1 INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by McCarthy Keville O'Sullivan Ltd. (MKO) on behalf of Arlum Ltd., which intends to apply to An Bord Pleanála (ABP) under the *Planning and Development Act 2000* (as amended by the *Residential Tenancies Act 2016*) for a strategic housing scheme located in the townlands of Moneyduff and Oranhill, Oranmore, Co. Galway. The application is being made under the Strategic Housing Provisions of the *Planning and Development (Housing) and Residential Tenancies Act, 2016*.

The proposed site is located in the townlands of Moneyduff and Oranhill, approximately 590m south of the centre of Oranmore, Co. Galway.

1.2 The Applicant

The applicants, Arlum Ltd are the developers of the site and they have been involved in a number of similar developments in recent years. Arlum Ltd were established in 1999 and they were behind the development of the Palace Fields Development in Tuam (completed in 2006). They have also recently made a successful application for the development of 128 residential units at Ballygaddy Rd, Tuam. Arlum 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 the provision of which has which has been transposed into Irish law with the following legislation:

- S.I. 296 of 2018
    - European Union (Planning & Development) (Environmental Impact Assessment) Regulations 2018
    - Sn 28 Ministerial Guidelines, August 2018
    - Commenced 1st September 2018

- S.I. 646/2018
    - European Union (Planning & Development) (Environmental Impact Assessment) (Amendment) Regulations 2018
    - Bring into operation Sn 176A of the Act. Relate to screening determination
    - Commenced 1st January 2019

- S.I. 588/2018
    - Planning & Development (Housing) and Residential Tenancies Act 2017 Commencement Order
    - Brings into operation Sn 27 of the Act. Relates to screening determination
    - Operative date 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 2001 (as amended) insofar as they transpose the EIA Directive.

The Environmental Impact Assessment (EIA) of the proposed development will be undertaken by ABP 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.

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 - *"Construction of more than 500 dwelling units"*, as per Item 10 (b)(i) of the Schedule and (iv) urban development which would involve an area greater than either 10 ha (built up area) or 20ha (elsewhere),

The proposed residential development does not exceed the 500 unit threshold and does not propose urban development of an area greater than 10 hectares and therefore is not subject to mandatory EIA.

Section 172 of the Planning & Development Act 2000, as amended, also sets out the basis for EIA for developments which may not be of a scale included in Schedule 5 of the Planning & Development Regulations 2001, as amended. This allows a consenting authority to require EIA where it is of the opinion that a development (although sub-threshold) is likely to have significant effects on the environment and therefore should be subject to EIA. In this context, the consideration of 'significant effect' should not be determined by reference to size only and the nature and location of a project must also be taken into account.

Class 15 of Schedule 5 provides for EIA/EIAR for developments under the relevant threshold, where the works would be likely to have significant effects on the environment. This states the following:

"Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7."

The proposed residential development is a project which falls under Schedule 5 and has been screened in for EIA given its nature, size (c8.5 hectares) and location close to an environmentally sensitive area i.e. the Galway Bay Complex Special Area of Conservation (site code: 000268).

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 Description of the Development

The proposed development will consist of the following:

1) Construction of 212 no. residential units comprising:
    - 34 no. House Type A (four-bed semi-detached unit)
    - 54 no. House Type B (three-bed semi-detached unit)
    - 16 no. House Type C (four-bed detached)
    - 16 no. House Type D (three-bed terraced unit)
    - 24 no. House Type E (three-bed semi-detached unit with attic conversion)
    - 50 no. House Type G (25 no. two-bed ground floor duplexes and 25 no. two-bed plus study first/second floor duplexes)
    - 6 no. House Type H (two-bed duplex apartments)
    - 12 no. house Type J (two-bed terrace)
2) Development of a crèche facility (374 sqm) and associated outdoor play areas and car parking.
3) Provision of new vehicular and pedestrian site access from the North-South Oranmore Distributor Road (the route of which was permitted under An Bord Pleanála Reference PL 07.237219, which was extended under Pl Ref 15/1334).
4) Provision of shared communal and private open space, site landscaping, car parking, site services and all associated site development works.

1.6 Need for the Development

There is currently a significant shortage of housing units available for sale and occupancy in the area surrounding Galway City, and in particular in Oranmore. The rapidly increasing price of housing is a result of the shortage in supply, and many people will soon find themselves unable to afford a home. This problem is also aggravated by a lack of housing units available for the rental market also. The proposed

development will contribute significantly to alleviating the shortage of housing supply in Galway and brings into use lands zoned specifically for that purpose.

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 housing in the Oranmore area, which the proposed development will be able to provide for.

1.7 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 An Bord Pleanála, 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.

1.8 Structure and Content of the EIAR

1.8.1 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, flora and fauna, 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
- Human Beings. Population & Human Health
- Biodiversity, Flora & Fauna
- 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.

1.8.2 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.
	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.

Impact Characteristic	Term	Description
	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.
	'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.

1.9 Project Team

Table 1.2 below details the companies and staff that were responsible for completion of the EIAR:

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 Owen Cahill Orla Murphy Pat Roberts David McNicholas James Owens 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
Richard Crumlish Archaeological Consultant	Richard Crumlish	Preparation of Section 11: Cultural Heritage
Tobin Consulting Engineers	Brendan Rudden	Preparation of Section 12: Traffic

1.9.1 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 almost 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.

David McNicholas – Senior Ecologist
David McNicholas is a Senior Ecologist at McCarthy Keville O'Sullivan, Planning & Environmental Consultants. David holds a BSc (First Class Hons) Environmental Science and an MSc (Hons) Environmental, Health and Safety Management. David specialises in the preparation of EIAs, EcIAs and NISs including ecological surveys and monitoring. David has worked on all phases of wind farm development from feasibility/ scoping, ecological surveys, preparation of full EIS chapters, construction phase environmental monitoring and post-construction ecological monitoring. David has worked as an Ecological Clerk of Works (ECoW) during the construction phase of ten large scale wind farms in Ireland and Northern Ireland, gained significant experience on the implementation of the environmental and ecological measures. David is a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM).

Órla Murphy – Assistant 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.

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.

1.9.2 External Team

1.9.2.1 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.

1.9.2.2 Hydro Environmental Services Ltd. – Land, Soils & Geology and Hydrology & Hydrogeology

Michael Gill

Michael Gill is an Environmental Engineer with over ten years' environmental consultancy experience in Ireland. Michael has completed numerous hydrological and hydrogeological impact assessments of wind farms in Ireland. He has also managed EIAR/EIS assessments for infrastructure projects and private residential and commercial developments. In addition, he has substantial experience in wastewater engineering and site suitability assessments, contaminated land investigation and assessment, wetland hydrology/hydrogeology, water resource assessments, surface water drainage design and SUDs design, and surface water/groundwater interactions.

David Broderick

David Broderick is a hydrogeologist with over seven years' experience in both the public and private sectors. Having spent two years working in the Geological Survey of Ireland working mainly on groundwater and source protection studies David moved into the private sector. David has a strong background in groundwater resource assessment and hydrogeological/hydrological investigations in relation to developments such as quarries and wind farms. David has completed numerous geology and water sections for input into EIAs for a range of commercial developments.

1.9.2.3 Richard Crumlish – Cultural Heritage

Richard Crumlish has been working as an archaeologist for over 25 years. He has a B.A. in Archaeology and Geography from U.C.G. (now NUIG) and is a member of the Institute of Archaeologists of Ireland (M.I.A.I.). Richard directed his first excavation in 1992 and has directed over 300 since. He has compiled numerous impact assessments. He worked initially on a contract basis for the Archaeological Services Unit, U.C.G, between 1992 and 1997. He was then a director of Archaeological Services Unit Ltd., based in Oranmore, Co. Galway between 1997 and 2002. He has been a consultant archaeologist, based in Ballinrobe, Co. Mayo since 2002.

Richard has published a number of articles in historical/archaeological journals over the years and has given talks at a number of heritage events and during Heritage Week since 2010. He will speak at a conference on the Archaeology of Islands for Galway City Council in June 2018. His clients have included local authorities, architects, engineers, developers, community groups, forestry companies and semi-state bodies.

1.9.2.4 Tobin Consulting Engineers – Traffic

TOBIN Consulting Engineers are in operation for over 60 years and have carried out numerous Traffic and Transportation Assessments (TTA's) for various residential, commercial, business, retail and leisure developments. TOBIN has also drafted various Traffic Chapters for EIAR's. The drafting of TTAs and Traffic Chapters involve the followings tasks:

- Liaising with local authorities, TII, clients and other key stakeholders,
- Analysis of the suitability of haul routes,
- Design and analysis of access points to all types of developments,
- Access and site layout arrangements using AutoTRACK, swept path analysis software,
- Junction analysis (Junction 9 and OSCADY PRO) on uncontrolled, signalised and roundabout junctions

Richard Daly

Richard joined TOBIN Consulting Engineers in Feb 2016 having returned back to Ireland from London where he had been employed as a Civil Engineer between 2011 and 2016 with Barhale PLC. Richard has worked on a wide variety of projects thoughout the UK and Ireland from large scale utility works to Sports Campus developments and Strategic Housing Developments. He has worked on projects at numerous stages from initial concept stage right through to Contract completion. Tasks undertaken by Richard include: preparation and submission of planning applications, preparation of tender documents, coordination of site works, design and development of civil design for developments including services, roads etc.

Brendan Rudden

Brendan joined TOBIN in 2003 having previously worked for Roscommon County Council and with TOBIN as a student. Brendan is a specialist in project development and has worked on a large number of civil engineering and infrastructure projects including housing, warehousing, commercial, sports facilities and waste management. He has worked on planning applications, fire safety certificates, waste permits, and civil engineering contract documents bringing projects from feasibility through to completion of construction. Significant project examples are Connacht GAA, East Galway Landfill and Galway Harbour Extension (GHE).