recent years by the EPA at a number of locations in Dublin city centre. The most recent annual report on air quality "Air Quality Monitoring Annual Report 2016" (EPA 2017), details the range and scope of monitoring undertaken throughout Ireland. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.). Long term averages for NO_2, PM_{10}, $PM_{2.5}$, CO and benzene indicate that concentrations in Dublin are below the limit values set for the protection of human health.

During Construction Phase, as detailed in Chapter 5.11: Air Quality & Climate – Air Quality, best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure best dust mitigation practice based Institute of Air Quality Management (IAQM) Guidance. Therefore, the impact of construction of the proposed development is likely to be short-term and imperceptible with respect to human health.

As the site is within close proximity of a number of sensitive receptors, it is recommended that dust monitoring (Bergerhoff Method) should be conducted during the construction phase as this will ensure the efficiency of the dust mitigation measures and also highlight when more measures may need to be implemented. Construction phase impacts on human health due to construction phase vehicles are predicted to be imperceptible as volumes fall

below the scoping levels for impact. This is discussed in Chapter 5.11: Climate & Climate Change - Air Quality.

As detailed in Chapter 5.14: Material Assets - Waste Management, a number of asbestos surveys have been carried out at Nos. 20-21 and Nos. 23 - 28 Parnell Square. These identified a number of locations within the buildings where asbestos containing materials are present (ASM). All forms of asbestos have the ability to cause lung cancer, mesothelioma, cancer of then larynx and ovary, and asbestosis (fibrosis of the lungs) (WHO, 2018), if not correctly managed. All asbestos containing materials are to be removed as part of the construction demolition phase of the proposed development by a suitably qualified contractor. It will be transported and disposed of by a licenced contractor to a licenced facilitated. Please see Volume 2, Appendix 3.1: Outline Construction Management & Waste Management Plan.

There is the potential for a number of human health impacts during the operational phase of the development. In particular, vehicle related air emissions may generate quantities of air pollutants such as NO_2, PM_{10}/$PM_{2.5}$, CO and VOCs. The pollutants of most concern are NO_2 and PM_{10}, as these pollutants are generated as a direct result of vehicles and have the greatest potential to exceed the air quality standards.

However, as outlined in Chapter 5.5: Material Assets - Transportation, traffic modelling indicates that low numbers of additional traffic will be generated due to the proposed development. It is envisaged that there will be increases of up to 60 annual average daily traffic movements (AADT) on the link close to Parnell Square due to the proposed development. However, this is significantly below the level of increased daily traffic flow of 1,000 AADT which is deemed to cause any impact on human health. Therefore, using the air quality screening criteria, no road links can be classed as 'affected' by the proposed development and no significant short or long term human health impacts are predicted due to the proposed development.

There are no other impacts on air quality associated with the operational phase of the proposed development.

8.1.7 'Population & Human Health' with 'Climate: Daylight Analysis'

There is an interaction between Population & Human Health and Daylight Analysis.

During the Demolition and Construction phase, the construction of the proposed development on daylight access is likely to be, initially, lesser than the impact of the completed development at operational phase.

At Operational Phase, the most significant daylight access impacts of the development will be on those existing buildings in close proximity, which have windows directly facing the site. While there is likely to be a moderate to significant impact on daylight access to a small number of southwest-facing rooms at Sheridan Place, the impact on these rooms could be considered to be consistent with an emerging pattern of very high density development on backland or infill sites in Dublin City Centre.

The impact of the proposed development on daylight access within buildings at very close proximity to the site (e.g. Parnell Court and Charlemont House to the east) are likely to range from "imperceptible" to "moderate". The impact on daylight access on other nearby buildings at Granby Row and Frederick Lane North is likely to range from "imperceptible" to "slight".

Given that the potential for the development to impact on daylight access diminishes with distance, ARC's analysis found that the impacts outlined above represent a worst-case scenario. The proposed development is unlikely to result in any undue adverse effects on daylight access within buildings in the wider surrounding area.

Further detail in relation to daylight is set out in Chapter 5.13: Climate – Daylight Analysis.

8.1.8 'Population & Human Health' with 'Climate: Sunlight Analysis'

There is an interaction between Population & Human Health with Sunlight Analysis.

The potential for the proposed development to result in a change to the shadow environment is limited by the already dense shadow environment of this part of Dublin's urban core. The site is already occupied by the existing Protected Structures and Amharclann structure to the rear.

The potential for the redevelopment of the central portion of a city block (i.e. where the perimeter buildings of that city block are to be retained) to result in additional overshadowing of the wider area is very limited.

During the Demolition and Construction phase, plant machinery, hoarding, scaffolding and cranes will cast shadows which will be temporary in nature on the immediate vicinity of the construction site.

At Operational Phase, the impact of shadows cast by the proposed development on the study area are considered to be consistent with emerging trends for development in the area. In this context, at the sample windows at Sheridan Place (north of the proposed development) it has been considered to have a "moderate" impact. At Parnell Court (west of the proposed development), sunlight access impacts are predicted to range from "none to slight" change. At Charlemont House (east of the proposed development), a "slight to moderate" impact is expected. However, there is no expectation of sunlight here within the meaning of BRE Guide in the pre development situation, as the rear of Charlemont House faces northwest.

Further detail in relation to the sunlight is set out in Chapter 5.12: Climate – Sunlight Analysis.

8.1.9 'Population & Human Health' with 'Material Assets: Waste Management'

The Demolition and Construction phase of the development will generate a range of wastes, particularly asbestos containing materials, which could interact with the Population and Human Health. Correction segregation, storage, handling, transport and reuse/ recycling/disposal will be required to ensure litter on does not become a nuisance to nearby populations.

The site will be managed in accordance with the Outline Construction and Waste Management Plan under Volume 2, Appendix 3.1 of this EIAR, which will incorporate a site specific Construction & Demolition Waste Management Plan, Volume 2, Appendix 14.1

An Operational Waste Management Plan will be in place during the operational phase of the proposed development. This will ensure that works are undertaken in accordance with current legal and industry standards. Details of this plan accompany this EIAR and are located within Volume 2, Appendix 5.14.2.

8.1.10 'Cultural Heritage: Architectural Heritage' with 'Material Assets: Transportation'

There is a positive interaction between these 2no. environmental topics at operational phase. The proposed public realm works along Parnell Square North incorporate enhanced pedestrian facilities, including widened footpaths and pedestrian crossings.

In line with the Chapter 5.3: Cultural Heritage – Architectural Heritage, the proposed reconfiguration of Parnell Square North would be similar to the historical imagery depicted by Maltron in 1790. While it is noted that this image shows the area as entirely pedestrianised, the proposed public realm works provide for significantly enhanced pedestrian facilities, albeit not complete pedestrianisation.

Further details in relation to the above is contained within Chapter 5.3: Cultural Heritage – Architectural Heritage and Chapter 5.5: Material Assets – Transportation.

8.1.11 'Cultural Heritage: Architectural Heritage' with 'Landscape & Visual Impact'

During Demolition and Construction phase, the presence of the construction activity will be noticeable in the landscape, in the context of the existing Architectural Heritage.

At operational phase, there is an interaction between Architectural Heritage and Landscape & Visual Impact. The alterations of the protected structures under the supervision of the conservation officer are likely to have a long-term positive impact, and enhance the visual appearance of the area.

8.1.12 'Cultural Heritage: Architectural Heritage' with 'Air: Noise & Vibration'

The noise environment reflects a typical city centre location. During the Construction Phase, including demolition, there will be increased vibration that could impact on the adjoining Protected Structures. However, the construction activity will be controlled by the contractor's implementation of the Construction Noise & Vibration Mitigation measures, set out under Volume 2, Appendix 5.10.1. Within this plan there are monthly noise & vibration monitoring reports which will be prepared by the contractor.

The vibration from construction activities will be limited to the values set out within Chapter 10: Air – Noise & Vibration of this EIAR. These limits are set in order to protect, inter alia, Protected

Structures and sensitive buildings such as those with no or minimal foundations.

These measures will minimise potential impacts to the adjacent protected structures during the construction and demolition phase.

8.1.13 'Cultural Heritage: Architectural Heritage' with 'Material Assets: Waste Management'

At Operational phase – waste management deliveries for the proposed restaurant / café use at No. 27 & 28 will occur along Parnell Square North. As outlined under Chapter 5.14: Material Assets – Waste Management, the presentation of waste will occur during staggered times in line with Dublin City Council Waste Bye-Laws.

8.1.14 'Cultural Heritage: Archaeology' with 'Soils & Geology (Including 'Land')

During the Construction and Demolition Phase, the interaction between these topics relates to the monitoring of excavated material.

Excavated material will be removed off site in accordance with the approved Outline Construction Management & Waste Management Plan. A copy of this document is found under Volume 2, Appendix 3.1 of this EIAR.

During Operational Phase, there is no interaction.

Further details in relation to both Chapters are found in Chapter 5.4: Cultural Heritage – Archaeology and Chapter 5.8: Soils & Geology (including 'land').

8.1.15 'Material Assets: Transportation' with 'Landscape & Visual Impact'

During the Demolition and Construction Phase HGVs and construction related activities will be visible. This is a short term impact. It may signal future positive change for some.

At Operational Phase the redesign of the public realm area is likely to result in a "moderate" change to the visual environment. However, it is a change that is likely to be considered to be positive in character by most.

8.1.16 'Material Assets: Transportation' with 'Soils & Geology (Including 'Land')'

During the Construction and Demolition phase, there is potential for residual nuisances from site excavation and construction related vehicles depositing dust and dirt on nearby roads.

However, the contractor will be required to implement a best practice construction management approach by following the Outline Construction Management & Waste Management Plan. This includes the Volume 2, Appendix 5.11.2: Dust Minimisation Plan and wheel washing facilities at compounds to reduce the potential impacts arising.

During operational phase, there is no interaction.

8.1.17 'Material Assets: Transportation' with 'Air – Noise & Vibration'

The existing noise climate is typical of a city centre location dominated by road traffic.

During the Construction and Demolition phase, there is potential for increased noise and vibration as a result of construction traffic to and from the development site. The calculated noise levels are below the construction noise criterion and are therefore not expected to generate any significant impact.

During Operational Phase, it is envisaged that the vast majority of trips will be made via public transport, by foot, or in private vehicles that will travel only part of the way to the development. Therefore, it is expected that the noise impact associated with vehicles travelling to and from the development is neutral, imperceptible and long-term.

8.1.18 'Material Assets: Transportation' with 'Climate & Climate Change: Air Quality'

Significant interactions between these topics occur during the Construction and Demolition Phase of the Development. During that phase, there is the potential for a short term negative impact.

Dust mitigation measures set out under Volume 2, Appendix 5.12.2 will ensure potential impacts are minimised. These include spraying surfaces during dry weather, wheel washes, control of vehicle speeds and identification of agreed haul routes. These are detailed

in the Outline Construction Management & Waste Management Plan found under Volume 2, Appendix 3.1 of this EIAR.

8.1.19 'Material Assets: Transportation' with 'Material Assets: Waste Management'

Transportation requirements during Demolition and Construction Phase will be in response to the quantum of excavated material to be removed from the site.

Waste management practices will be implemented through the Construction & Demolition Waste Management Plan during construction phase to ensure the volume of waste is reduced as much as possible. This in turn will ensure the requirement for additional HGV movements is reduced. The reduction of truck movements as a consequence of the waste removal also has a cumulative interaction with Air Quality, and Noise & Vibration. Reducing the number of HGV movements reduces the likely impacts arising from those environmental topics.

Similarly, waste during the Operational Phase of the development will be managed in accordance with Operational Waste Management Plan. Adherence to this plan will ensure that only the required number of HGV (Bin trucks) are required for collecting operational waste.

8.1.20 'Landscape & Visual Impact' with 'Climate Sunlight Analysis'

Similar to interactions identified for 'Population & Human Health' and Sunlight Analysis'.

The potential for the proposed development to result in a change to the shadow environment is limited by the already dense shadow environment of this part of Dublin's urban core. The site is occupied by the existing Protected Structures and Amharclann structure on site. Moreover, the potential for the redevelopment of the central portion of a city block (i.e where the perimeter buildings of that city block are to be retained) to result in additional overshadowing of the wider area is very limited.

During the Demolition and Construction phase, plant machinery, hoardings, scaffolding and cranes will cast shadows on the immediate vicinity of the construction site. This impact will be temporary in nature.

At Operational Phase, the impact of shadows cast by the proposed development on the area are considered to be consistent with emerging trends for development in the area.

8.1.21 'Biodiversity' with 'Soils & Geology (Including 'Land')

During Demolition and Construction Phase onsite construction activities will be implemented in accordance with the Outlined Construction & Demolition Management Plan, provided under Volume 2, Appendix 3.1. This plan also considers the guidance of the Construction & Demolition Waste Management Plan outlined under Volume 2, Appendix 14.1.

There will therefore be no significant impact on Biodiversity due to the implementation of best practice construction management measures.

During Operational Phase, there is no interaction.

Further details in relation to both Chapters are found in Chapter 5.7: Biodiversity and Chapter 5.8: Soils & Geology (including 'land').

8.1.22 Biodiversity with Water (Drainage, Supply, Flood Risk and Groundwater)

There is potential for water pollution to impact on designated sites during Demolition, Construction, and the Operational Phases. To prevent this, the management of standing water on site during construction will be carried out in accordance with the Outlined Construction Management Plan.

However, there is actually no potential for significant effects to arise. In Chapter 5.7: 'Biodiversity' it is concluded that no European Sites are deemed to be at risk of likely significant effects from construction or operation of the proposed development.

8.1.23 'Biodiversity' with 'Air – Noise and Vibration'

This relates to the potential impact on birds resulting from a temporary increase in noise and vibration levels during the construction phase.

However, no potential significant impacts will arise for the reasons outlined in Chapter 5.7: Biodiversity: Section 5.7.5.3 which looks at the potential impacts on Bats and Birds during the demolition and construction phase of the development.

8.1.24 'Soils & Geology (including 'Land')' with 'Water' (Drainage, Supply, Flood Risk and Groundwater)

During the Demolition and Construction Phase, the interaction between Soils & Geology (including 'land') with Water (Drainage, Supply, Flood Risk and Groundwater) will be dealt with in accordance with the approved Outline Construction Management & Waste Management Plan.

The main contractor is to ensure that during construction phase there is no hazardous build-up of water. The contractor must also provide for temporary disposal of rainwater from the site during the course of the works.

Any water on site during Demolition and Construction Phase is to be treated on site by way of sediment / filtration tanks and must comply with a waste disposal licence obtained by the contractor from the Local Authority.

During Operational Phase, SUDs measures will help to reduce the overall quantity of run off, while improving the water quality of the run off. This is in turn will discharge into the closed drainage network.

8.1.25 'Soils & Geology (including 'Land') with 'Air: Noise & Vibration'

The noise and vibration generated during the excavation of soils and groundworks associated with the construction of the project, at the rear of 23 – 28 Parnell Square, and during the repaving of the public realm, will be controlled and monitored as set out in Chapter 5.10: Air Noise - Vibration of this EIAR.

8.1.26 'Soils & Geology (including 'Land') with 'Material Assets: Waste Management'

As detailed in Chapter 5.8: Soil & Geology (including 'Land') previous site investigations in 2014 at Nos. 23 - 28 Parnell Square North have shown that asbestos is present at depths between 0.5 and 3 metres below ground level in three locations sampled. Slightly elevated levels of selenium and total organic carbon were also noted.

However, contaminated material will be required to be removed from site for treatment or disposal as appropriate. The contaminated material may be suitable for recovery or disposal in Ireland depending on the limitations of the facility's licence. If not suitable, the material will require recovery or disposal abroad and

will be exported in accordance with the requirements of Transfrontier Shipment of Wastes (TFS).

This process forms part of the Construction and Demolition Waste Management Plan prepared by contractors. An outline of this Plan can be found in Volume 2, Appendix 3.1 of this EIAR.

8.1.27 'Material Assets: Waste Management' with 'Climate & Climate Change: Air Quality'

During the construction phase, the removal of Asbestos Containing Material (ACM'S) has implications for the Climate & Climate Change – Air Quality for the application site.

ACM's will only be removed by competent persons and transferred offsite by a suitably permitted waste contractor to a licenced facility. The Health and Safety Authority (HSA) should be contacted in relation to the handling of asbestos. Material should be dealt with in accordance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, as amended.

This process forms part of the Outline Construction Management and Waste Management Plan prepared by contractors. An outline of this Plan can be found in Volume 2, Appendix 3.1 of this EIAR.

8.2 Cumulative Impact

The Directive requires the EIAR to describe the cumulative effects of the Proposed Development. Cumulative effects can be defined as the effects on the environment that result from incremental changes caused by the combination of the proposed development together with other past, present and reasonably foreseeable future developments.

Cumulative effects may arise from:

- The interaction between the various impacts within a single project.
- The interaction between all of the different existing and/or approved projects in the same area as the proposed project.

The interactions between the environmental topics examined have been outlined in detail above under Section 8.1 of this Chapter.

This section sets out the interaction that the proposed development has with different existing and / or approved projects in the same area.

8.2.1 Approved Plans / Projects

At the time of preparing this EIAR, there are currently no approved plans or projects in the vicinity of the Proposed Development which significantly interact with the proposed development.

8.2.2 Future Plans

8.2.2.1 Parnell Square Cultural Quarter: A Catalyst for Renewal and Growth along the Civic Spin, Vision Document 2013

The PSCQ Vision document, identifies a range of proposals for Parnell Square, including:

1. A cornerstone of the vision document is an exemplar city library to be built within the former Colaiste Mhuire buildings (Nos. 23 - 28 Parnell Square North) and includes a design centre and inter-cultural hub to facilitate learning, creativity and participation.
2. Ancillary workshop spaces, rehearsal rooms and study areas in Nos.20/21 Parnell Square North.
3. Fully or partially pedestrianized plaza environment to Parnell Square North, to improve the public realm and to provide opportunities for cultural events and activities.

4. New landscaping/public realm works at the eastern and western sides of Parnell Square, with widened paths and new trees, to improve the pedestrian access and safety while maintaining traffic flow.

The project would represent the implementation of this Vision document, delivering the Parnell Square Cultural Quarter, with City Library and public realm enhancements, as a notable cultural destination at the northern end of the 'Civic Spine', and stimulating the regeneration of the north inner city.

There is the potential for spin off projects as a consequence of the proposed development. However, the extent of such potential development is unknown and beyond the scope of this EIAR to determine and assess. Each to be assessed on its own merits, having regard to the provisions of the City Development Plan and any related plans, and being in accordance with the proper and sustainable planning and development of the area.

8.2.2.2 Transportation Plans

The impact of the project with respect to existing infrastructure, including pedestrian, bicycle, bus, Luas and vehicular facilities, has been assessed as part of the planning design and the EIAR.

As detailed under Chapter 5.5: Material Assets – Transportation, there are currently a number of further transportation improvements planned that affect Parnell Square. These which include:

- New Metro Link from Estuary to Cherrywood with an underground stop on O'Connell Street North.
- Dublin City Council Strategic Green Route along Parnell Square East as an extended part of the Civic Spine.
- GDA Cycle Network Route No. 3 along Parnell Square East.
- Dublin City Council Strategic Pedestrian Route on Parnell Square.
- Dublin Bus network redesign.

In the absence of detailed proposals for the various transportation initiatives and management measures to be applied to Parnell Square East in the future, such as Bus Connects, Swiftway, BRT, Strategic Green Route, GDA Cycle Network, Strategic Pedestrian Route, which are outside the control of the PSCQ project, it has not been possible to determine their cumulative effect with the project on the operation of the public transport services in the Parnell Square area.

8.3 'Do-Nothing' Scenario

If the Proposed Development does not proceed, the likely impacts arising from each environmental topic under Chapters 5.1 – 5.14 would not occur. Thus, there would be no interaction between the project and other existing / approved projects. Therefore, there would be no potential for cumulative impacts to arise.

8.4 Mitigation Measures

We refer to the environmental topics under Chapters 5.1 – 5.14 for specific mitigation and to the summary of all mitigation measures contained within Chapter 6.

8.5 Monitoring

We refer to the environmental topics under Chapters 5.1 – 5.14 for specific mitigation and to the summary of all mitigation measures contained within Chapter 6.

8.6 Bibliography

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