1 INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment Report ('EIAR') has been prepared by McCarthy Keville O'Sullivan Ltd. (MKO) on behalf of Crown Square Developments Limited, which intends to apply to Galway City Council for a mixed use development located at the former Crown Equipment site in Mervue, Galway City.

A comprehensive masterplan for the entire site has been developed, setting out proposals for buildings, spaces and a movement and land use strategy. The proposed development strategy envisages that the subject lands will be developed in two distinct stages, with two separate planning applications:

- Phase 1: Commercial Offices (Blocks A-E), Hotel and Site Infrastructure, including all basement structures for the entire site
- Phase 2: Strategic Housing Development - Residential, Leisure and Ancillary Uses,

This EIAR will accompany the Phase 2 planning application which includes 3 no. blocks of apartments, a small number of commercial premises, a fitness/leisure facility and associated infrastructure on the eastern portion of the site, along with the allocation of basement parking.

The proposed development builds upon the previous planning permissions and construction works carried out at the site in c2008. Almost the entire site has already been excavated to structural formation level and there are extensive foundations and partially complete building structures in-situ which will be used and adapted where possible.

The proposed development site extends to 5.1 ha and is located in the north-east of Galway City in Mervue, at the junction of the Monivea Road and Joyce's Road (also known as Connolly's Avenue). The IDA Business Park and Mervue Industrial Estate are located to the west/south-west of the site and the Eircom Telecommunications site immediately borders the subject site to the north-east. Medium density residential development is located to the east of the site along the Monivea Road.

1.2 The Applicant

The applicant, Crown Square Developments Limited (a member of The Rhatigan Group) are the developers of the site. The building contractor JJ Rhatigan & Co. was established in 1952 with the development arm of the group being established in 1994. The development arm has become a key component in the overall success of the group, having successfully delivered a number of similar developments in recent years including, Teleflex (Athlone), Heuston South Quarter (Dublin), the Latin Hall Office Development (Dublin), Radisson Blu Golden Lane (Dublin) and the IDA Business & Technology Park (Athlone). They have also recently made a successful application for the development of a site in Dublin's Ship St. Crown Square Developments Limited have employed an experienced Design Team to ensure that this development will be delivered to meet all the relevant planning, environmental and sustainability requirements.

1.3 Legislative Context

European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive'), is currently transposed into Irish planning legislation by the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended). The EIA Directive was amended by Directive 2014/52/EU which has been transposed into Irish law with the recent European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018). Most of the provisions of the new regulations came into operation on the 1st September 2018 while a number of other provisions came into operation on the 1st January 2019.

Accordingly, this EIAR complies with the EIA Directive as amended by Directive 2014/52/EU. To the extent relevant and necessary, regard has been had to the existing provisions of the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2018 insofar as they transpose the EIA Directive.

The European Union Directive 2011/92/EU, amended by EU Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive'), requires Member States to ensure that a competent authority carries out an assessment of the likely significant effects of certain types of project, as listed in the Directive's, prior to development consent being given for the project. The Environmental Impact Assessment (EIA) of the proposed development will be undertaken by Galway City Council (GCC) as the competent authority.

Article 5 of the EIA Directive as amended by Directive 2014/52/EU provides where an EIA is required, the developer shall prepare and submit an environmental impact assessment report (EIAR) previously referred to as an Environmental Impact Statement ('EIS'). The information to be provided by the developer shall include at least:

(a) a description of the project comprising information on the site, design, size and other relevant features of the project;
(b) a description of the likely significant effects of the project on the environment;
(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;
(e) a non-technical summary of the information referred to in points (a) to (d); and (f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.

McCarthy Keville O'Sullivan Ltd. (MKO) was appointed as environmental consultants on the proposed project and commissioned to prepare this EIAR in accordance with the requirements of the EIA Directive as amended by Directive 2014/52/EU.

1.4 EIA Screening

The relevant classes/scales of development that normally require Environmental Impact Assessment (EIA) are set out in Schedule 5 (Part 2) of the Planning and Development Regulations 2001, as amended.

Section 172 of the Planning & Development Act 2000, as amended, provides the legislative basis for mandatory EIA. It states the following:

"An environmental impact assessment shall be carried out by a planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either:

(a) the proposed development would be of a class specified in –
(i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either –
I. such development would exceed any relevant quantity, area or other limit specified in that Part, or
II. no quantity, area or other limit is specified in that Part in respect of the development concerned,

or

(ii) Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either –
I. such development would exceed any relevant quantity, area or other limit specified in that Part, or
II. no quantity, area or other limit is specified in that Part in respect of the development concerned,

Further to the above, Schedule 5 of the Planning & Development Regulations 2001, as amended sets out a number of classes and scales of development that require EIA.

With regards to the proposed development, the provisions of Schedule 5 require an EIA to be undertaken where it is proposed to carry out the following – *'Urban development which would involve an area greater than 2 hectares in the case of a business district 10 hectares in the case of other parts of a built up area and 20 hectares'* per Item 10 (b)(iv) of the Schedule.

The proposed development exceeds the 2-hectare threshold and therefore is subject to EIA.

This EIAR fulfils the requirements set out by the Environmental Protection Agency (EPA) in the *'Guidelines on the Information to be contained in Environmental Impact Statements' (2002)*, as well as taking account of the recent *'Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017)*, and Schedule 6 of the Planning and Development Regulations 2001, as amended, relating to the information to be contained in an Environmental Impact Statement.

The EIAR provides information on the receiving environment and assesses the likely significant effects of the project, and proposes mitigation measures to avoid or reduce these effects. The function of the EIAR is to provide information to allow the competent authority to conduct the Environmental Impact Assessment (EIA) of the proposed development.

1.4.1 EIAR Guidance

The Environmental Protection Agency (EPA) recently published its *'Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* (EPA, August 2017), which are intended to guide practitioners preparing an EIAR during the

transition to new Regulations transposing the revised EIA Directive. These draft guidelines have been used in the compiling of this EIAR.

In preparing this EIAR regard has also been taken of the provisions of *'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements'* (EPA, 2003) and the *'Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment'*, published by the Department of the Environment, Community and Local Government (DECLG) in March 2013 to the extent these guidelines are relevant having regard to the enactment of the revised EIA Directive.

The European Commission also published a number of guidance documents in December 2017 in relation to Environmental Impact Assessment of Projects (Directive 2011/92/EU as amended by 2014/52/EU) including 'Guidance on Screening', 'Guidance on Scoping' and 'Guidance on the preparation of the Environmental Impact Assessment Report'. MKO has carried out the EIA process and prepared the EIAR with regard to these draft guidelines also.

1.5 Brief Site History

Development permitted under Pl Ref. 06/223/ ABP Ref. PL 61.220893 has previously commenced and substantial works have been completed. Following the onset of the economic recession, development was put on hold and the site was hoarded up. Almost the entire site has been excavated through rock to a structural formation level. There is extensive foundation construction across the site and three levels (lower basement upper basement and ground floor) of the range of retail buildings proposed along the Monivea Road complete structurally. Rising column elements extend from ground floor slab in this area. Given the extent of this structure, its adaptation and reuse are proposed as a sustainable development measure.

Galway City Council (GCC) granted planning permission for Pl Ref 18/363 on 10th May 2019 subject to 27 no. conditions. This application was by Crown Square Developments Ltd. for a ten-year permission which comprises Phase 1 of a mixed-use scheme and forms part of a larger landholding which extends to 51,148 sqm in total. The site is currently a recently reactivated construction site for Phase 1 of the development.

1.6 Brief Description of the Development

A comprehensive masterplan for the entire site has been developed, setting out proposals for buildings, spaces and a movement and land use strategy. The proposed development strategy envisages that the subject lands will be developed in two distinct stages, with two separate planning applications:

- Phase 1: Commercial and basement/ infrastructural works
- Phase 2: Strategic Housing Development - Residential, leisure and local service elements

The proposed masterplan for the entire site (Phase 1 and 2) includes a stated site area of 5.1 ha. It is considered that the proposed development will provide for a development of suitable mass and scale which makes a considerable contribution to the civic amenity of this rejuvenating area.

The first phase (Figure 1.1) of development for which permission has already been obtained from Galway City Council provides for:

- 5 no. blocks of commercial offices which range in height from 3-6 stories over ground floor level (40,405 sqm).
- A hotel development with 5 floors over ground floor level, comprising 175 no. bedrooms, conferencing facilities and restaurant/bar areas (8,675 sqm).
- A double basement which includes a 'high bay' area for service, delivery and waste management vehicles; in addition to the provision of plant, car and bicycle parking, changing/shower areas and locker/amenity facilities (62,175 sqm), incorporating alterations to the existing structures on site permitted under Pl Ref. 06/223/ ABP Ref. PL 61.220893.
- Public realm and landscaping works, including pedestrian and cyclist linkages.
- The provision of vehicular access/egress via Monivea Road and Joyces Road, public transport set-down areas and cycle lanes.
- The provision of substations and associated ancillary works.
- All other associated site development and servicing works.

This EIAR will accompany the second planning application for phase 2 of the development strategy for the site which will be made directly to An Bord Pleanála under *the Planning and Development Act 2000 (as amended by the Residential Tenancies Act 2016)*. The Phase II development (Figure 1.1) will consist of:

1. A residential scheme comprising 288 no. apartments and amenity accommodation with a gross floor area of 32,379 sqm, which will include:
    - Block G (104 no. units); Block H (136 no. units) and Block J (48 no. units).
    - 75 no. one-beds (26%); 185 no. two-beds (64.2%); and 28 no. three-bed units (9.7%)
    - Ancillary residential amenity areas (1,275 sqm).
    - Block G extends to eight-storeys, Block H extends to seven-storeys and Block J extends to five-storeys.
    - External balconies are provided on all elevations.
2. A commercial scheme with a cumulative gross floor area of 4,096 sqm, which will include:
    - A neighbourhood facility comprising a restaurant (500 sqm), café (50 sqm), local convenience store (225 sqm), a pharmacy (200 sqm), 5 no. retail/commercial units (797 sqm in total), a crèche (310 sqm)
    - A fitness/leisure facility (1,140 sqm); and
    - A medical centre (655 sqm).
3. Public realm and landscaping works, including pedestrian and cyclist linkages.
4. Vehicular access to the double basement permitted under Pl Ref 18/363 and the allocation of 288 no. car parking spaces located on the lower basement level to service the residential units. Visitor car parking will be provided on the upper basement level and will be managed in accordance with an Operational Management Plan and a Mobility Management Plan.
5. The provision of a dedicated cyclist ramp and 733 no. secure bicycle parking spaces located in the upper basement permitted under Pl Ref 18/36 (comprising 529 no. residential; 144 visitor parking and 60 no. bicycle parking spaces to service the neighbourhood facility).
6. All other associated site development, plant and servicing works.

7. The application will be supported by an Environmental Impact Assessment Report and a Natura Impact Statement.

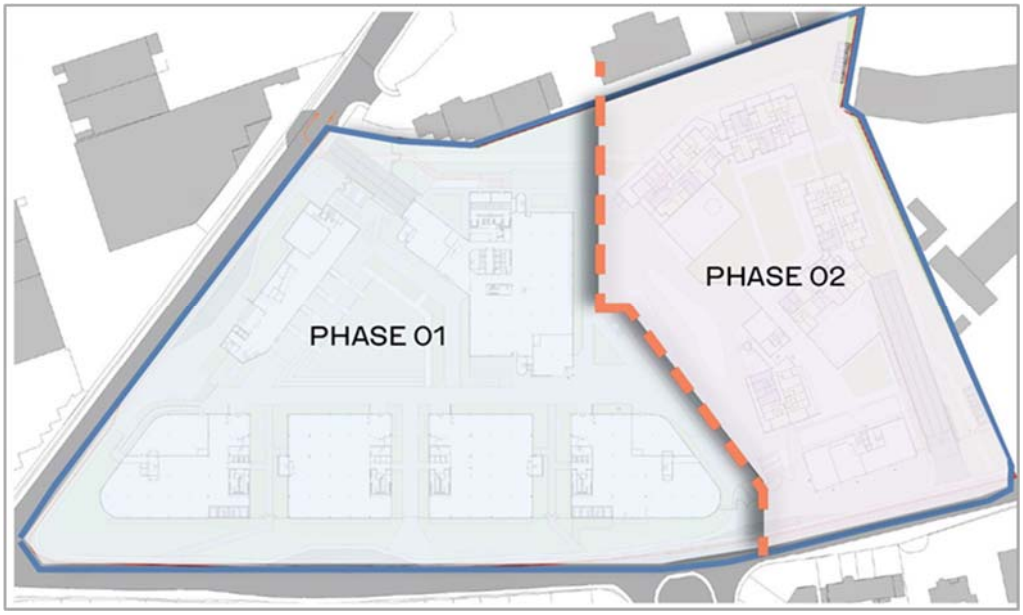

Figure 1.1: Outline above-ground development at Crown Square site

1.7 Need for the Development

There is currently a shortage of residential units available for sale and occupancy in the Galway City area, and in particular the eastern side of the city. The rapidly increasing price of such space is a result of the shortage in supply, and many people and families will soon find themselves unable to afford accommodation in the city. The proposed development will contribute significantly to alleviating the shortage of residential space in Galway and brings into use lands zoned for development.

In addition, the construction industry such as the subject development, make a significant contribution to economic development in Ireland. The recent upturn in the economy and thus the construction industry has led to an increase in demand for high quality residential space in the Galway area, which the proposed development will be able to provide for.

1.8 Purpose and Scope of the EIAR

The purpose of this EIAR is to document the current state of the environment in the vicinity of the proposed development site and to quantify the likely significant effects of the proposed development on the environment, in accordance with the requirements of the EIA Directive. The compilation of this document served to highlight any areas where mitigation measures may be necessary in order to protect the surrounding environment from the possibility of any negative impacts arising from the proposed development.

It is important to distinguish the Environmental Impact Assessment (EIA) to be carried out by Galway City Council, from the Environmental Impact Assessment Report (EIAR) accompanying the planning application. The EIA is the assessment carried out by the competent authority, which includes an examination that identifies, describes and assesses in an appropriate manner, in the light of each individual case and in

accordance with Articles 4 to 11 of the Environmental Impact Assessment Directive, the direct and indirect effects of the proposed development on the following:

a) population and human health
b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC
c) land, soil, water, air and climate
d) material assets, cultural heritage and the landscape
e) the interaction between the factors referred to in points (a) to (d)

The EIAR submitted by the applicant provides the relevant environmental information to enable the EIA to be carried out by the competent authority. The information to be contained in the EIAR is prescribed by statutory regulation, as described in Section 1.3 above.

1.9 Structure and Content of the EIAR

1.9.1 General Structure

This EIAR uses the grouped structure method to describe the existing environment, the potential impacts of the proposed development thereon and the proposed mitigation measures. Background information relating to the proposed development, scoping and consultation undertaken and a description of the proposed development are presented in separate sections. The grouped format sections describe the impacts of the proposed development in terms of human beings, biodiversity, soils and geology, water, air and climate, noise, landscape, cultural heritage and material assets such as traffic and transportation, together with the interaction of the foregoing.

The chapters of this EIAR are as follows:

- Introduction
- Background to the Proposed Development
- Description of the Proposed Development
- Population & Human Health
- Biodiversity
- Land, Soils and Geology
- Hydrology and Hydrogeology
- Air and Climate
- Noise and Vibration
- Landscape and Visual
- Archaeology & Cultural Heritage
- Material Assets – including Traffic & Transport
- Interactions of the Foregoing

The EIAR also includes a non-technical summary, which is a condensed and easily comprehensible version of the EIAR document. The non-technical summary is laid out in a similar format to the main EIAR document and comprises a description of the proposed development followed by the existing environment, impacts and mitigation measures presented in the grouped format.

1.9.2 Description of Likely Significant Effects and Impacts

As stated in the *'Draft Guidelines on the Information to be contained in Environmental Impact Statements'* (EPA, 2017), an assessment of the likely impacts of a proposed development is a statutory requirement of the EIA process. The statutory criteria for

the presentation of the characteristics of potential impacts requires that potential significant impacts are described with reference to the extent, magnitude, complexity, probability, duration, frequency, reversibility and trans-frontier nature (if applicable) of the impact.

The classification of impacts in this EIAR follows the definitions provided in the Glossary of Impacts contained in the following guidance documents produced by the Environmental Protection Agency (EPA):

- *'Guidelines on the Information to be contained in Environmental Impact Assessment Reports – Draft August 2017'* (EPA 2017).
- *'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements'* (EPA, 2003)
- *'Guidelines on the Information to be contained in Environmental Impact Statements'* (EPA, 2002)

Table 1.1 presents the glossary of impacts as published in the EPA guidance documents. Standard definitions are provided in this glossary, which permit the evaluation and classification of the quality, significance, duration and type of impacts associated with a proposed development on the receiving environment. The use of pre-existing standardised terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across all disciplines covered in the EIAR, as advised in 'Guidelines on the Information to be contained in Environmental Impact Statements' (EPA, 2002). The consistent application of terminology throughout the EIAR facilitates the assessment of the proposed development on the receiving environment.

Table 1.1 Impact Classification Terminology (EPA, 2017)

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment.
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment.
Significance	Imperceptible	An effect capable of measurement but without significant consequences.
	Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging trends.
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.

Impact Characteristic	Term	Description
	Profound	An effect which obliterates sensitive characteristics.
Extent & Context	Extent	Describe the size of the area, number of sites and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions
Probability	Likely	The effects that can reasonably be expected to occur because of the development if all mitigation measures are properly implemented.
	Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency	Momentary Effects	Effects lasting from seconds to minutes.
	Brief Effects	Effects lasting less than a day.
	Temporary Effects	Effects lasting less than a year.
	Short-term	Effects lasting one to seven years.
	Medium-term	Effects lasting seven to fifteen years.
	Long-term	Effects lasting fifteen to sixty years.
	Permanent	Effects lasting over sixty years.
	Reversible Effects	Effects that can be undone.
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Type	Indirect Effects	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative	The addition of many minor or significant effects to create one larger, more significant effect.
	'Do Nothing'	The environment as it would be in the future should no development of any kind be carried out.
	Indeterminable	When the full consequences of a change in the environment cannot be described.
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost.
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents.

Impact Characteristic	Term	Description
	'Worst Case'	The effects arising from a development in the case where mitigation measures substantially fail.

Each impact is described in terms of its quality, significance, duration and type, where possible. Where potential impacts are envisaged, remedial and/or mitigation measures that are practical and reasonable are recommended. A *'Do-Nothing'* impact is also predicted in respect of each environmental theme in the EIAR. Residual impacts are also presented following any impact for which mitigation measures are prescribed. Cumulative impacts, if any, with other relevant existing, permitted or proposed projects and plans are also described under each environmental heading. The remaining impact types are presented as required or applicable throughout the EIAR.

1.10 Project Team

Table 1.2 below details the companies and staff that were responsible for completion of the EIAR. Appendix 1-1 contains CVs for these team members.

Table 1.2 Companies and staff responsible for EIAR completion

Consultants	Principal Staff Involved in Project	EIAR Input
McCarthy Keville O' Sullivan Ltd. Block 1, GFSC, Moneenageisha Road, Galway	Michael Watson John Staunton Ciara McGuinness Pamela Harty Owen Cahill Orla Murphy Pat Roberts John Hynes Irene Sullivan Eoin Gilson Kathryn Blade Joanna Mole	Project Managers; Co-ordination and editing of EIAR Scoping and consultation; EIAR Sections 1, 2, 3, 4, 5, 6,7, 8, 10 and 13
Damian Brosnan Acoustics	Damian Brosnan	Baseline Noise Survey and preparation of Report Section9: Noise and Vibration
AEGIS Archaeological Consultant	Frank Coyne	Preparation of Section 11: Cultural Heritage
3D Design Bureau	Nicholas Polley	Verified Photomontages
Henry J Lyons Architects	Martin Donnelly Eoin Dineen Derek Byrne Roldan Jacoby Sinead McMahon Ian Cummins	Architectural design
Cunnane Stratton Reynolds Landscape Architects	Keith Mitchell	Landscape Design
Patrick McCaul Environmental Consulting Engineers Ltd.	Patrick McCaul Niall O'Kane	M&E Design

Consultants	Principal Staff Involved in Project	EIAR Input
PUNCH Consulting Engineers	Ray Owen Fergal Timlin Ronan Stokes	Preparation of Section 12: Traffic Engineering Design Flood Risk Assessment

1.10.1 McCarthy Keville O'Sullivan

Michael Watson – Project Director

Michael Watson completed a BA in Geographical Analysis (1998) and MA in Environmental Management at NUI, Maynooth in 1999. He is a professional geologist (PGeo) and full member of IEMA (MIEMA) as well as a Chartered Environmentalist (CEnv). Michael joined McCarthy Keville O'Sullivan Ltd. in 2014 having gained over 15 years' experience in the environmental consultancy sector working for a prominent Cork-based environmental & hydrogeological consultancy firm. Michael is head of the Environment Team and is responsible for overseeing and directing the EIAR projects undertaken by McCarthy Keville O'Sullivan Ltd. given his significant and relevant industry experience. Michael has extensive experience in overseeing and managing a wide range of projects, including the planning, impact assessment and Environmental Protection Agency licensing phases of manufacturing, timber treatment and waste facilities. Michael also has extensive experience in stakeholder engagement and consultation, and has regularly liaised and consulted with Planning, Licensing and Permitting authorities, including County Councils, An Taisce and the Environmental Protection Agency, on behalf of clients.

Dr. John Staunton – Project Environmental Scientist

John Staunton is a Project Environmental Scientist with McCarthy O'Sullivan Ltd. with over 10 years of postgraduate experience in both research and private consultancy. John holds both a BSc (1st class Hons) and a PhD in Environmental Science. Prior to taking up his position with McCarthy Keville O'Sullivan in October 2014, John worked as a research assistant for several soil and hydrogeological contamination research projects being undertaken by the Earth and Ocean Sciences department in NUI Galway. John also carried out research as part of a PhD, is lead author on four international peer-reviewed scientific papers, and presented at several national and international conferences. John's key strengths and areas of expertise are in project management, report writing, map making, communication and impact assessments. Since joining MKO, John has been involved as an Assistant Environmental Scientist on a significant range of energy infrastructure projects, hydrological and ecological monitoring, report writing of Environmental Reports (ER), Environmental Impact Statements/Environmental Impact Assessment Reports (EIAR) & Strategic Environmental Assessments (SEA) and carrying out research/literature reviews. This is in addition to project managing multiple jobs ranging from small projects to multi-million-euro energy developments. Within MKO John works as part of a large multi-disciplinary team to produce EIAR, ER and SEA documents.

Pat Roberts – Ecology Director

Pat Roberts joined MKO (then Keville & O'Sullivan Associates) in 2005 following completion of a B.Sc. in Environmental Science. He has extensive experience of providing ecological services in relation to a wide range of developments at the planning, construction and monitoring stages. He has wide experience of large scale industrial and civil engineering projects. He is highly experienced in the completion of ecological baseline surveys and impact assessment at the planning stage. He has

worked closely with construction personnel at the set-up stage of numerous construction sites to implement and monitor any prescribed best practice measures. He has designed numerous Environmental Operating Plans and prepared many environmental method statements in close conjunction with project teams and contractors. He has worked extensively on the identification, control and management of invasive species on numerous construction sites.

Pat has worked as project manager and ecologist on numerous ecological assessments completed by the company to date, including a wide range of work within sensitive ecological areas, and currently manages the work of the MKO Ecology Team.

John Hynes – Senior Ecologist
John Hynes is a Senior Ecologist with McCarthy O'Sullivan Ltd. with over 5 years of experience in both private practice and local authorities. John holds a B.SC in Environmental Science and a M.Sc. in Applied Ecology. Prior to taking up his position with McCarthy Keville O'Sullivan in March 2014, John worked as an Ecologist with Ryan Hanley Consulting Ltd. and Galway County Council. John has specialist knowledge in Flora and Fauna field surveys. Geographic Information Systems, data analysis, Appropriate Assessment, Ecological Impact Assessment and Environmental Impact Assessment. John's key strengths and areas of expertise are in project management. GIS and impact assessment. Since joining MKO John has been involved as a Senior Ecologist on a significant range of energy infrastructure, commercial, national roads and private/public development projects. Within MKO John plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIS Reports. John has project managed a range of strategy and development projects across the Ireland and holds CIEEM membership.

Irene Sullivan – Graduate Ecologist
Irene is a Graduate Ecologist with McCarthy Keville O'Sullivan Ltd. Irene holds a BSc. (Hons) in Zoology, awarded by University College Dublin. Prior to taking up her positionin July 2018, Irene worked as a research assistant with the SHINE (Supporting Hen Harriers in Novel Environments) team of University College Cork. Prior to that, she has worked as a Curlew Action Team assistant with the Curlew Conservation Programme (NPWS), and as a Tern Warden with Birdwatch Ireland's Little Tern Conservation Programme. Irene gained invaluable survey and field experience while volunteering as a surveyor for the Irish Hen Harrier Winter Survey, for Birdwatch Ireland's Irish Wetland Bird Survey, and while carrying out her undergraduate dissertation on lemur behaviour as a student researcher with the international conservation organisation Operation Wallacea. Irene has a strong background in applied ecology and conservation biology. Since joining MKO, Irene has been involved as a graduate ecologist on a significant range of habitat assessments and ecological survey work including bat surveys, bird surveys, and multi-disciplinary surveys. Within MKO, Irene has contributed to a variety of project reports while developing mapping and research skills. Irene is a member of Birdwatch Ireland, the Irish Herpetological Society and the Irish Wildlife Trust.

Órla Murphy – Environmental Scientist
Órla Murphy is an Assistant Environmental Scientist with McCarthy O'Sullivan Ltd. with nearly 2 years of experience in private consultancy. Órla holds BSc (Hons) in Geography from Queens University Belfast & a MSc in Environmental Protection and Management from the University of Edinburgh. Prior to taking up her position with McCarthy Keville O'Sullivan in January 2018, Órla worked as an Environmental Project Assistant with

ITPEnergised in Scotland. Órla's key strengths and areas of expertise are in Environmental Protection and Management, EIA, Project Management, Renewable Energy and Peatland Management, where she has carried out research projects and site work relating to restoration and management of peatland sites in both Scotland and Northern Ireland. On joining MKO Órla has been involved on a range of renewable energy infrastructure projects, working as part of a large multi-disciplinary team to produce EIA Reports. Órla holds a graduate membership with the Institute of Environmental Management and Assessment.

Eoin Gilson - Environmental Scientist
Eoin is a Graduate Environmental Scientist with McCarthy O'Sullivan Ltd. who took up his position in October 2018. Eoin holds a BSc (Hons) in Microbiology and a MSc (Hons) in Applied Environmental Science. Eoin has specialist knowledge in environmental field surveys, data analysis and renewable energy systems. Eoin's key strengths and areas of expertise are in data management, report writing and environmental monitoring and management. On joining MKO Eoin has been involved on a range of renewable energy infrastructure projects, working as part of a large multi-disciplinary team to produce EIA Reports.

Kathryn Blade B.Sc. - Landscape Architect
Kathryn Blade is a Landscape Architect with McCarthy Keville O'Sullivan and holds a BSc (Hons) in Landscape Architecture from University College Dublin. Kathryn has worked primarily in private practice and has experience in the areas of public realm design, commercial, leisure and residential development in Ireland, the UK and the Middle East. Kathryn has experience in design and delivery from concept stage through to construction in the UK and overseas projects. Prior to taking up her position with McCarthy Keville O'Sullivan in June 2018, Kathryn worked as a Landscape Architect in Belfast and was part of a core team developing both landscape and public realm schemes for the Belfast City Council Framework. Kathryn was also part of the core design team appointed to deliver the significant Dubai Expo 2020, working alongside industry leaders in design and sustainability. Amongst her skills she has a breadth of strong computer-based expertise, drawing, design and graphics ability. Kathryn is a Licentiate Member of the Landscape Institute in the U.K. and is working towards her professional chartership. Since joining MKO Kathryn has been involved in projects such as energy infrastructure, extraction industry and residential projects.

Joanna Mole – Chartered Landscape Architect
Joanna Mole is a Landscape and Visual Impact Assessment Specialist and Chartered Landscape Architect with McCarthy O'Sullivan Ltd. with over 15 years of experience in both private practice and local authorities. Joanna holds a BSc (Hons) in Landscape Design & Plant Science from Sheffield University, a Postgraduate Diploma in Landscape Architecture from Leeds Beckett University, a MSc in Renewable Energy Systems Technology from Loughborough University. Prior to taking up her position with McCarthy Keville O'Sullivan in October 2017, Joanna worked as a Landscape Architect with Kav-Banof in Israel and held previous posts with CSR in Cork, LMK in Limerick, Geo Architects in Israel and Groundwork Bridgend in South Wales. Joanna is a Chartered Landscape Architect with specialist knowledge in Landscape and Visual Impact assessments for projects ranging from individual houses to large windfarms, cycle route design and landscape contract management. Since joining MKO Joanna has been involved in projects such as energy infrastructure, extraction industry and residential projects. Within MKO Joanna works as part of a large multi-disciplinary team to produce EIA Reports. Joanna holds chartered membership of the British

Landscape Institute since 1998 and has been an examiner for British Landscape Institute professional practice exam.

Ciara McGuinness – Planner

Ciara McGuinness is a Planner with McCarthy Keville O'Sullivan Ltd. and has over 3 years of experience. Ciara holds a BA (Hons) degree in Geography, Planning and Environmental Policy, and an MSc (Hons) degree in Environmental Policy, both of which she received from University College Dublin. In addition, she holds a project management distinction diploma from Dublin Business School. Prior to taking up her position with McCarthy Keville O'Sullivan in October 2016, Ciara worked as a consultant planner with LUC, a private consultancy based in London. Ciara has specialist knowledge in development management and consultancy, regeneration, master planning, community engagement and urban design Since joining MKO Ciara has been involved as a Planning Consultant on a significant range of energy infrastructure, commercial, retail and residential projects. Within MKO Ciara plays a large role in preparing high quality project content and project managing small to medium scale projects. Ciara is also a Corporate Member of the Irish Planning Institute (IPI).

Pamela Harty – Senior Project Planner

Pamela is a Senior Project Planner with McCarthy O'Sullivan Ltd. with over 10 years of experience in both private practice and local authorities. Pamela holds BA (Hons) in Geography & Legal Science and Masters in Regional & Urban Planning. Prior to taking up her position with McCarthy Keville O'Sullivan in September 2015, Pamela worked as a Senior Planner with SLR Consulting Ltd. and held previous posts with Moray Council in Scotland, the Heritage Council of Ireland, Kilkenny Borough Council and North Tipperary County Council. Pamela is a chartered town planner with specialist knowledge in strategic planning, regeneration, development consultancy, statutory plan preparation, community engagement, urban design and masterplanning. Pamela's key strengths and areas of expertise are in project management, development management/masterplanning, socio economic impact assessments and collaborative planning. Since joining MKO Pamela has been involved as a Project Planning Consultant on a significant range of energy infrastructure, commercial, student housing and residential projects in addition to project managing circa 34MW of solar energy planning applications through the statutory planning system, with more projects in the pipeline. Within MKO Pamela plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIS Reports. Pamela has project managed a range of strategy and development projects across the Ireland and the UK and holds chartered membership with both the Irish Planning Institute and Royal Town Planning Institute.

1.10.2 External Team

1.10.2.1 Damian Brosnan – Noise & Vibration

Damian Brosnan has been working in acoustics since 1996. He holds a Postgraduate Diploma in Acoustics & Noise Control from the Institute of Acoustics, and an MSc in Applied Acoustics from the University of Derby. Damian is a member of the Institute of Acoustics (MIOA), and is secretary of their Irish branch. He is also a member of Engineers Ireland, and a member of ACASITI, a recently formed association of Irish professional acoustic consultants. Damian has worked on several hundred noise projects to date, including a number of large scale residential and commercial developments.

1.10.2.2Aegis Archaeology

Aegis Archaeology Limited, established in 1997, is an archaeological consultancy, providing a full range of archaeological services to the state, public and private sectors in Ireland. Archaeology in the Republic of Ireland is legislated for in a number of Acts, principally the National Monuments (Amendments) Acts 1930-2004. It is regulated by the National Monuments Service of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, and the National Museum of Ireland. Over the past twenty years or so, Aegis Archaeology has successfully undertaken archaeological work on smaller and larger scale projects, countrywide.

1.10.2.3 PUNCH Consulting Engineers – Traffic

PUNCH Consulting Engineers was established by the well-known Irish engineer Michael Punch in 1973 to provide a wide-ranging consultancy service in civil & structural engineering. In this time it has grown to be one of the largest Irish-owned consultancies, with a diverse client base across an increasingly broad range of sectors of the industry. Their steady growth has given them the scale and resources to deliver large and complex projects, both nationally and overseas. Clients include Government Departments, local authorities, private developers and major international companies. They have successfully delivered individual projects of up to €450m, and these projects have been delivered in Ireland, the United Kingdom, mainland Europe, the Middle East and North Africa.

Ray Owen

Ray Owen has been working in highways and traffic for forty years. He has a degree in Civil Engineering and is a Chartered Engineer. He is also a Member of the Institution of Civil Engineers and the Chartered Institute of Highways and Transportation. Ray has worked for the public and private sector as a project manager, designer and on site supervision. The projects have included motorways or expressways and major infrastructure projects. The work has been located in Ireland, UK, Hong Kong and Qatar.

1.10.2.4 3D Design Bureau – Photo Visualisations

3D Design Bureau are an experienced, dynamic and forward thinking 3D Studio with over 18 years experience in the field architectural visualisation and technical Verified View Montages. They are a talented, coordinated team of skilled individuals consisting of architects, engineers, BIM experts, 3D artists and post production designers. The company specialise in 3D processes that include digital 3D Modelling, BIM Modelling, 3D Visualisation, Virtual Reality and 3D Rendering. They offer a range of 3D services and deliverables across our integrated 3D Departments of Architectural Visualisation, BIM, Virtual Reality, 3D Product Design, 3D Graphics and Virtual Shopfronts. The company have worked on numerous large scale residential, commercial and mixed-use projects producing verified view montages, CGIs and daylight analysis as part of the planning requirements. The company's client base includes (but not limited to) Cairn Homes, Glenveagh Homes, Ardstone, Marlet, Bartra Capital, Henry J Lyons, Redddy Architecture, Scott tallon Walker, John Fleming Architects. The company brand is well established in the industry and is in the top two companies providing technical and creative digital construction services.

Nicholas Polley

Nicholas Polley is a building services Engineer from Bolton Street with over 20 years experience in the area of architectural visualisation. He setup the company in 2000 and is the managing director. He has built a team of skilled individuals consisting of architects, engineers, BIM experts, 3D artists and post production designers to help

grow the company and to ensure that it is at the forefront of the services it provides. The company continues to grow under the guidance of Nicholas in terms of project scale and client base.

1.10.2.5 Patrick McCaul Environmental Consulting Engineers Ltd. – Mechanical and Electrical Design

Patrick McCaul Environmental Consulting Engineers Ltd. is a fully accredited company of Chartered Mechanical & Electrical and Renewable Technologies Consulting Engineers who have earned a respected reputation in the building services industry throughout Ireland. The company has always been innovative and willing to embrace and implement new technologies. Being up-to-date with the most recent technological developments and legislation is a core business competency that helps ensure the company's place as one of the most experienced, dynamic and forward-thinking M&E engineering practices in Ireland. They have extensive experience of New Builds, Refurbishment and Upgrade projects over the years with quality design and build, sustainability and energy efficiency, comfort criteria, low maintenance, flexible and future proof, including innovation and using modern construction methods, applied. Develop and Construct contracts, including PFI projects, are a significant element of the design workload of Patrick McCaul ECE Ltd. over the past number of years and they have excellent experience of off-site constructions having completed the M&E services for numerous modular plant room installations, packaged biomass boiler installations, packaged boiler house, electrical switch rooms, packaged air handling units etc.

Patrick McCaul

Having studied Building Services Engineering at South Bank University (Centre of Excellence Building Services), Patrick set up the current business in 1992 and enjoys the interaction with people in developing projects and delivering change for clients using our skill base and innovation to develop successful buildings. His usual role as Project Director in projects involves taking a hands-on approach and includes management and co-ordination of projects. He oversees the entire design process, ensuring high standards of design quality. Patrick has worked across a diverse range of technically demanding and award-winning projects within the commercial, industrial, leisure, education, residential and health care market sectors.

Niall O'Kane

After graduation Niall was a Design and Contracts Engineer for International Multi-Disciplinary Consulting and Contracting Engineers. He was involved in numerous major developments in the Greater London Area. He has been Project Partner and Senior Engineer with Patrick McCaul Environmental Consulting Engineers for 26 years. He undertakes management responsibilities and co-ordination of projects which involves cost control, budgeting, whole life costing and value management. He has specialised in sustainable design ensuring buildings provide the client with the best value for money. He is a trained Assessor for both BREEAM and Code for Sustainable Homes.

1.10.2.6 Henry J Lyons Architects – Architectural Design

Henry J Lyons and Partners was established c.1917 in Dublin, incorporated as H J Lyons (Architects) Ltd in 1996 and trades as Henry J Lyons Architects. They have offices on Dublin and Cork with over 182 people providing architectural services to a broad range of commercial and public sector clients. The substantial part of their work is in the residential sector where they provide architectural design and construction contract administration as well as due diligence, purchaser and investor consultancy services. This range of experience has provided them with an in depth understanding

of the factors influencing successful residential projects. They have recent and relevant skills and experience in the required areas and have a team that work with each other on a day to day basis in the same studio. Martin Donnelly acted as project director and takes responsibility for Brief Development, Client Reporting and Team Management as well as due-diligence and construction implementation with Eoin Dineen, Associate Director. Derek Byrne takes responsibility for master planning, scheme and residential design. Martin and Derek were supported by architects Eoin Dineen (Associate Director), Roldan Jacoby (Associate) and Sinead McMahon (Senior Project Architect).

1.10.2.7 Cunnane Stratton Reynolds – Landscape Design

Cunnane Stratton Reynolds provides town planning, landscape architecture, environmental assessment and arboriculture services to developers and the public sector throughout Ireland and the UK from their offices in Dublin, Cork and Galway. CSR has a highly skilled team of town planners and landscape architects across our three offices, combining local knowledge with national experience in all sectors of development to provide our clients with reliable and effective planning and design service. In addition to their core areas of expertise our staff hold qualifications in the complimentary fields of EIA, project management, GIS, CAD, architectural technology, arboriculture and architectural history. CSR is a corporate member of the Irish Planning Institute (IPI), Irish Landscape Institute (ILI) and the UK Landscape Institute. All staff are members of their respective professional institutes including those above and the Royal Town Planning Institute (RTPI) and Arboricultural Association as appropriate.