



Beaufort Building Engineers Ireland Visit 1st March 2016

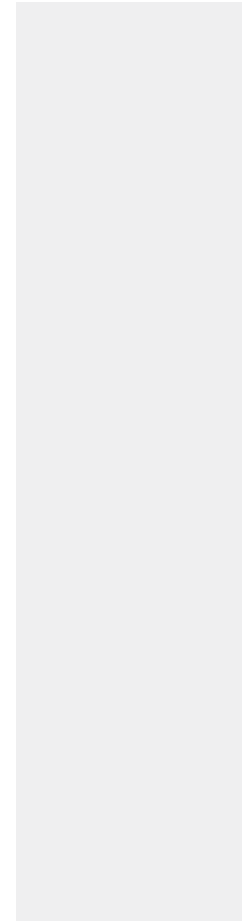
Niall McAuliffe BE, CEng, MEngSc, CDipAF, DipPM
Chartered Engineer
Capital Projects Officer UCC

A TRADITION OF
INDEPENDENT
THINKING



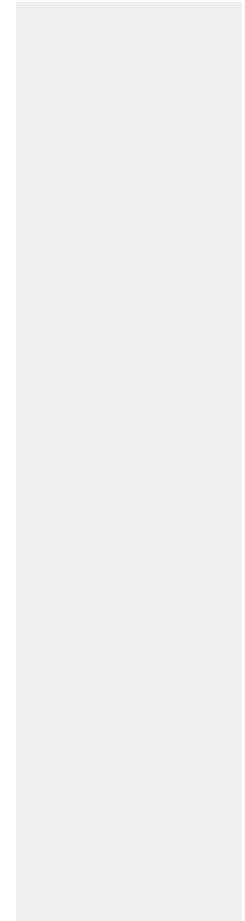
Agenda

- UCC Profile
- Buildings & Estates
 - Capital Projects Office
- Framework for Development within UCC
- Beaufort Project
- An Engineering Challenge



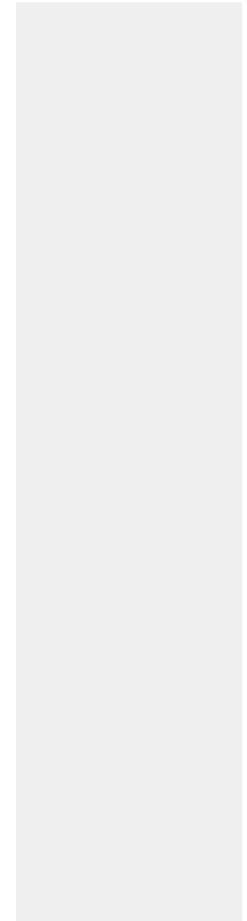
UCC Profile

- c. 19,000 registered students.
- 13,817 undergraduates
- 3,684 postgraduates
- 1,072 PhD students
- 2,300 adult and continuing education students
- 2,215 international students from circa 100 countries
- 1,489 academic and research staff
- 1,013 administrative and support staff

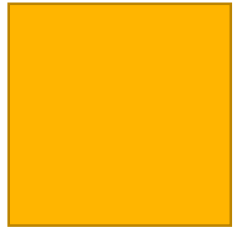


Estate Metrics

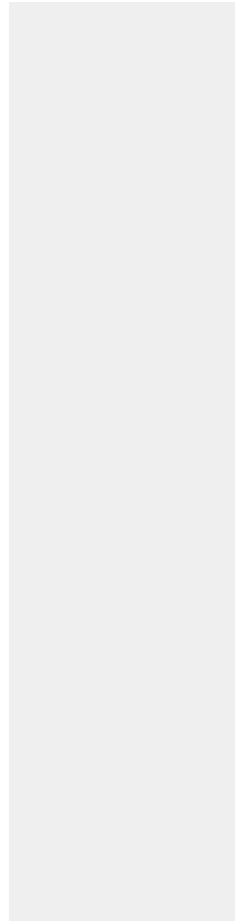
- Estate – 220,000 m²
- Buildings -130
- Sites - 20
- Energy :
 - €4,600,000 annually
 - 56,620 MWh (20% Research Institute)
- 23,000 tonnes CO₂
- Overall CO₂
- 30,000 te CO₂ (including transport)



Buildings and Estates Profile



- ❑ Physical Estate Management
- ❑ Capital
 - ❑ Capital Program (15 yr) €450m
 - ❑ Annual Capital €20m
- ❑ Operations
 - ❑ Building Services and Fabric Maintenance
 - ❑ Energy
 - ❑ Commuter Plan
 - ❑ Services and Security
 - ❑ Voice Telephony
- ❑ 150 Staff
- ❑ Annual Recurrent €20m



ACADEMIC, STRATEGIC & PHYSICAL PLANNING CONTEXT

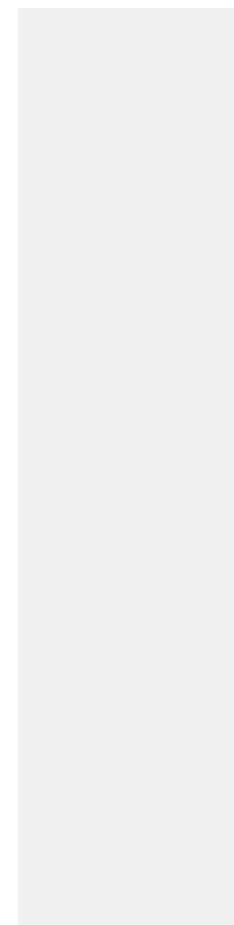


- **UCC Campus Planning Studies**

- University Strategic Plan
- University Physical Development Plan
- Environmental Development Plan 1997
- UCC Conservation Plan 2003
- UCC Commuter Plan 2005
- Cork Science Innovation Park Feasibility Study (2009)
- Draft North Mall Masterplan 2007

+

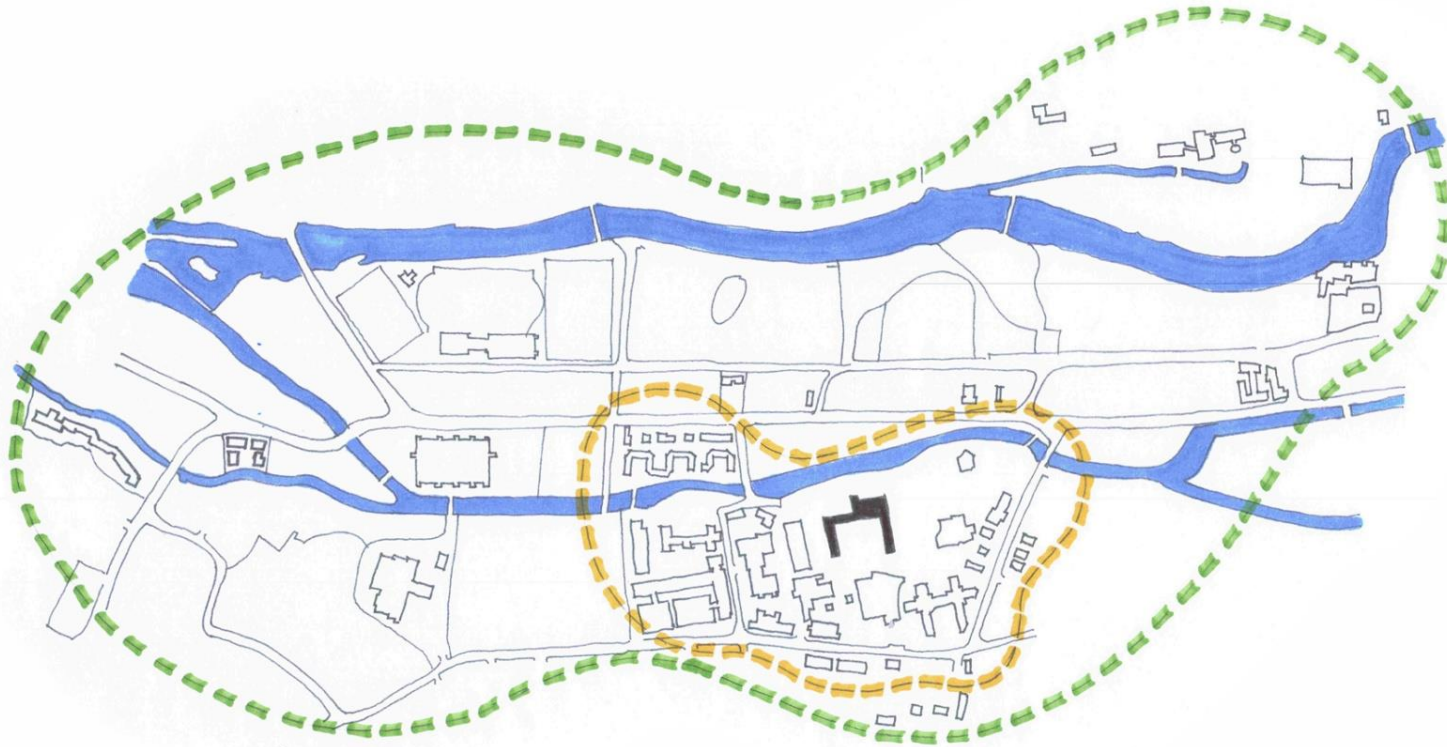
- Kane (Science) Research Facility Building Study 2009
- Gateway Study (2009)
- Ringaskiddy – MERC Campus Concept Feasibility Study



ERI
CUH
Ringaskiddy

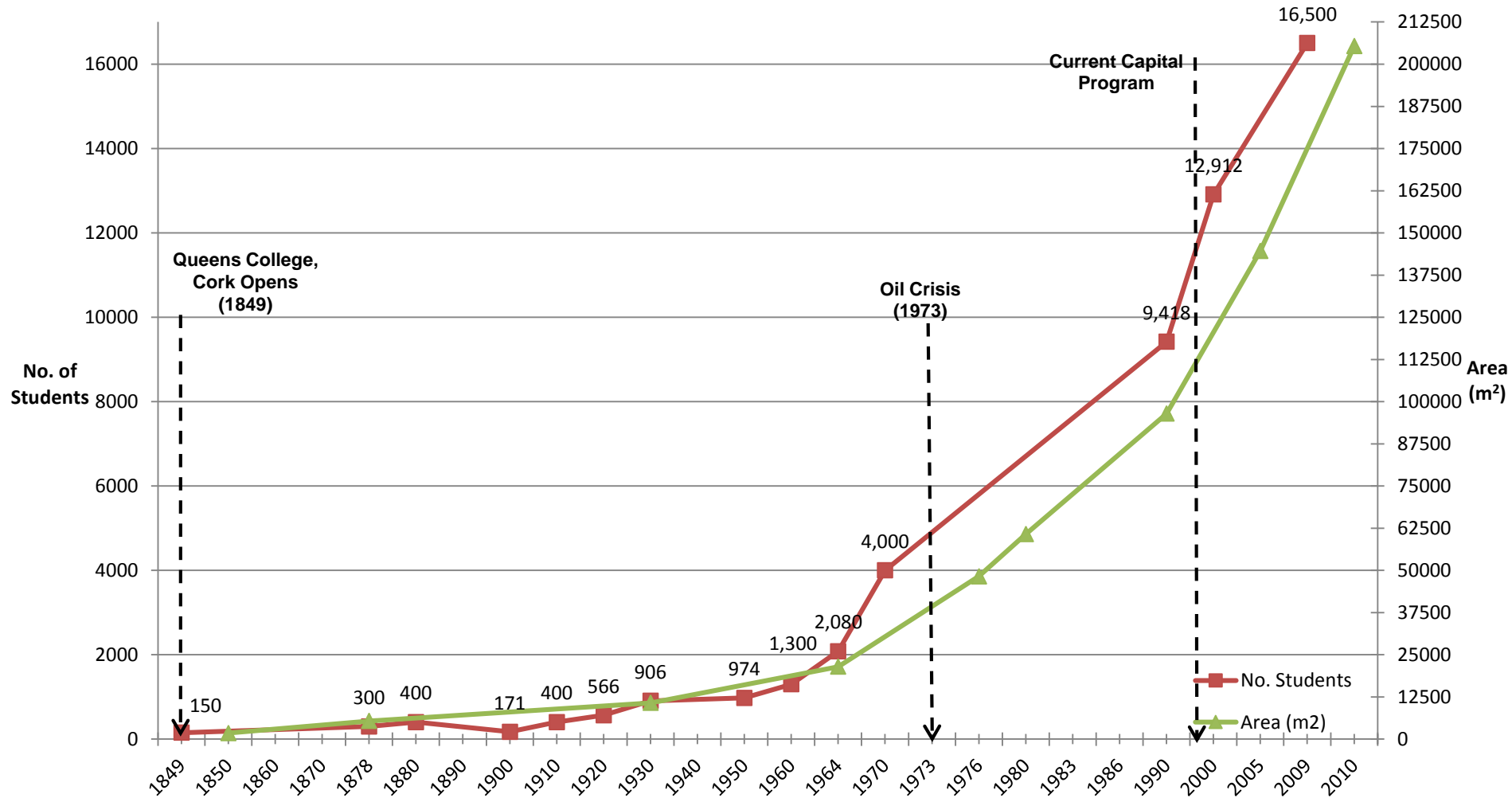


UCC CAMPUS – PHYSICAL CONTEXT



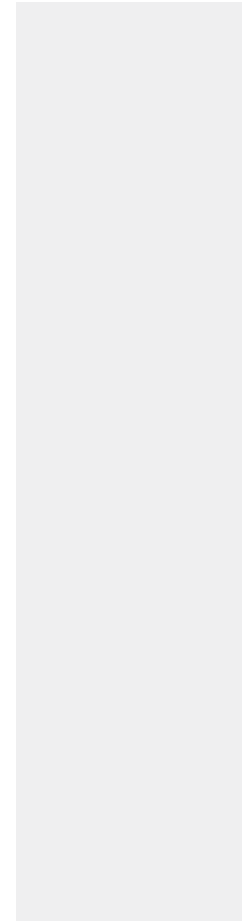
Physical Development Factors – Greater Campus

UCC Student Numbers and Building Stock 1849-2010



Capital Projects Office

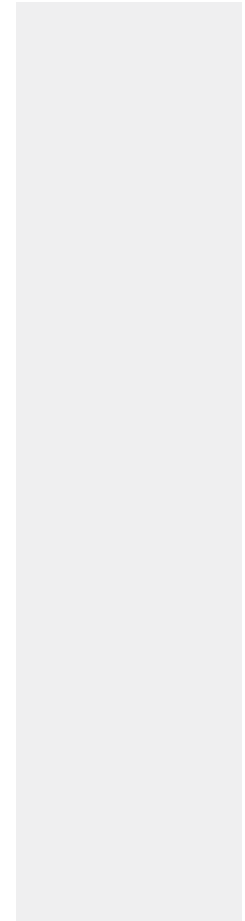
- Manage the Capital Program
- Secure Approvals
- Appoint Design Teams
- Interface : End User – Design Team
- Single Point of Contact
- Appoint Contractors
- Manage the overall process on behalf of the University

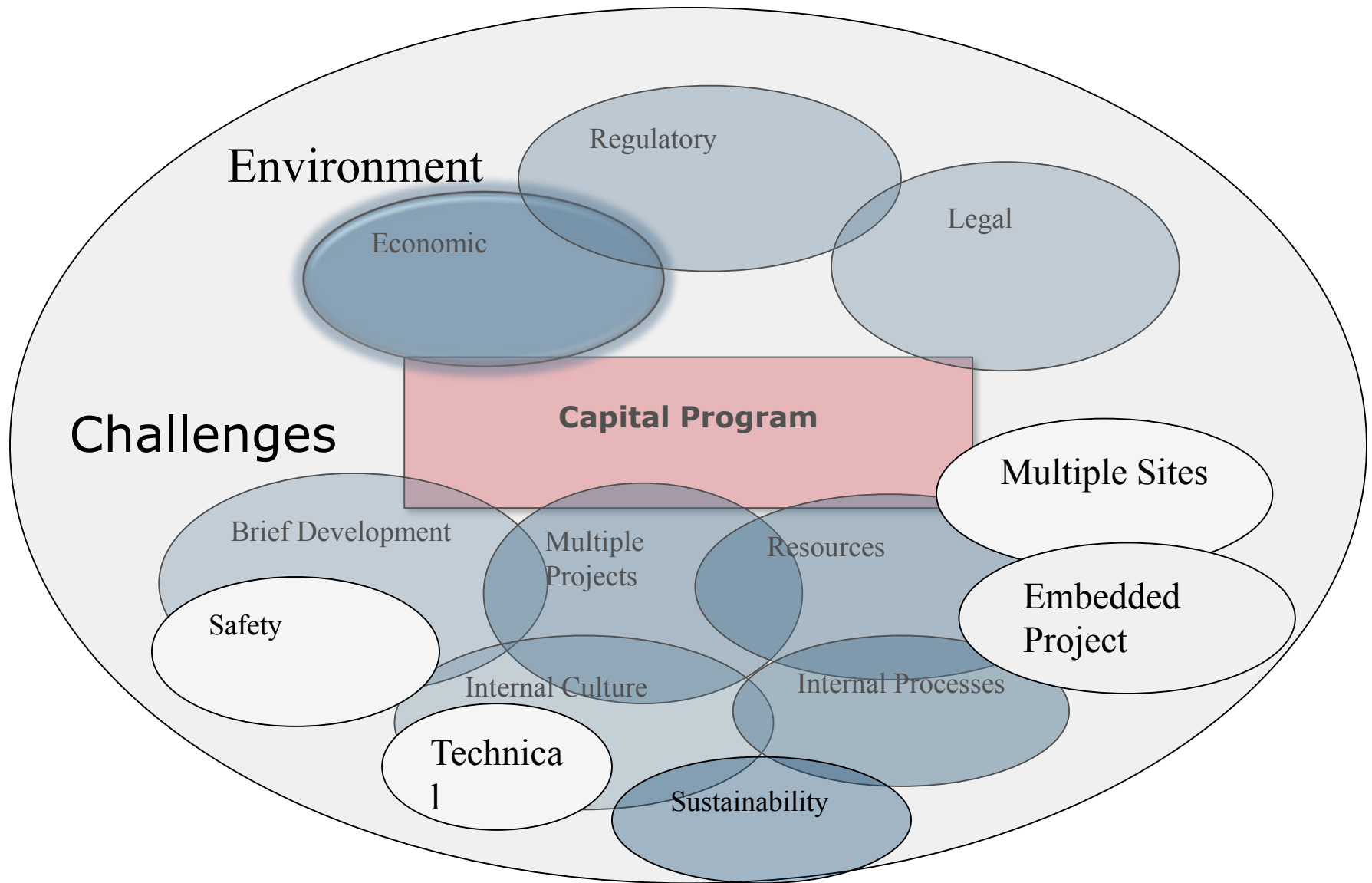


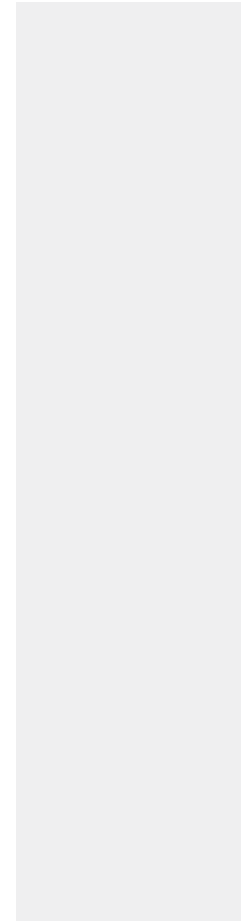
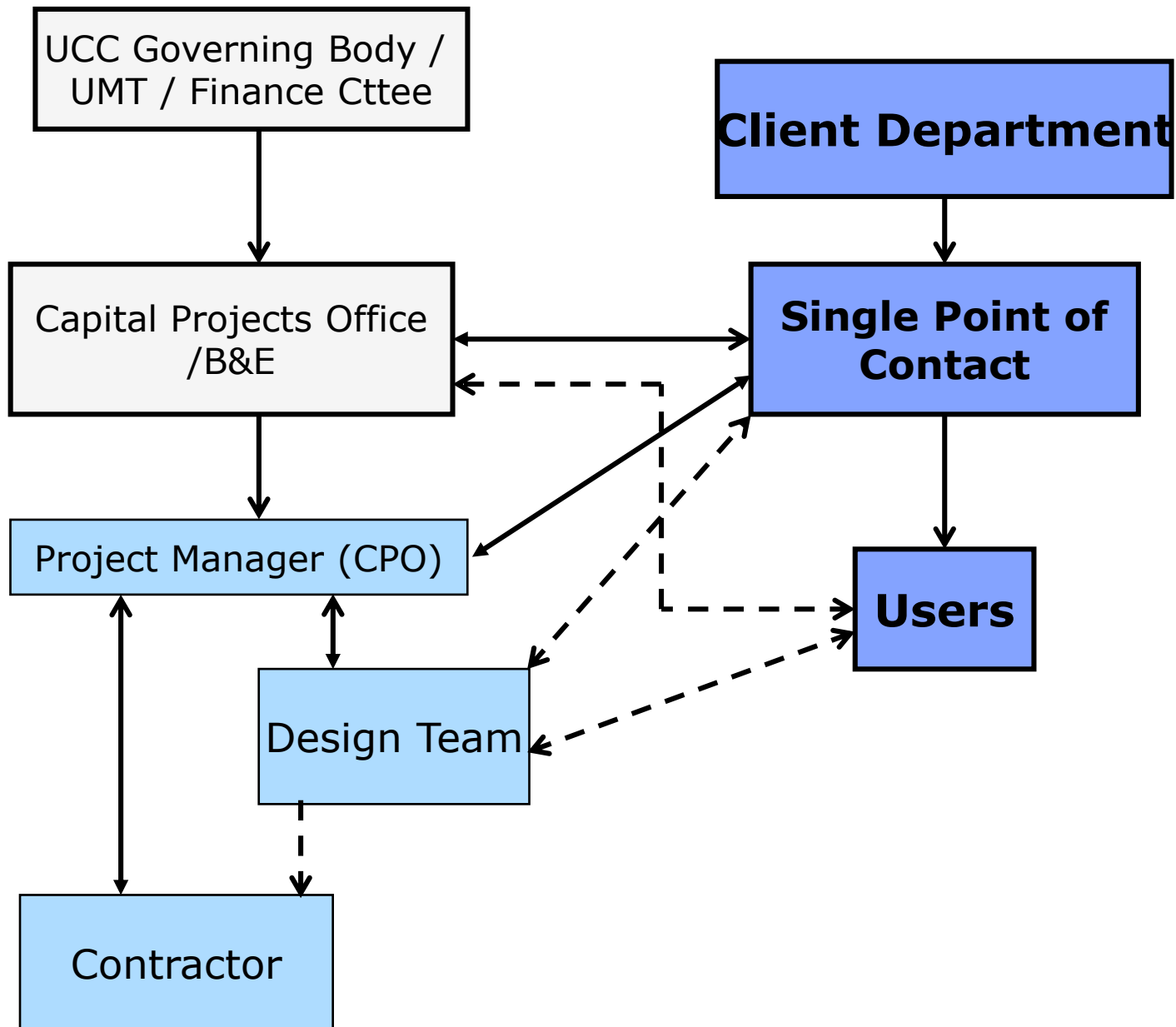
Capital Projects Office

- Team
 - CPO
 - 2 Project Managers
 - Admin
- Task

“Make it happen”



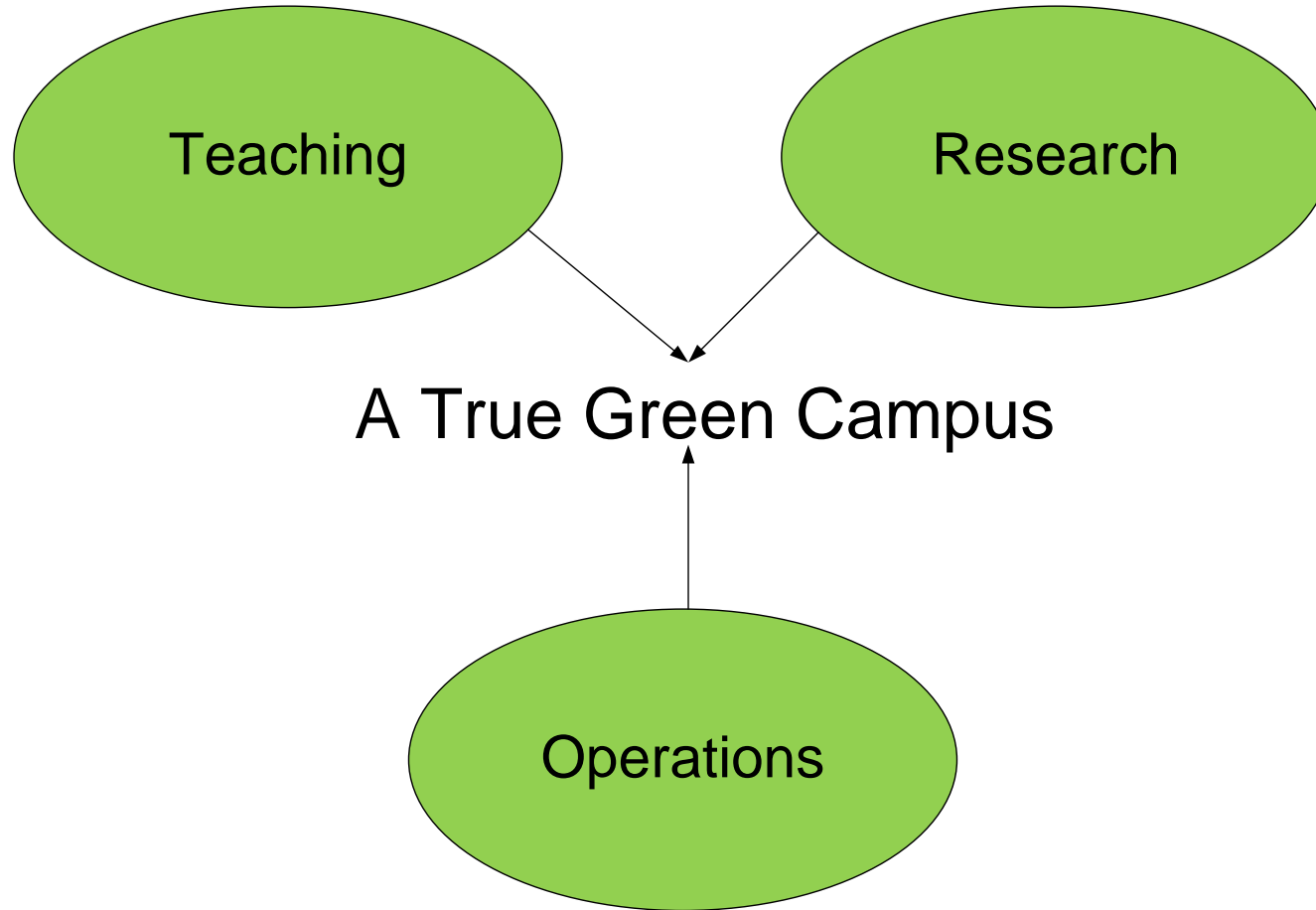




Capital Program Characteristics

- €440m over 15 yrs
- 120,000 m²
- > 60 % area increase
- > 44 Projects
- > 50 construction contracts
+ subcontracts
- > 140 professional
appointments
- 45 % increase in students
- Embedded in other sites

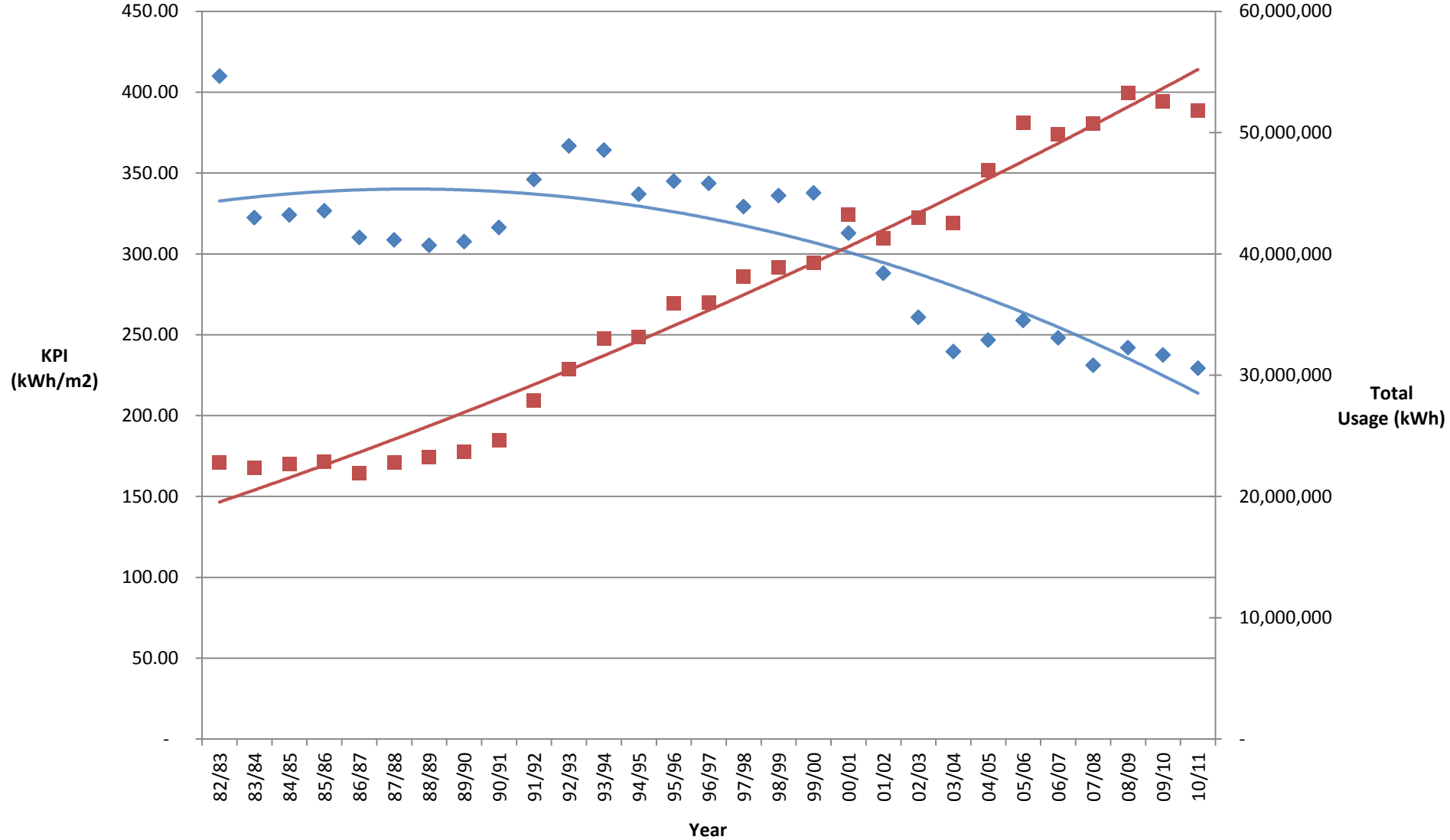
Integrated Sustainable Approach



Sustainability at UCC

- ❑ First University in the world to be awarded the international Green Campus Flag
- ❑ First University in the world to achieve ISO 50001 Energy Management Systems Certification
- ❑ UCC is ranked 4th in the world in the 2015 UI GreenMetric World University Ranking
- ❑ Winner of SEAI Renewable Energy Systems Award 2011 for the Western Gateway Building.
- ❑ Winner of Green (College) Award 2011

UCC kWh/m² per Annum of Total Energy (Thermal & Elec.) for Total College Buildings



Sustainability Target

Sustainability



ISO 50001 Presentation



**4th Place Worldwide
Only Irish Institution in top 50**

UCC - Ireland's First Five Star University (QS Stars 2011)

UCC - First University in the world to be awarded the international Green Campus Flag

UCC - First University in the world to achieve ISO 50001 Energy Management Systems Certification

UCC - Winner 2012 Green College Award

UCC - Winner 2012 Green Travel Initiatives Award

UCC - Winner 2011 SEAI Renewable Energy Systems Award

Beaufort

Why? Where? How?



University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Beaufort – Why?

- Provide a “One Stop Shop” for world class Maritime and Energy Research, Training, Development and Innovation
- Technology Transfer and technology support of industry
- Establish a Flagship Cluster to produce innovative technologies to support the development of the Irish maritime and energy sectors.
- Derive Synergies from the unique competencies within the IMERC partnership including researchers, end users, entrepreneurs, innovators and investors.
- *HMRC – Tony Lewis*
- *CMRC – Jeremy Gault*
- *SERG – Eamonn McKeogh*

Facilities

- National Ocean Test Facility – NOTF
now
- LIR
 - Deep Water Flume
 - Ocean Wave Basin
 - Coastal Flume
 - Teaching Flume
- SERG Laboratory
- Light Lab
- Office Block
 - 150 researchers

HMRC Former Location



Proposed – The Dream

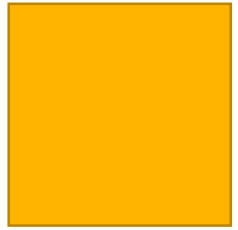


proposed

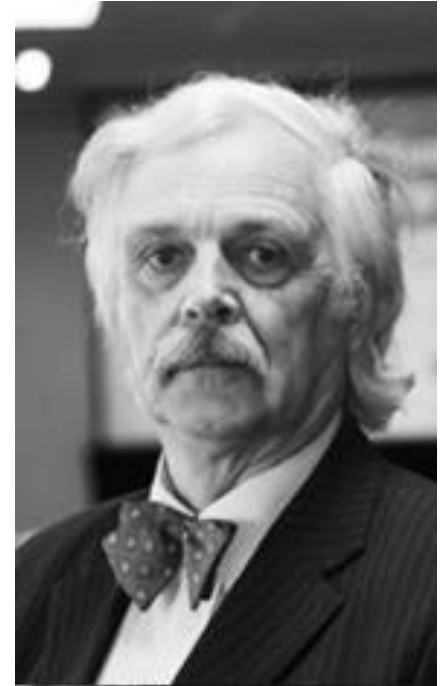
Visualising the Dream



Irish Examiner – Lewis Symposium



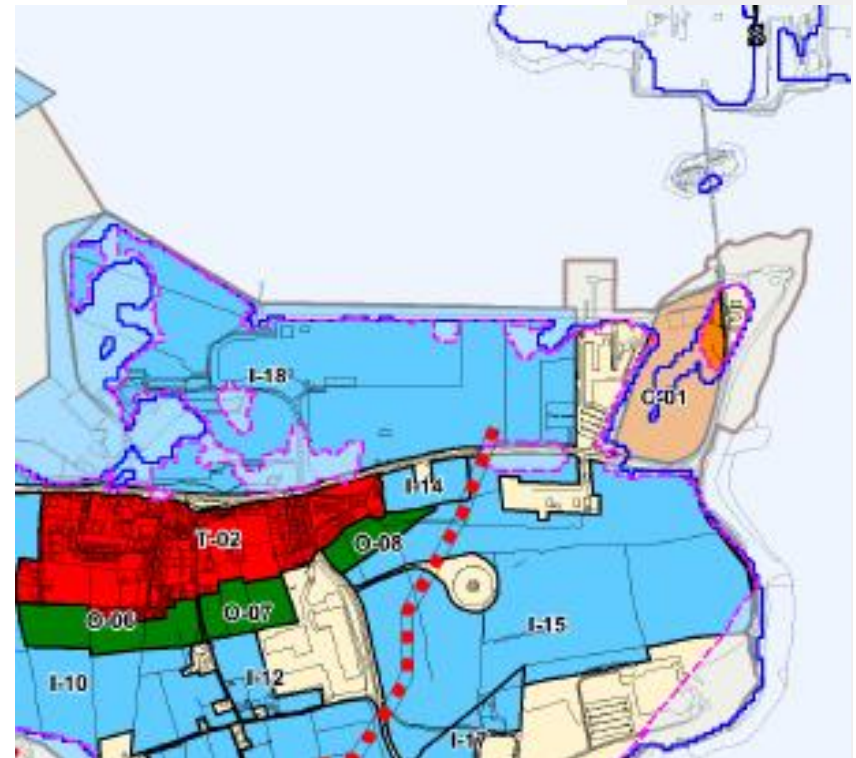
- **‘father of ocean energy’** Professor Tony Lewis in Cork
- “Tony saw the potential of our marine resource before many others and was instrumental in developing the sector here.”
- Ireland’s maritime economy grew by 9% between 2010 and 2012 — almost double that of the general economy.
- Employment in the sector increased from 17,425 to 18,480 full-time equivalents.
- Research indicates that a fully developed Irish ocean energy sector could be worth up to **€9bn to the economy by 2030 and could sustain thousands of jobs.**



Beaufort – Where?

C-01 **Specific Zoning Objective**

Third level educational campus
for marine related education,
research and training.
Approx Area - 7.55 Ha



Planning



- Planning lodged 8th July 2011
- Additional Information sought 23rd August 2011
- **Planning granted – 2nd February 2011**
- **Conditions**

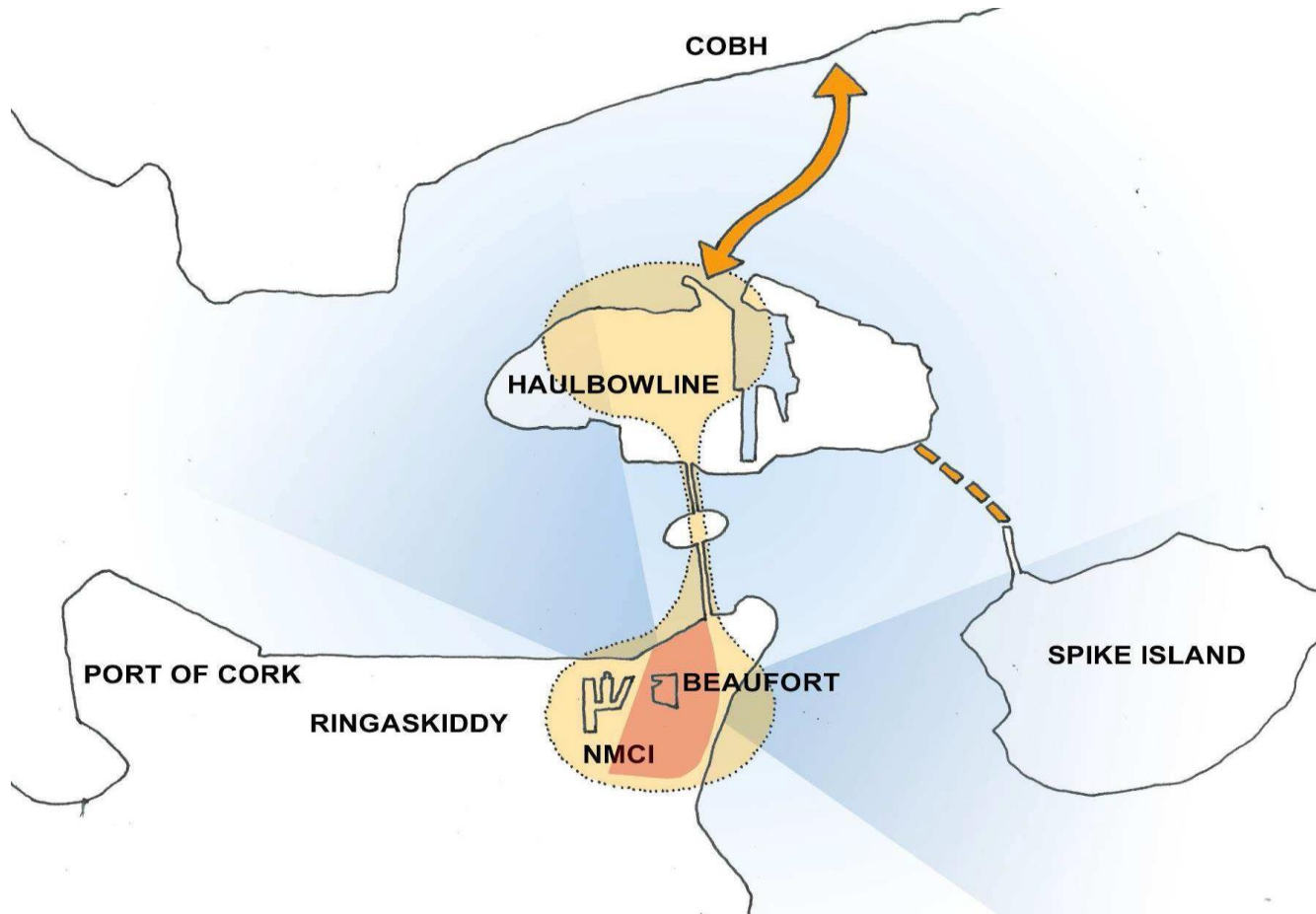
IMERC – Masterplan



IMERC - Ringaskiddy

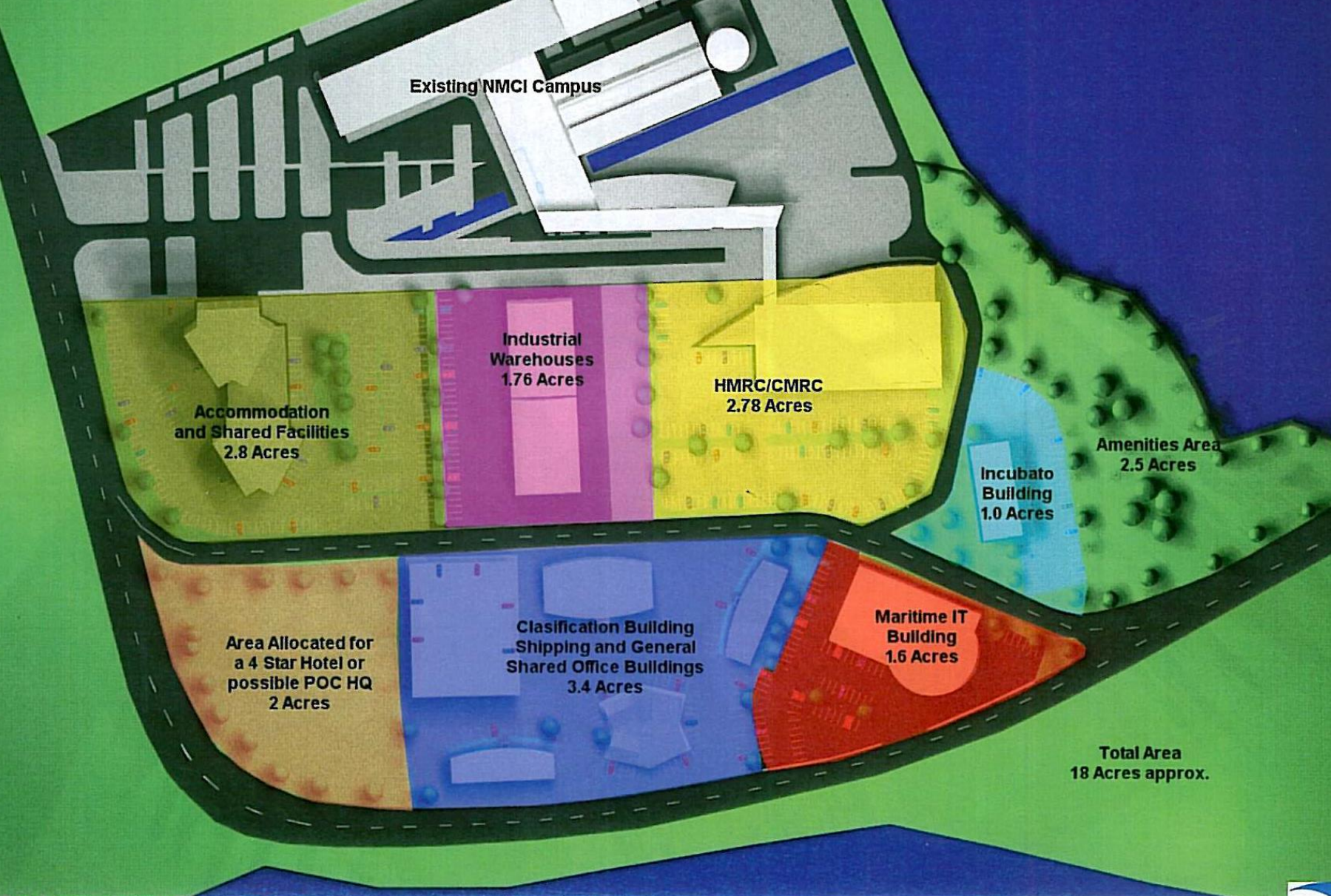


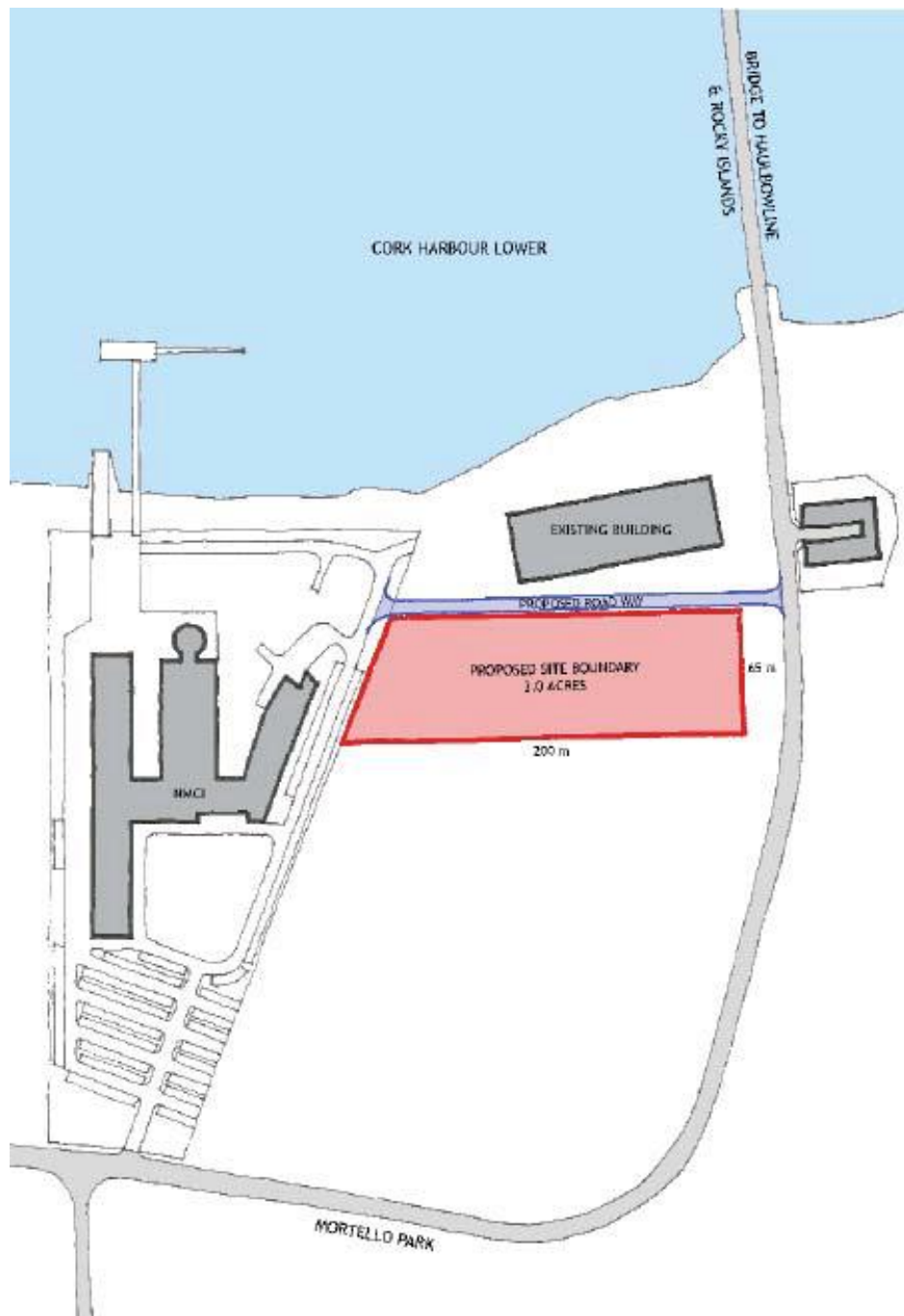
Links to Haulbowline



Haulbowline





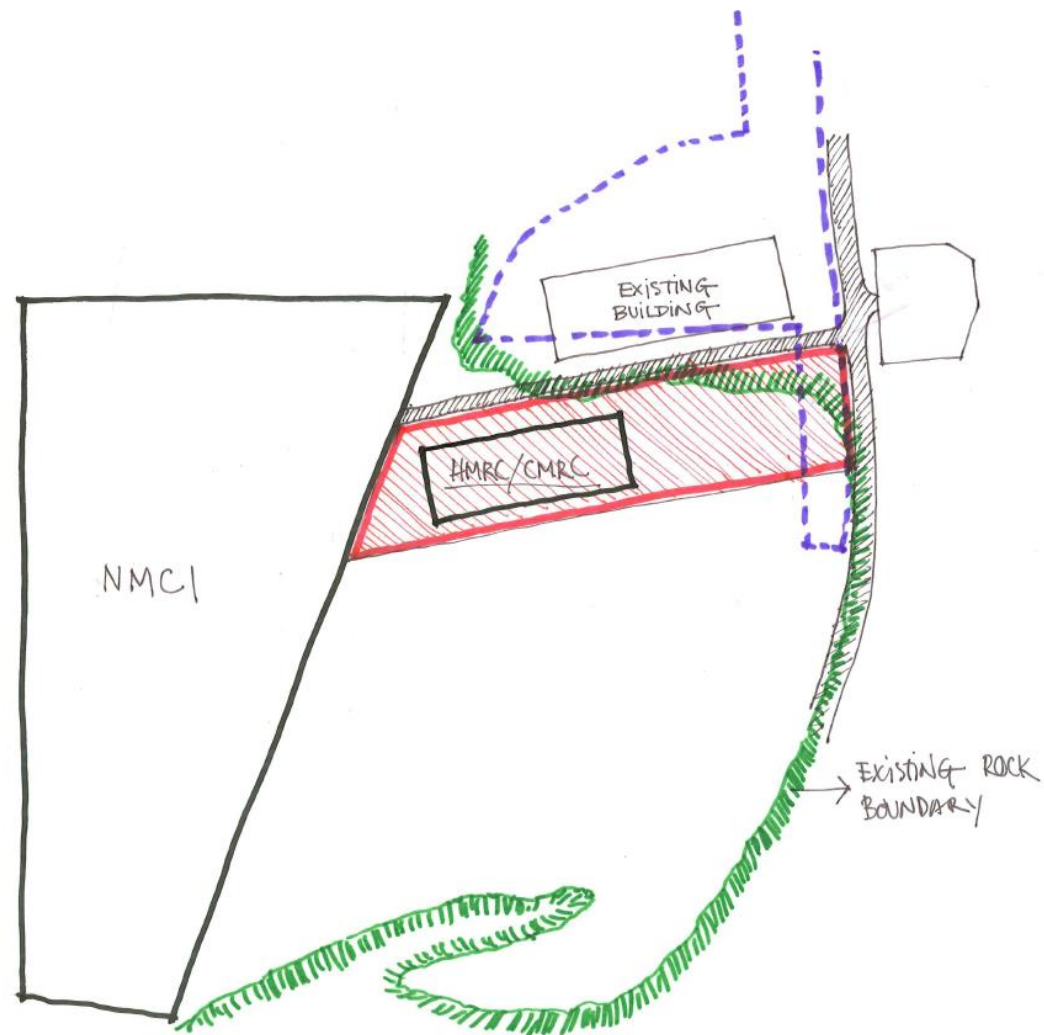
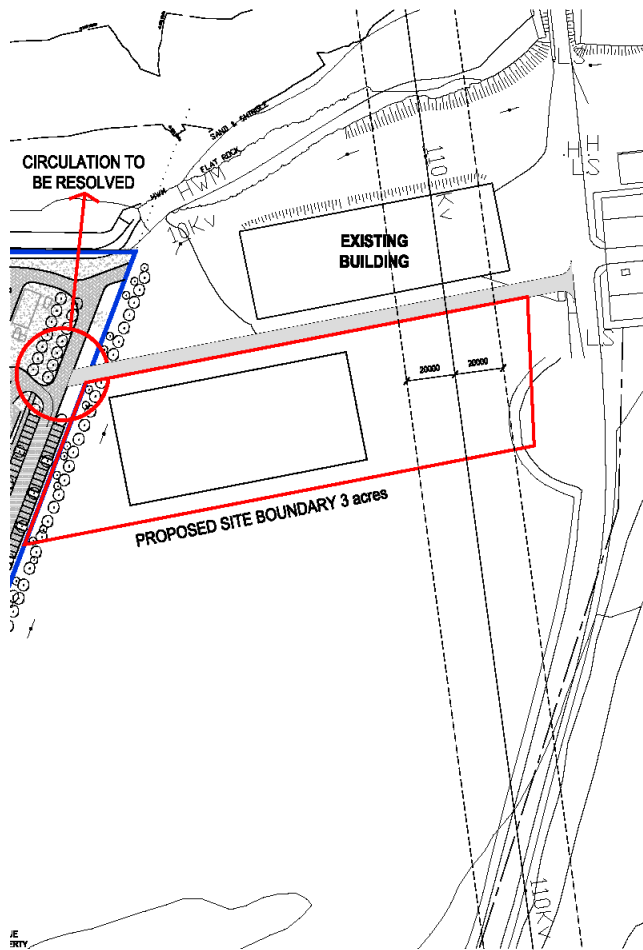




PLANNING OPTION 03

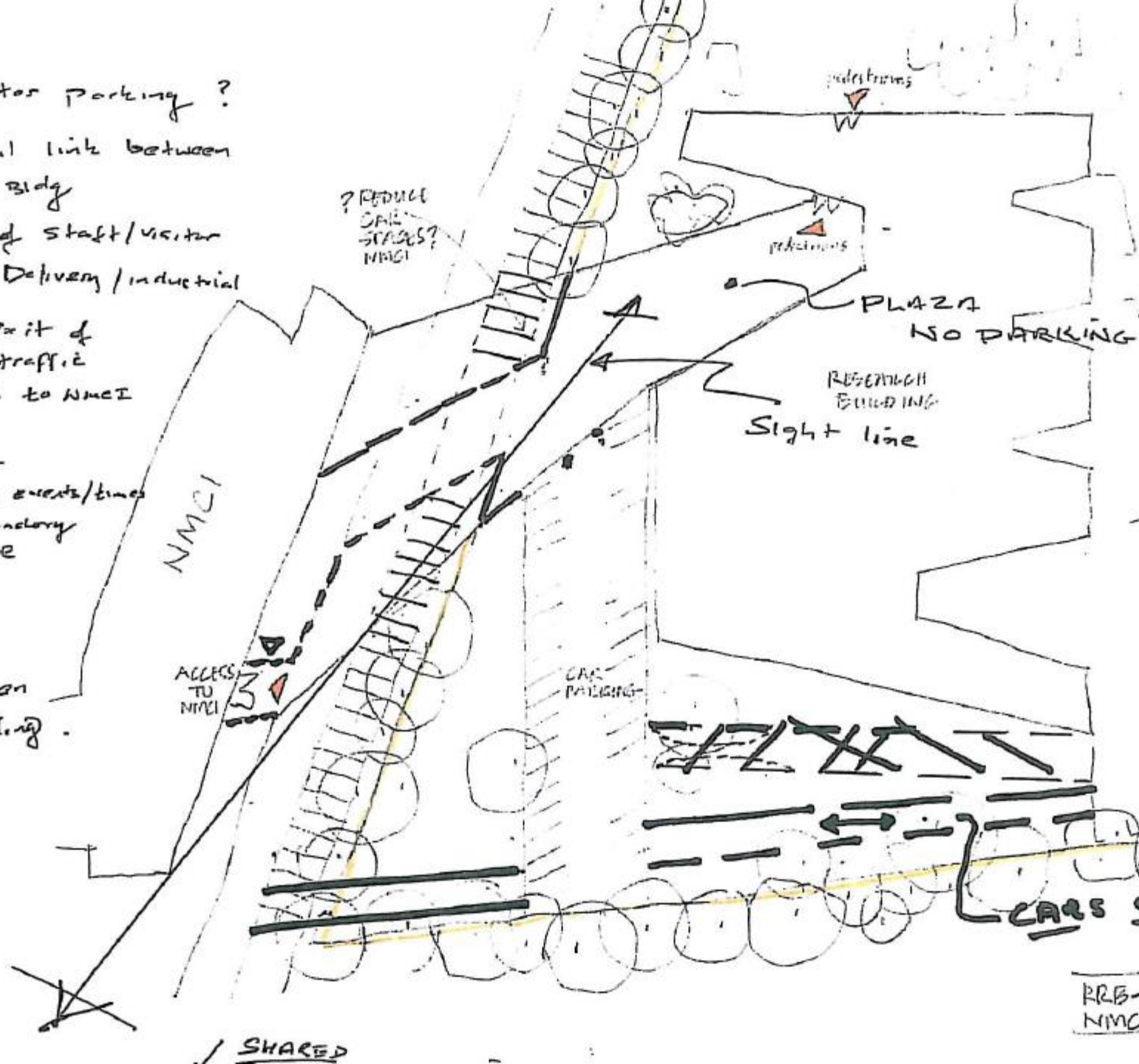






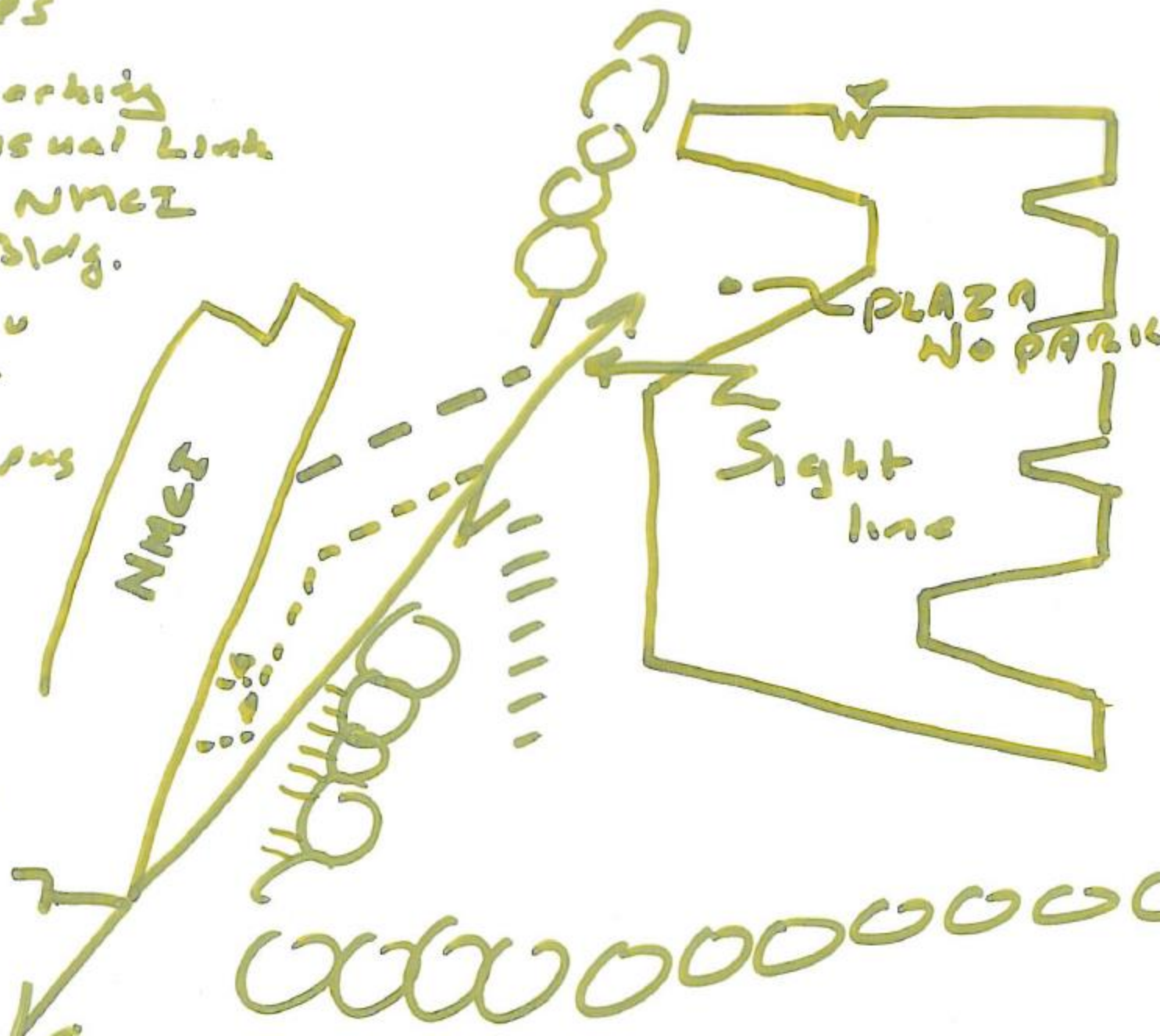
Principles

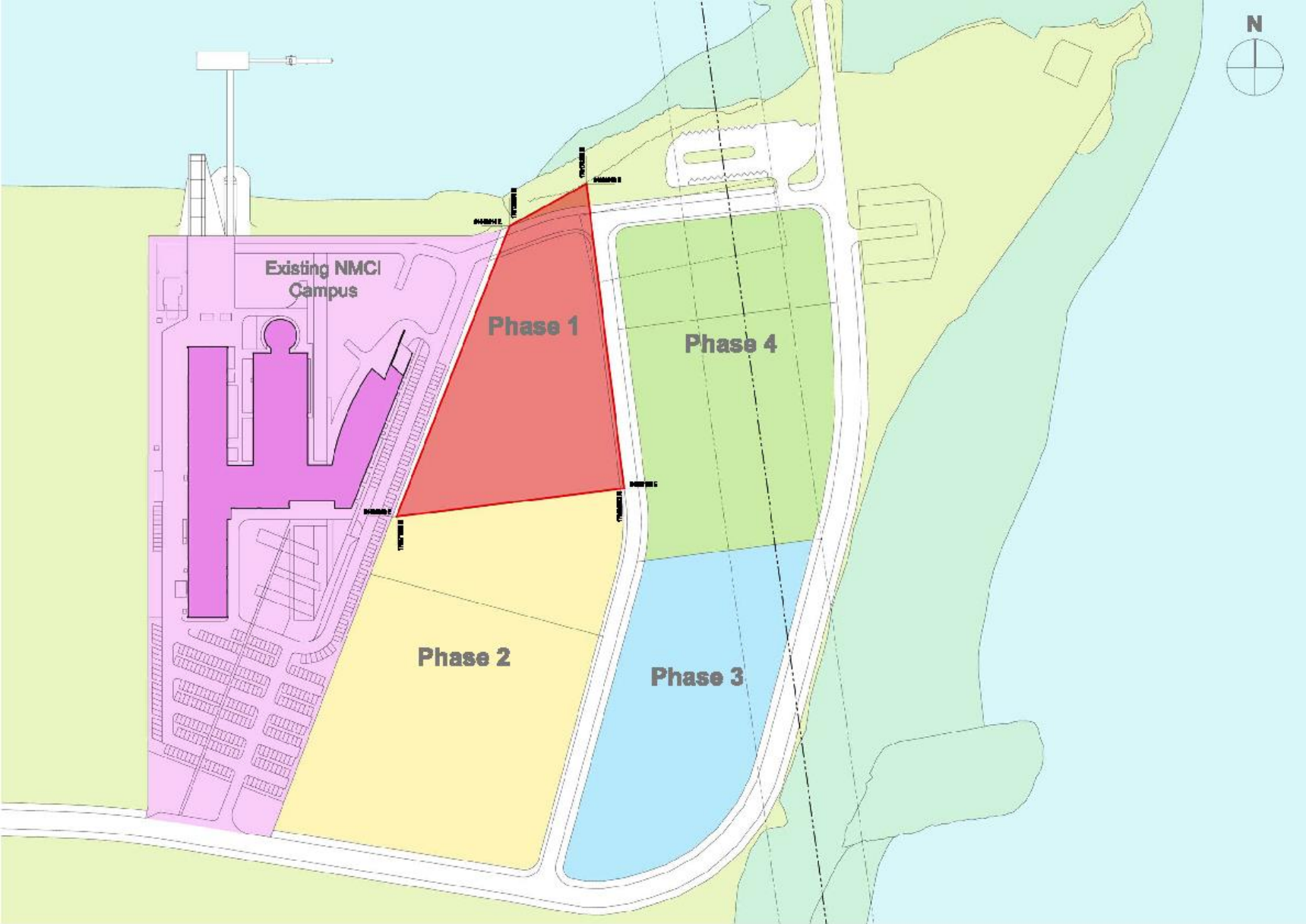
- Shared visitor parking?
- Strong visual link between NMCI & UCC Bldg
- Segregation of staff/visitor parking from Delivery/Industrial traffic.
 - Prevent exit of delivery traffic from RRS to NMCI Car park.
- Must cater for weekends and events/times when the boundary links will be closed.
- Links and access to promote open campus feeling.



Principles

- Visitor parking
- Strong visual link between NMEZ & UCC Bldg.
- Links to ensure & promote open campus feel.
- Separation of delivery traffic & pedestrians





Beaufort – How?

Client - What Matters to UCC ?

- Delivering the Project – of course!
- Environment – Broadest Term
 - Energy
 - Landscape
- Student Experience
- Heritage
- Corporate Responsibility
 - Safety
 - Best Practice systems
 - Neighbour
- Cost
 - Taxpayer
- Quality
- Aesthetics
 - Coherence
 - Uniformity
- Staff + Visitor Experience
- Balance

Client –Tasks and Duties

- Select best design team + appoint PSDP
- Decide on ER
- Manage DT / End User Interface
- Manage End User expectations
- Safety File
- Agree procurement strategy for construction
- Manage procurement of Contractor / specialists
- Appoint contractor + PSCS
- Process payments
- Deal with disputes
- Teamwork DT + UCC CPO + Contractor critical for all above

Reflections on the Construction Process



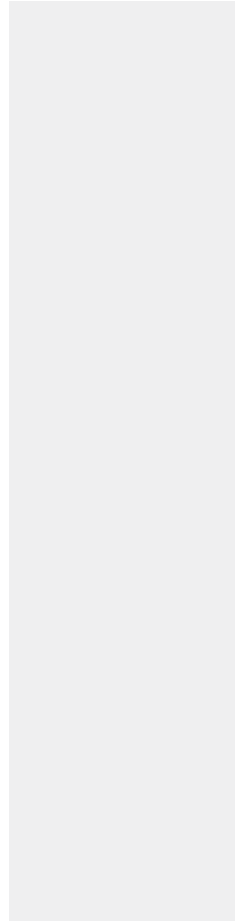
A bit of Einstein

Nothing is a miracle

Everything is a miracle

Friedrich Nietzsche

When one has finished building one's house, one suddenly realizes that in the process one has learned something that one really needed to know in the worst way - before one began.



Challenges (A SAMPLE)

- Site
 - Geology
 - Drainage
 - Surface water outfall = foreshore licence
- Funding
- Planning
 - Zoning
 - Flooding
- Changing research requirements
 - Manage end-user expectations
- Procure a Contractor
 - OJEU
 - 2 Stage process
 - Became 4 stage process

Team

mcculloughmulvinarchitects

ARUP







Pictures : Ros Kavanagh
ros@roskavanagh.com





BUILDING END USER – Beaufort

**Client – UCC Capital Projects
Office**

Architect: McCullough Mulvin

Civil/Structural Eng: Arup

Mech/Electrical: RPS

Quantity Surveyors: J. J. Casey

Contractor: J. J. Rhatigan



Beaufort Research Laboratory

(Maritime and Energy Research Building)
Ringaskiddy



Funders + Supporters

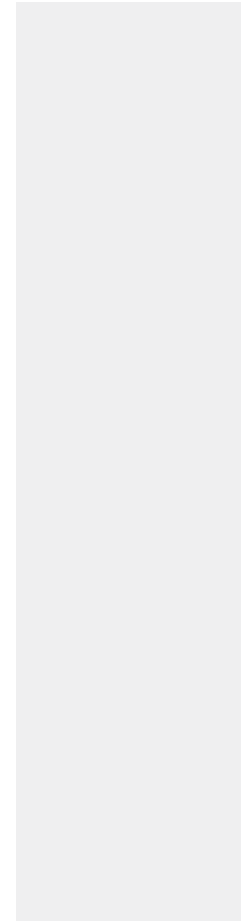
- Funders

- HEA - DJEI + DES
- Bord Gais Eireann
- DCENR
- DAFM

- Supporters

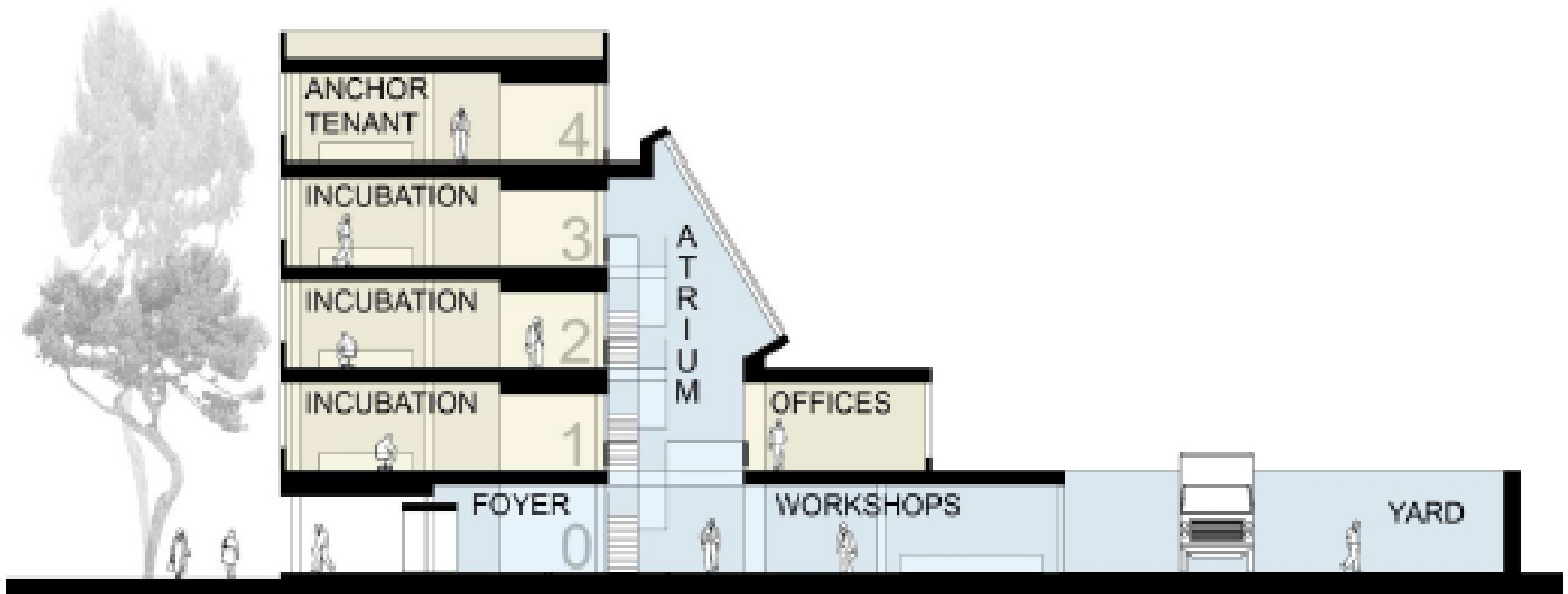
- Port of Cork
- IDA
- SEAI
- SFI
- CIT / NMCI
- INS

The Team



Next Development ?

SECTION



An Engineering Challenge

How many logos can fit on one sign?





Áras Beaufort Coláiste na hOllscoile Corcaigh



The Beaufort Building University College Cork

D'oscail an Taoiseach, Enda Kenny TD, an foirgneamh seo ar an 11 Iúil 2015

The building was officially opened by An Taoiseach, Mr Enda Kenny TD, on the 11th July 2015

Uachtarán, na hOllscoile
Ailtirí
Conraitheoirí

Dr Michael B. Murphy
McCullough Mulvin
JJ Rhatigan & Company

President, UCC
Architects
Contractors



Ireland's EU Structural Funds
Programmes 2007-2013
Co-funded by the Irish Government
and the European Union



EUROPEAN REGIONAL
DEVELOPMENT FUND



An Roinn Post, Fianair agus Nuálaíochta
Department of Jobs, Enterprise and Innovation

HEA

HIGHER EDUCATION AUTHORITY
AN tÚDARÁS um ARD-OIDEACHAS



Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha
Department of Communications, Energy and Natural Resources



Department of
Agriculture,
Food and the Marine
An Roinn
Talmhaíochta,
Bia agus Mara



Bord Gáis
Energy

