

# Strategic Gas Emergency Reserve

## Site and Pipe Route Selection Report



**24<sup>th</sup> August 2026**

## **Strategic Gas Emergency Reserve – Site Selection Report**

### **Publication Note**

Dear Reader,

Please find enclosed the Site Selection Report for the proposed Strategic Gas Emergency Reserve (SGER) Project.

The purpose of this report is to document the site identification, assessment, and selection process undertaken to support the development of the Strategic Gas Emergency Reserve. The report presents the methodology adopted to identify and evaluate potential locations, the assessment criteria applied, and the rationale for selecting site SE7 - Cahiracon, Co. Clare, as the preferred site for further development of the SGER.

This report's methodology, developed and approved by Gas Networks Ireland (GNI), follows a five-step process: project scoping, study area definition, initial screening, option shortlisting and detailed assessment. This approach incorporated technical, environmental, planning and financial criteria.

This version of the report has been redacted to remove commercially sensitive, security-sensitive and confidential information. The redactions have been applied only where necessary to protect information relating to critical energy infrastructure, landowner confidentiality, commercial negotiations, and other sensitive project details.

This report reflects the information available and project status at the time of its preparation. As the SGER Project has progressed through project development and Front-End Engineering Design (FEED) activities in 2026, certain aspects of the project, supporting information, and technical assessments may have evolved or been updated. The publication of this report is intended to provide transparency regarding the site selection process undertaken at that stage of the project.

Yours faithfully,

**Tom Hegarty**

Head of Engineering (SGER)

## Non-Technical Executive Summary

This report presents the selection process undertaken to identify the emerging preferred site and pipeline route for Ireland's Strategic Gas Emergency Reserve (SGER), a state-led nationally significant project designed to provide immediate and reliable backup natural gas supply in the event of a major disruption to the country's existing gas infrastructure. The SGER originates from the Government's Energy Security In Ireland to 2030" strategy, responds to increasing energy security risks and aligns with national and European policy objectives.

The approved solution is a Floating Storage and Regasification Unit (FSRU) functioning as a non-commercial, emergency only facility. The project is intended to be transitional, supporting Ireland's climate commitments and facilitating the future integration of renewable gases.

This report's methodology, developed and approved by Gas Networks Ireland (GNI) follows a five-step process: project scoping, study area definition, initial screening, option shortlisting and detailed assessment. This approach incorporated technical, environmental, planning and financial criteria.

Primary and secondary constraints were applied to screen potential sites across coastal counties in the Republic of Ireland. After evaluation, three locations: Shannon Estuary, Bantry Bay and Cork Harbour were identified as potential locations.

Subsequently twenty-three sites (23) were identified and evaluated to identify the "most aligned" options. Starting with those sites identified as "most aligned" with the strategic objectives, high-level schedules were developed to evaluate whether there is a reasonable expectation that they can meet the N-1 project programme. Based on the Project Programme Alignment evaluation only two sites are considered as having a reasonable expectation of supporting accelerated delivery of the project "as early as possible", namely

- [REDACTED]
- Siet SE7 Cahiracon

The detailed assessment considered key technical, environmental, planning and financial criteria. Based on the Site and Route Selection methodology **the emerging preferred site and route option is Site SE7 – Cahiracon.**

[REDACTED] Due to the rigorous nature of the shortlisting process, only projects which satisfied the technical, environmental and planning criteria advanced to the final detailed assessment stage. While there were some marginal benefits associated with the selected site across Technical, Environmental and Planning criteria, the projected first gas date for each of the sites, coupled with the projected costs, had the most significant influence on determining the selected site.

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# 1 Introduction

**Nicholas O'Dwyer Ltd in association with Tom Phillips & Associates have been appointed to prepare a site and pipe route selection assessment on behalf of Gas Networks Ireland (herein referred to as the 'Client') to assess the most feasible location capable of accommodating a Strategic Gas Emergency Reserve, owned and operated by Gas Networks Ireland, in the form of a Floating Storage and Regasification Unit, for use in the event of an interruption to gas supplies (herein referred to as the 'Conceptual Development'.**

## 1.1 Project Overview

The Strategic Gas Emergency Reserve (SGER) is a state-led, nationally significant project that will provide Ireland with an immediate and reliable backup source of natural gas in the event of a major disruption to the country's existing gas supply.

The Strategic Gas Emergency Reserve (SGER) was established as part of the Government's strategic response to growing energy security risks and the need for a stable transition to renewable energy. It originates from the "Energy Security in Ireland to 2030" report, approved by Government in November 2023. This report outlined 28 actions under the pillars of sustainability, affordability, and security.

Action 17 of the plan called for the development of a state-led strategic gas reserve to protect Ireland against supply disruptions. The decision was informed by lessons from recent global energy shocks, including the disruption to European gas supplies following the invasion of Ukraine, and domestic electricity capacity shortfalls.

Following the report, the Government appointed Gas Networks Ireland (GNI) to prepare a detailed proposal on the optimum solution to deliver a State-led strategic gas emergency reserve to protect Ireland in the event of an unexpected gas supply disruption, and produce a detailed recommendation, on behalf of the state.

An assessment of 24 different technical solutions was undertaken by GNI and subsequent reports set out recommendations, including a Floating Storage and Regasification Unit (FSRU) as the likely fit for Ireland's needs. The detailed recommendations are set out in the Preliminary Business Case for the project which was submitted to Government in April 2024.

The Government approved the development of the SGER in March 2025, confirming that the reserve will take the form of a Floating Storage and Regasification Unit (FSRU). The FSRU will be owned and operated on behalf of the State by Gas Networks Ireland (GNI), as a state-led, non-commercial, emergency-only facility. This approach is consistent with Ireland's climate law and avoids fossil fuel lock-in by ensuring the reserve is temporary, transitional, and does not support increased gas demand.

For the emerging option for the Strategic Gas Emergency Reserve to be delivered an appropriate site to accommodate the Conceptual Development and an associated pipeline route connecting



the onshore facility to the existing National Transmission System (NTS) must be identified.

## **1.2 Document Purpose**

The purpose of this report is to identify and appraise the potential options for the location of the Conceptual Development and an associated pipeline route connecting the onshore facility to the existing National Transmission System (NTS). The report will document the assessment and determine the “Emerging Preferred Site(s)”.

The site and route selection methodology was developed and approved by GNI in advance of initiating any site or route selection activities. The methodology was developed to ensure the project satisfies the N-1 security of supply standard, as set out in the Preliminary Business Case (PBC) and endorsed by Government on 4th March 2025.

The methodology is structured to demonstrate compliance with the project need and technical requirements set out under section 7.2 of this report encompassing the following key components.

- Marine Infrastructure: LNG jetty, berthing facilities and associated infrastructure for a moored Floating Storage and Regasification Unit (FSRU) and visiting LNG carriers
- Onshore facilities: Gas conditioning plant and Above Ground Installation (AGI), metering, pressure control and odorization.
- Pipeline Connection: A transmission pipeline designed in accordance with IS 328 and relevant standards, providing a secure link to the NTS.

## **1.3 Strategic Context for SGER**

The approved Preliminary Business Case and specifically the Strategic Case established the strategic context for the project and made the necessary case for change required to avoid the negative consequences of a ‘do-nothing’ scenario. The Strategic Case defines the strategic objectives required for successful project delivery.

The Strategic Case demonstrates that there is a need for a Strategic Gas Emergency Reserve (SGER). This need is fully aligned with national Government and European policies and objectives. It is imperative that the project avoids the economic, social and legal consequences generated by an uncontrolled interruption to the gas supply in the event of a do-nothing scenario. In addition, a key benefit of the project will be the support it will provide for renewable electricity through a back-up gas supply and the future transition to hydrogen enabled infrastructure.

## **1.4 Legal and Planning Context**

There is significant support for the project need and identified conceptual development in legislation, government strategy documents, and planning policy from national to local level.

This is detailed in sections 4 (Energy Policy Context), 5 (National Context), and 6 (Local Context).

## 1.5 Structure of Report

The report is structured as follows:

- Sections 2-6 set out the policy context for the site and route selection, in terms of the international, European, national and local levels.
- Section 7 sets out the site and route selection process and methodology through a five-step process from scoping, defining the study area, screening, shortlisting, and detailed assessment for both the site and the pipeline route. The details of the Emerging Preferred Site and Route are then laid out.
- Section 8 sets out the report conclusions and recommendations with Section 9 setting out key actions or next steps that may be identified.

## 1.6 Definitions

The following definitions are used in this report:

|                                    |                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Client</b>                      | Gas Networks Ireland (GNI)                                                                                                                                                                                                                                                                                                                                            |
| <b>Consultant</b>                  | Nicholas O'Dwyer Ltd in association with Tom Phillips & Associates                                                                                                                                                                                                                                                                                                    |
| <b>Sponsor</b>                     | Department of Climate, Energy and the Environment (DCEE)<br><i>[formerly Department of the Environment, Climate and Communications (DECC)]</i>                                                                                                                                                                                                                        |
| <b>Project</b>                     | Strategic Gas Emergency Reserve                                                                                                                                                                                                                                                                                                                                       |
| <b>N-1 Infrastructure Standard</b> | European Union (2010), Regulation (EU) No 994/2010 of the European Parliament and of the Council of 20 October 2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC. Article 6 of this regulation introduced an infrastructure standard (commonly referred to as the N-1 Infrastructure Standard or N-1 for short) |

## 2 Guidance

**This section provides an overview of the relevant guidance documents at the international, level in relation to LNG installations and port development that were pertinent to this site and route selection assessment.**

### 2.1 International Context

The following sub-sections summarise key international technical guidance in relation to LNG installations.

#### 2.1.1 SIGTTO Paper No.14

The Society of International Gas Tanker & Terminal Operators Limited (SIGTTO) is an international body established for the exchange of technical information to enhance safety and reliability of gas tankers and terminals. SIGTTO has published multiple guidance documents focusing on (but not limited to) liquefied gas terminals, jetty maintenance and floating LNG installations.

Site Selection and Design for LNG Ports and Jetties Information Paper No. 14 (IP 14) published in 1997, details the minimum design criteria required for a port (either to be built or altered) to accommodate LNG carriers. This publication addresses safety issues for LNG ports and focuses on eliminating slippages at the ship/shore interface and within navigational approach channels. IP 14 provides guidance for site selection and design of LNG terminals and design criteria for jetties.

#### 2.1.2 PIANC Reports 116 & 121

The World Association of Waterborne Transport Infrastructure (PIANC) is a non-political and non-profit organisation which publishes technical reports relating to sustainable waterborne transport infrastructure. Key reports include:

- Safety Aspects Affecting the Berthing Operations of Tankers to Oil and Gas Terminals (Report No. 116), published in 2012; and
- Harbour Approach Channels Design Guidelines (Report No. 121), published in 2014.

Report No. 116 identifies significant safety aspects associated with the arrival, berthing and unberthing of oil and gas tankers at terminals. Impacts of waves, wind and currents in conjunction with terminal safety management and risk assessment procedures are considered.

Report No.121 provides guidelines and recommendations for the design (i.e., vertical and horizontal dimensions) of harbour approach channels and the manoeuvring and anchorage areas within harbours. Report No. 121 also defines restrictions to operations within a channel.

### 2.1.3 I.S. EN ISO 28460:2010

*ISO 28460: 2010 Petroleum and natural gas industries — Installation and equipment for liquefied natural gas — Ship-to-shore interface and port operations* (ISO 28460:2010) specifies the requirements to ensure the safe transit of an LNG carrier through a port area, and the efficient and safe transfer of its cargo. ISO 28460:2010 includes provisions for:

- A ship's safe transfer, berthing, mooring and unberthing at a jetty;
- Cargo transfer;
- Access from jetty to ship;
- Operational communications between shore and ship;
- Ballast water considerations; and
- Liquid nitrogen connection (where fitted).

This Standard only applies to conventional onshore LNG terminals and the handling of LNG carriers in international trade, however can be used as guidance for offshore and coastal operations.

### 2.1.4 BS EN ISO 20257-1:2020

*ISO 20257-1:2020 Installation and equipment for liquefied natural gas — Design of floating LNG installations — Part 1: General requirements* (ISO 20257-1:2020) provides requirements and guidance for the design and operation of floating LNG installations including for the liquefaction, storage, vaporisation, transfer and handling of LNG. This standard is applicable to the following LNG installations:

- Floating LNG liquefaction installations (plant);
- Floating LNG regasification installations (plant);
- Floating storage units;
- Offshore, near-shore or docked floating LNG installations;
- Any jetty associated with docked LNG installations, with regards to the mooring; and
- Newbuilt and converted floating LNG installations.

### 2.1.5 BS EN ISO 20257-2:2021

*ISO 20257-2:2021 Installation and equipment for liquefied natural gas — Design of floating LNG installations Part 2: Specific FSRU issues* (ISO 20257-2) provides specific requirements and guidance for the design and operation of LNG storage and regasification units (FSRUs; as described in ISO 20257-1). This guidance is applicable to offshore, near-shore or docked FSRU (whether new builds or converted) and includes requirements for when an FSRU is moored to a

jetty.

### 2.1.6 EN 1473:2021

European Standard *EN 1473:2021 Installation and equipment for liquefied natural gas - Design of onshore installations* (EN 1473:2021) provides guidelines for the design, construction and operation of all onshore LNG installations for the liquefaction, storage, vaporisation, transfer and handling of LNG and natural gas. These guidelines are applicable for plants which have an LNG storage capacity over 200 tonnes. EN 1473:2021 is relevant to the following installations:

- LNG export installations (plant): between the designated gas inlet boundary limit and the ship manifold; and
- LNG receiving installations (plant): between the ship manifold and the designated gas outlet boundary limit.

The key objective of EN 1473:2021 (page 5) is to recommend procedures and practices that will result in safe and environmentally acceptable design, construction and operation of LNG plants. EN 1473:2021 recognises that the position of a jetty at an LNG marine terminal is vital in determining the risk of the ship/shore transfer operation. It also notes that the provisions in ISO 28460:2010 and IP 14 are highly recommended.

## 3 Energy Policy Context

### 3.1 Sustainability policies

Environmental sustainability of energy systems represents the transition of a country's energy system towards mitigating and avoiding potential environmental harm and climate change impacts. Sustainability focuses on productivity and efficiency of generation, transmission and distribution, decarbonisation and air quality.

Sustainability policies are relevant to this document as they significantly influence the future of the energy system. For instance, they incentivise changes in the demand for electricity and gas by, for example, promoting electrification of heat. They also impact the supply of both electricity (through measures such as promoting renewable energy capacity and phasing out certain fuels) and gas (for example, by discouraging import of fracking gas and promoting renewable gas). This section gives a brief overview of the EU and Irish policies relevant for this document.

#### 3.1.1 EU

The European Union is at the forefront of climate policy, as testified by the Green Deal package. The **Green Deal**,<sup>1</sup> initiated in 2020, comprises a set of policy initiatives aimed at steering the EU towards a green transition, with the overarching objective of achieving climate neutrality by

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<sup>1</sup> EC, *The European Green Deal*. Available [here](#)

2050.

In the subsequent year, the EU enacted the **European Climate Law**,<sup>2</sup> which transformed the political commitment to attain climate neutrality by 2050 into a legally binding obligation. This law outlines specific targets, mandating the EU to reduce its greenhouse gas (GHG) emissions by a minimum of 55% by 2030 (compared with 1990), achieve net-zero GHG emissions by 2050 at the latest, and strive for negative emissions thereafter.

**Fit for 55 package**,<sup>3</sup> presented shortly after the European Climate Law, set out the necessary actions to meet the 2030 targets. This package was subsequently updated when the Commission proposed increased ambition on renewable energy and energy efficiency in the REPowerEU plan. A key element in the package is the revision of the Renewable Energy Directive, to help the EU deliver the new 55% GHG target. Under RED II<sup>4</sup>, the EU was obliged to ensure at least 32% of its energy consumption comes from renewable energy sources (RES) by 2030. RED III<sup>5</sup>, which entered into force in November 2023, increased the EU's binding renewable target for 2030 to a minimum of 42.5%. The aspiration is to further increase this figure to 45%, which will showcase the EU's commitment to renewable energy.

### 3.1.2 Ireland

Ireland's climate ambitions have evolved in parallel with those of the European Union. This section summarises Ireland's relevant decarbonisation policies, including the recent strategies on renewable gases (hydrogen and biomethane).

The **Programme for Government – Our Shared Future**<sup>6</sup> was published in 2020 and highlighted that energy will play an essential role in creating a strong and sustainable Irish economy over the next decade. The Programme for Government includes a target of 51% reduction in total emissions by 2030, relative to 2018 levels, and of achieving net-zero emissions by 2050. Additionally, the Government committed to cease issuing new licences for gas exploration and extraction and stated its opposition to the importation of fracked gas.

The **Climate Action and Low Carbon Development (Amendment) Act of 2021**<sup>7</sup> laid the legal foundation for Ireland's transition to a net-zero economy by 2050. This legislation outlines a 2030 interim target (-51%, relative to 2018), sets five-yearly carbon budgets, establishes sectoral emissions ceilings, mandates an annually updated Climate Action Plan, and introduces a Long-

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<sup>2</sup> EU (June 2021), *Regulation (EU) 2021/1119 of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (European Climate Law)*. Available [here](#)

<sup>3</sup> EU (July 2021), *'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality*. Available [here](#)

<sup>4</sup> EU (December 2018), *Directive (EU) 2018/2001 of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast) ('RED II')*. Available [here](#)

<sup>5</sup> EU (September 2023), *Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast) ('RED II')*. Available [here](#)

<sup>6</sup> Government of Ireland (2020), *Programme for Government – Our Shared Future*. Available [here](#)

<sup>7</sup> Government of Ireland (2021), *Climate Action and Low Carbon Development (Amendment) Act 2021*. Available [here](#)

Term Climate Action Strategy.

The **Climate Action Plan 2025**<sup>8</sup> (CAP 25) builds on the CAP2024 and reinforces a comprehensive road map for actions aimed at halving Ireland's emissions by 2030. This plan spans various sectors, including power, industry, buildings, transport, agriculture and land use and targets a 51% reduction in greenhouse gas (GHG) emissions by 2030 compared to 2018 levels and to achieve climate neutrality by 2050.

The plan includes various sectoral targets across transport, public sector, electricity, built environment, agriculture and land use.

The plan aligns with COP 28 commitments to phase down unabated coal power and phase out inefficient fossil fuel subsidies, while accelerating the shift to zero and low carbon fuels well before mid-century. This includes reducing reliance on natural gas for energy systems in a just and orderly manner.

Ireland's present **Long-term Strategy on Greenhouse Gas Emissions Reductions**<sup>9</sup>, approved by the Government in April 2023, sets indicative pathways beyond 2030 towards achieving carbon neutrality for Ireland by 2050. This strategy builds upon the decarbonisation pathways outlined in the carbon budgets, sectoral emissions ceilings and Climate Action Plan 2024, to ensure a cohesive and effective approach to climate policy.

The **National Hydrogen Strategy**<sup>10</sup> outlines the strategic vision for the role hydrogen will play in Ireland's energy system, by focusing on its long-term role as a key component of a zero-carbon economy, and the short-term actions that will be implemented in the coming years to facilitate the development of the hydrogen sector in Ireland. The Strategy considers the needs of the entire hydrogen value chain including production, end uses, transportation and storage, and demand.

- **Production:** Prior to 2030, hydrogen is expected to be produced from grid-connected electrolysis from surplus renewables. Dedicated offshore plants are likely to become increasingly important for green hydrogen production.
- **Transport:** Initially, hydrogen is likely to be transported by truck or used onsite, or blended in small percentages in the gas network. Hydrogen pipelines (local, and then national) will need to be developed in the medium term.
- **Storage:** The National Strategy sees small-scale storage applications as most likely until 2033, and thereafter foresees the use of large-scale storage on a geological scale.
- **Demand:** Initial demand will come from heavy-duty transport, followed by industry and power generation (2030–2035). Aviation and maritime are expected to be the largest end

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<sup>8</sup> Government of Ireland (2025), *Climate Action Plan 2025*. Available [here](#)

<sup>9</sup> Government of Ireland (2023), *Long-term Strategy on Greenhouse Gas Emissions Reductions*. Available [here](#)

<sup>10</sup> DECC (2023), *National Hydrogen Strategy*. Available [here](#)



users of hydrogen, but these sectors will take longer (estimated 2035–2040) to develop.

Biomethane also has the potential to reduce emissions in the sector. In Ireland, the development of a biomethane industry is at a nascent stage of development but there are significant opportunities. Biomethane has the potential to displace fossil gas in many hard-to-decarbonise sectors while playing an important role in decarbonising Ireland's agriculture sector. In its **National Biomethane Strategy**,<sup>11</sup> the Government has set a target to deliver 5.7 TWh per annum of biomethane by 2030.

## 3.2 Security of supply

This section outlines the EU and Irish regulations on energy security of supply relevant for this document.

### 3.2.1 EU

The EU has developed policies on an incremental basis to address energy security with relevance to both geopolitics and its climate action ambitions. This section outlines the two regulations most relevant to this document. Note, however, that in addition to this the EU has published numerous other regulations that touch on security of supply, especially as a reaction to the war in Ukraine.

Following a number of Russian–Ukrainian gas disputes in 2006 and 2009, **the European Commission introduced Regulation 994/2010**<sup>12</sup> in an attempt to enhance the security of the gas supply. Published in 2010, this Regulation mandated all Member States to formulate preventive action plans and emergency plans to deal with crises and to ensure that gas supplies are guaranteed to households and other protected customers for a certain period of time. Article 6 of this Regulation also introduced an infrastructure standard asking Member States to ensure that the necessary measures are taken so that, in the event of disruption to the single largest gas infrastructure, the capacity of the remaining gas infrastructure is able to satisfy total gas demand on a day of exceptionally high gas demand, defined as a day occurring with a statistical probability of once in 20 years.

In 2017, the Commission introduced a new Regulation (**EU 2017/1938**<sup>13</sup>) to further strengthen gas security by introducing a new and more efficient approach to preventing and mitigating

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<sup>11</sup> Government of Ireland (2024), *Ireland's National Biomethane Strategy*. Available [here](#)

<sup>12</sup> EU (2010), *Regulation No 994/2010 of the European Parliament and of the Council concerning measures to safeguard security of supply and repealing Council Directive 2004/67/EC*. Available [here](#)

<sup>13</sup> EU (2017), *Regulation (EU) 2017/1938 of the European Parliament and of the Council concerning measures to safeguard security of gas supply and repealing Regulation (EU) No 994/2010*. Available [here](#)



possible security-of-gas-supply crises. This Regulation introduced a solidarity principle whereby, as a last resort, neighbouring Member States would help ensure gas supplies to households and essential social services in the case of a severe crisis. To ensure better coordination between Member States there was a shift from a national approach to a regional approach when designing security-of-supply measures. This approach was also seen as helping to increase the effectiveness of security-of-supply measures and reduce their costs for EU citizens. Article 5 of the Regulation restates the infrastructure standard introduced in the 2010 Regulation. Furthermore, paragraph 3 of the same article specifies that *"where appropriate, in accordance with the risk assessments referred to in Article 7, the competent authorities of neighbouring Member States may agree to fulfil, jointly, the obligation set out in paragraph 1 of this Article."*

### 3.2.2 Ireland

Similarly, Ireland has introduced several regulations and actions over the past decade to ensure and improve security of supply. We outline the key policies relevant for this document.

The **National Planning Framework – First Revision**<sup>14</sup> (NPF) is a revision of the national planning framework which provides Ireland's high-level spatial plan guiding growth and development to 2040. The first revision to the NPF updates the 2018 NPF to reflect demographic, economic and environmental changes. The NPF first revision is both a vision and a credible development strategy to shape the national, regional and local spatial development in economic, environmental and social terms to 2040. The NPF first revision includes 10 National Strategic Outcomes (NSO) ranging from 'compact growth' to access to quality services'. Page 132 of the NPF First Revision discusses 'Energy Security in Ireland', and notes

*"Gas will continue to play a key role to support the secure transition to an energy system, based on electrification and greatly increased renewables penetration. Ireland imports approximately three quarters of its gas from the UK and this is expected to increase as indigenous supply from the Corrib gas field declines. The technical analysis shows that the existing infrastructure and supply sources are largely able to meet Ireland's gas demand requirements in the medium- to long-term. It also shows, however, that a disruption of gas supplies from the UK, for whatever reason, would have a very significant impact on Ireland's economic and social well-being. The Package is supported by an Annex "Securing Ireland's Gas Supplies" that sets out in more detail, the long-term approach to secure our gas security of supply. The report sets out a range of mitigation measures, including the need for additional capacity of indigenous renewable energy, but also energy imports, energy storage, fuel diversification, demand side response, and renewable gases."*

The **National Development Plan Review**<sup>15</sup> (NDP) is a companion document to the NPF – First Revision. The NDP Review covers all public capital investment to 2035 and includes Exchequer

<sup>14</sup> Government of Ireland (April 2025), National Planning Framework. Available [here](#)

<sup>15</sup> Government of Ireland (2025), National Development Plan Review 2025. Available [here](#)

funds, the apple Escrow funds, the Infrastructure, Climate and Nature Fund, and proceeds of the AIB share sales. The plan sets out total investment of €275.4 billion over the 10 year period, sectoral capital allocations of €102.4 billion for the years 2026 to 2030 and a further €100 billion for 2030 to 2035. The plan notes that the *"in particular, Government has prioritised increased investment levels in water, energy, transport and housing; to meet the housing needs of our population and to support future economic growth to improve the living standards of the people of Ireland"*. Their joint publication (NDP Review and NPF first Revision) aligns the Government's investment strategy with its strategic planning documents to update the previous plans.

The **Policy Statement on Security of Electricity Supply**,<sup>16</sup> issued in November 2021, delineates several updates to national policy within the framework of the Programme for Government commitments pertinent to the energy sector. The policy includes Government approval for:

- prioritising development of new conventional generation, encompassing gas-fired and gas oil/distillate-fired generation, to ensure the security of electricity supply and support the expansion of renewable electricity generation;
- retaining existing conventional electricity generation capacity until the new conventional electricity generation capacity is developed;
- considering the potential impact on the security of electricity supply when connecting large energy users to the electricity grid; and
- considering the appropriateness for additional electricity and gas transmission and distribution grid infrastructure to be permitted and developed.

**Energy Security in Ireland (ESI) to 2030**<sup>17</sup> outlines a comprehensive strategy aimed at ensuring energy security throughout the current decade, all while facilitating a sustainable transition towards a carbon-neutral energy system by 2050. Published in November 2023, this strategy is the outcome of an extensive process which involved a thorough review of Ireland's Electricity and Gas Networks (CEPA report), an extensive public consultation and an Independent Review of the Security of Electricity Supply (the McCarthy Report).

Regarding natural gas, the strategy covers both the short to medium and the long term. For the long term, the document envisions a future with significant reduced gas demand and increased supply of renewable gas. Actions in this space include studies for long-term gas storage solutions capable of storing renewable gases (such as the Kinsale gas field study); securing the existing onshore gas pipelines (from Kinsale field to the transmission pipelines); and ensuring a fit-for-purpose gas grid (Actions 14 to 16).

<sup>16</sup> DECC (2021), *Policy Statement on Security of Electricity Supply*. Available [here](#)

<sup>17</sup> DECC (2023), *Energy Security in Ireland to 2030. Energy Security Package*. Available [here](#).

For the short to medium term, the analysis highlights the need for Ireland to improve its resilience in the event of a disruption to the country's natural gas supplies. Without implementation of new resilience measures, such a disruption could lead to unacceptably high economic and social costs and failure to meet EU N-1 infrastructure standards.

To address this, Action 17 of ESI proposes the implementation of a "Strategic Gas Emergency Reserve to protect Ireland in the event of a gas supply disruption as Ireland makes a secure transition to a majority renewable energy". The strategy underscores that this emergency reserve is a transitional measure, acting as a bridge to long-term renewable gas storage. It states that GNI should develop the proposal in consultation with DECC, with the Minister presenting it to the Government for a final decision in Q2 2024.

The GNI proposal is required to be in line with criteria and requirements determined by the Government, which include:

- a proposal which can be implemented quickly;
- a proposal which does not inadvertently increase gas demand by increasing the supply available on the market;
- a cost-effective proposal at the appropriate scale which provides sufficient resilience if a disruption to gas supply occurs; and
- a proposal which is compatible with the Climate Action and Low Carbon Development Act 2015-2021.

**Securing Ireland's Gas Supply**,<sup>18</sup> an annex of the Energy Security gas review, outlines that DECC, following an extensive consultation with stakeholders, has identified a number of options for addressing the security-of-supply risk. These are:

- reopening of the Irish offshore for new gas exploration;
- underground gas storage;
- a third gas interconnector to the United Kingdom;
- a permanent onshore facility (LNG storage tanks and import capability); and
- an offshore gas emergency reserve (a floating storage and regasification unit).

### 3.3 Affordability policies

This section outlines EU and Irish policies as summarised in the previously referenced Securing

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<sup>18</sup> DECC (2023), Annex 2 – Securing Ireland's Gas Supplies. Available [here](#)

Ireland's Gas Supplies report, published by the Government of Ireland in November 2023.<sup>19</sup>

### 3.3.1 EU

The EU energy framework covers the regulation of gas markets and security of supply. This summarises the key elements of that framework. A specific project, once identified, would need to fall within the framework's requirements. It is noted that significant changes to the framework are currently being prepared through the review and revision of the Gas Directive 2009/73/EC and Gas Regulation (EC) No 715/2009.

- The investment must enhance competition in gas supply and enhance security of supply.
- The level of risk attached to the investment must be such that the investment would not take place unless an exemption was granted.
- The infrastructure must be owned by a natural or legal person which is separate at least in terms of its legal form from the system operators in whose systems that infrastructure will be built.
- Charges must be levied on users of that infrastructure.
- The exemption must not be detrimental to competition in the relevant market's supply as referred to in Article 6(2). Where necessary, non-market-based measures may be applied and should be detailed and justified as part of the Member State's preventive action plan. Measures contained in the plans must be clearly defined, transparent, proportionate, non-discriminatory and verifiable.

### 3.3.2 Ireland

A summary of the Government of Ireland's policy for the cost recovery of the selected strategic option is provided below. This sets out the initial policy context with regards to who pays and project affordability.

- Annual operational costs and gas procurement costs associated with a strategic-led project could be funded by a range of options including through charges levied on Irish energy consumers through a Public Service Obligation (PSO) levy model or tariff structure. CRU, as the regulator, has responsibility for determining and calculating such scheme structures.
- Applying a gas tariff structure involves cost recovery via the existing tariff structure applied by GNI to recover its capital investment from customers. It uses a tiered structure whereby charges depend on customer annual quantity and volume used. Using a tariff structure would imply costs recovered from gas customers only.
- The level of costs recovered by tariffs, if any, would be a matter for CRU as independent regulator.
- A PSO levy is a fixed charge applied to gas customers and potentially to electricity

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<sup>19</sup> DECC (2023), Energy Security in Ireland to 2030. Energy Security Package. Available [here](#).

customers.

- Currently in Ireland there is a PSO levy charged, or payments made to all electricity final customers, to fund schemes designed by Government in support of national renewable energy policy objectives. Over several years, the PSO has included several schemes and currently supports the Renewable Electricity Feed-In Tariff (REFIT) and the Renewable Electricity Support Scheme (RESS), which provides support payments to suppliers to contract with eligible renewable generation projects.
- Applying a PSO levy across gas and electricity connections could be considered appropriate given the importance of gas in electricity generation and, particularly, gas generation's ability to address intermittency in renewable energy. Legislative amendments may be required to provide such an arrangement.
- Any costs recovered through customer bills will be dependent on actual costs, funding and the final allocation mechanism. However, a broad incremental cost could be in the range of 1.5% to 2.5% on customer bills, which is in line with current and historic norms of similar levies (for example, electricity PSO and National Oil Reserves Agency levy).

The above context set out in the GOI report sets out the initial policy which will be further considered and developed in the Financial Case.

### 3.4 GNI strategic objectives

GNI's core business is gas transmission and distribution system operators, and its vision is to decarbonise the network while enhancing security of supply. GNI recognises that systems integration is the future and commits to working with relevant stakeholders to deliver this.

GNI's strategy sets out how GNI will continue to operate and maintain the gas network to ensure safe, reliable, affordable and secure supplies while preparing for a future in which networked gas enables an integrated energy system to achieve net zero. As part of its strategy, GNI has identified six strategic ambitions that provide a clear road map to deliver on GNI's vision and purpose.

- **Resilient energy network:** Transport energy safely and securely today and enable the transition to a decarbonised future.
- **Sustainable energy services:** Deliver reliable and affordable energy solutions for our customers and transition together to transport networked renewable gases at scale. GNI's Sustainability Strategy has three pillars – Environment, Social and Governances and is aligned with the United Nations Sustainable Development Goals.
- **Integrated energy system:** Collaborate with key stakeholders for a future in which networked gas enables an integrated energy system.
- **Excellence in operations:** Operate in an innovative, efficient and sustainable manner.

- **Energised people:** Leverage our past and energise our people to deliver the future of our network.
- **Strong financials:** Maintain financial strength to facilitate future development of a resilient and sustainable network.

## 4 National Context

The planning system in Ireland is a hierarchy of plans, with national, regional and local plans; with each plan having to be consistent with any high-order documentation. **Figure 4-1** summarises the key terrestrial and maritime planning policy documents relating to LNG installations.

| Planning Policy                          | Hierarchy                                                                       | Maritime Policy                                                                                     |
|------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>National</b>                          |                                                                                 |                                                                                                     |
| National Planning Framework              | High Level Aims and Objectives<br><br>National-Focus                            | National Maritime Spatial Plan                                                                      |
| <b>Regional</b>                          |                                                                                 |                                                                                                     |
| Regional Spatial and Economic Strategies | Policies of Regional Significance and Focus for co-operation and implementation | Regional Based Approach to Maritime Spatial Planning                                                |
| <b>Local</b>                             |                                                                                 |                                                                                                     |
| Development Plan and Local Area Plan     | Detailed objectives and locally devised approaches                              | Localised land-sea interaction e.g. coastal management planning, Integrated Coastal Zone Management |

Figure 4-1: Relationship between Ireland Planning Policy and Maritime Policy (Source: National Planning Framework, 2018: 98)

### 4.1 National Planning Framework – First Revision

The National Planning Framework (NPF) – First Revision 2025 (Refer 3.2.2 above)

### 4.2 National Marine Planning Framework

The National Marine Planning Framework (NMPF) is a long term marine spatial framework and is to be read in conjunction with the NPF. The NMPF details how marine activities will interact with each other, ensuring the sustainable use of marine resources up to the year 2040. The NMPF provides overarching marine planning policies (OMPP) which apply to all proposals that are capable of having maritime impacts and Sectoral Marine Planning Policies (SMPP). The following OMPP are considered relevant to LNG facilities:

**Co-existence Policy 1:** *Proposals should demonstrate that they have considered how to optimise the use of space, including through consideration of opportunities for co-existence and co-operation with other activities, enhancing other activities where appropriate.*



*If proposals cannot avoid significant adverse impacts (including displacement) on other activities they must, in order of preference:*

- a) minimise significant adverse impacts,*
- b) mitigate significant adverse impacts, or*
- c) if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.*

**Infrastructure Policy 1:** *Appropriate land-based infrastructure which facilitates marine activity (and vice versa) should be supported. Proposals for appropriate infrastructure that facilitates the diversification or regeneration of marine industries should be supported.*

**Social Benefits Policy 1:** *Proposals that enhance or promote social benefits should be supported. Proposals unable to enhance or promote social benefits should demonstrate that they will, in order of preference:*

- a) minimise, or*
- b) mitigate*

*significant adverse impacts which result in the displacement of other existing or authorised (but yet to be implemented) activities that generate social benefits.*

The following objectives and SMPP are considered relevant to ports, energy production and natural gas storage:

**Energy – Natural Gas Storage Objective:** *Support the development of natural gas storage where appropriate in the context of the outcome of the review of the security of energy supply of Ireland's electricity and natural gas systems. This review is being carried out by Department of the Environment, Climate and Communications, and is focusing on the period to 2030 in the context of ensuring a sustainable pathway to 2050.*

**Natural Gas Storage Policy 1:** *Subject to assessments required for the protection of the environment, and only where in keeping with the outcome of the review of the security of energy supply of Ireland's electricity and natural gas systems (which is being carried out by Department of the Environment, Climate and Communications), natural gas storage proposals should be supported.*

**Ports, Harbours and Shipping Objective 1:** *Safeguard the operation of ports as key actors in the economic wellbeing of the State through the provision of safe and sustainable maritime transport.*

**Ports, Harbours and Shipping Objective 3:** *Sustainable development of the ports sector and full realisation of the National Ports Policy with a view to providing adequate capacity to meet present and future demand, and to adapt to the consequences of climate change.*

**Ports, Harbours and Shipping Policy 1:** *To provide for shipping activity and freedom of navigation the following factors will be taken into account when reaching decisions regarding development and use:*

- *The extent to which the locational decision interferes with existing or planned routes used by shipping, access to ports and harbours and navigational safety. This includes commercial anchorages and approaches to ports as well as key littoral and offshore routes;*
- *A mandatory Navigation Risk Assessment;*
- *Where interference is likely: whether reasonable alternatives can be identified; and*
- *Where there are no reasonable alternatives: whether mitigation through measures adopted in accordance with the principles and procedures established by the International Maritime Organisation can be achieved at no significant cost to the shipping or ports sector.*

In addition the NMPF (page 119) notes that “Security of supply is a key energy policy objective for Ireland however it cannot be examined in isolation from sustainability. Natural gas storage installations and activities could have potential adverse ecological and environmental impacts, which would need to be identified, analysed and mitigated against as part of the forward planning and development management stages of marine planning.”

### 4.3 National Ports Policy

The NPP became operative in 2013 and is a high-level strategic policy document which seeks to facilitate a competitive and effective market for maritime transport services. The NPP provides the overarching policy framework for the governance and future development of Ireland's state-owned port network. The NPP contains legislative and non-legislative measures designed to address current issues facing the sector and to implement appropriate governance structures.

The NPP categorises the port sector into three levels: Ports of National Significance (Tier 1), Ports of National Significance (Tier 2) and Ports of Regional Significance.

Ports of National Significance (Tier 1) are ports that:

- Are responsible for at least 15 to 20% of overall tonnage through Irish ports; and
- Have clear potential to lead the development of future port capacity in the medium and long term, when and as required.

Dublin Port Company, Port of Cork Company and Shannon-Foynes Port Company have been identified as Tier 1. A key objective of the NPP is for the continued commercial development of these ports.

Ports of National Significance (Tier 2) are ports that:

- Are responsible for at least 2.5% of overall tonnage through Irish ports;
- Have clear, demonstrable potential to handle higher volumes of unitised traffic; and
- Have the existing transport links to serve a wider, national marketplace beyond their immediate region.

Port of Waterford Company and Rosslare Europort meet these requirements and are classified as Tier 2 ports.

There are 14 ports that fall within the category of Ports of Regional Significance (Tier 3). Of which, five are stated owned port companies and the remaining nine ports are operated by local authorities. The five stated owned ports are:

- Drogheda Port Company;
- Dún Laoghaire Harbour Company;
- Galway Harbour Company;
- New Ross Port Company; and
- Wicklow Port Company.

The NPF defines these Tier 3 ports as those that serve an important regional purpose and/or specialised trades or maritime tourism. The NPF considers these ports are limited in their future potential as centres of commercial shipping.

The NPP is currently under review, involving a two-part consultation process. Part 1 involved consultation on the Issues Paper with the period for submissions closing on the 15<sup>th</sup> January 2024. Part 2 will be a shorter public consultation on the Draft Policy paper. The new draft policy paper is anticipated to be presented to the Irish Government in 2025.

#### **4.4 Pipeline Legislation**

The main legislative requirements for approval to construct pipelines are contained in various Acts including:

- The Gas Act 1976. Under Section 39A of the Gas Act 1976 (as amended) GNI apply to the Commission for Energy Regulation for consent to construct a transmission pipeline.
- The Planning and Development Act 2000 (as amended to include the Strategic Gas Infrastructure Development Act 2006). Under this Act GNI apply to An Bord Pleanála for planning permission to construct a pipeline for a certain category of pipeline projects.

#### **4.5 Primary Design Standard**

The pipeline shall be designed and constructed in accordance with the requirements of I.S. 328:2021 (Gas Transmission – Pipelines and Pipeline Installations) is the standard specification and principal technical guidance document in relation to onshore gas transmission pipelines and pipeline installations. This Standard applies to the design, construction, inspection, testing, operation, maintenance and decommissioning of steel pipelines and pipeline installations for the transmission of 1<sup>st</sup> and 2<sup>nd</sup> family gases, natural gas and substitute natural gas, (e.g. Bio-methane gas) at maximum operating pressures over 16 bar and temperatures between – 25 °C and + 120 °C. The upper pressure limit is not defined but in current general practice this extends up to 100

bar'.

## 4.6 Codes and Standards

The following codes and standards may be applicable.

| Document Reference | Document Title                         |
|--------------------|----------------------------------------|
| API Spec 5L        | Specification for Linepipe             |
| ASME B31.12        | Hydrogen Piping and Pipelines          |
| ASME B36.10        | Welded and Seamless Wrought Steel Pipe |
|                    |                                        |

In addition to the above the following Client documents and procedures may be referenced:

| Document Reference | Document Title             |
|--------------------|----------------------------|
| AM/PR/088          | Pipeline Routing Procedure |
|                    |                            |

## 4.7 HSA Guidance on technical land-use planning advice

The Guidance interprets Health and Safety Authority (HSA) policy on technical land-use planning (TLUP) advice under the Seveso-III Directive (Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC), as implemented by the Control of Major Accident Hazards Regulations 2015 (COMAH). The HSA is the statutory body providing TLUP advice in Ireland, which it does at the request of a planning authority. The Guidance document explains in detail how the HSA will go about developing the required technical advice. It identifies sector types and explains, for each sector, the nature of accidents that will be considered, along with the scientific approach to estimating the likelihood of those accidents occurring.

## 4.8 Gas Safety Regulatory Framework for Ireland – Safety Case Guidelines for Natural Gas & LPG Licensed Undertakings (CRU19155)

This document provides guidelines for gas undertakings (Natural Gas, LPG, CNG suppliers, shippers, and storage operators) to prepare and maintain safety cases under Ireland's Gas Safety Regulatory Framework. These safety cases demonstrate that risks are managed to a level that is As Low as Reasonably Practicable (ALARP). At the time of writing, this document noted that *'at the time of publishing, there are currently no LNG undertakings on-shore within Ireland, under the CRU's regulatory jurisdiction. As a result, the CRU will not publish requirements for LNG undertakings as part*

*of the Safety Case Guidelines main document at this time.'*

However, the document noted that LNG undertakings fall under the safety requirements of the Seveso III Directive and S.I 209 of 2015 and as such there is likely significant overlap between the requirements of the CRU and the HSA. Any review of requirements is to consider this overlap with both CRU and HSA. It is unknown when the relevant requirements for LNG undertakings will be published.

## 5 Regional Context

### 5.1 Regional Spatial and Economic Strategies

Section 63(1) of the Local Government Reform Act 2014 and Chapter III of The Planning and Development Act 2000 Amended (Planning Act) requires each regional assembly to prepare and implement a Regional Spatial and Economic Strategy (RSES). A RSES sets out the strategic regional development framework for a region, with the primary objective to implement the NPF. In respect to regional economic strategy a RSES addresses (Section 23(2)(b) of the Planning Act):

- Enabling conditions for creating and sustaining jobs;
- Enhancing overall economic performance of a region;
- Proposals for augmenting economic performance of a region; and
- Enhancing regional innovation capacity;

In regard to the regional spatial strategy, Section 23(2)(c) of the Planning Act states that a RSES is to address the following:

- Location of employment, industrial and commercial development, retail development and housing;
- The provision of transportation, water services, energy and communication networks, educational, healthcare, sports and community facilities; and
- The promotion of sustainable settlement and transportation strategies.

## 6 Local Context

### 6.1 City and County Development Plans

Within the Irish planning system, the county or city development plan is the principal planning strategy document for the development of a local authority area over the statutory time period of the plan. The development plan gives spatial expression to the physical, economic, social and environmental needs of the community, in order to support and regulate new development, enhance valued assets and amenities and protect the environment. Development Plans are valid for a period of six years.

Section 10(1) of the Planning Act states that:

*'A development plan shall set out an overall strategy for the proper planning and sustainable development of the area of the development plan and shall consist of a written statement and a plan or plans indicating the development objectives for the area in question.'*

Further to this, the key role of the development plan can be summarized as:

- **Vision:** establishing an inclusive local vision for generating positive change in the future growth, renewal and protection of the plan area.
- **Policy:** adapting national and regional policy objectives to the local context and providing the policy framework within which planning decisions on individual development proposals can be made.
- **Strategy:** enabling strategic consideration of all relevant factors, to ensure an equitable, balanced and transparent approach to decision-making on spatial planning and physical development issues.
- **Investment:** influencing strategic and local investment in infrastructure and services by both the public and private sectors, through formulating policies governing the nature, scale and location of future change and planned development.
- **Delivery:** balancing competing interests and different future development options in the common good, to deliver better quality planning and long-term sustainable development outcomes.

#### 6.1.1 Kerry County Development Plan 2022-2028

The Core Strategy of the Development Plan contains the following paragraph:

*'3.5.1.4 North Kerry / West Limerick / Shannon Estuary / Clare Settlement Network*

*Kerry County Council supports the economic role and potential of the established towns of Listowel, Abbeyfeale, Newcastle West (Key Town) and Kilrush as economic drivers in a potential North*



*Kerry/West Limerick/Clare network connected with the Shannon Estuary referred to as the North Kerry/Shannon Estuary Network. This includes the Shannon Integrated Framework Plan (SIFP) area and strategic locations identified under the SIFP as a Shannon Estuary Coastal network.*

*This area is viewed as a driver for economic growth within the County and Region. There is potential for innovative projects, collaboration between stakeholders and sectors, infrastructure projects (including multi-modal transport infrastructure, more frequent public transport services and digital connectivity) to/from and within the network to unlock the strengths and opportunities. This includes the County's Regional Town of Listowel, Ballybunion and support for economic interaction with the AEC, Strategic Development Sites in the Shannon Estuary, the Kerry Hub and Knowledge Triangle and cross country boundary connectivity to other settlements in a network 11 (including Newcastle West in Limerick as a Key Town, Port of Shannon Foynes, Limerick-Shannon Metropolitan Area etc).'*

The following Development Plan objectives are applicable to the potential site and the Conceptual Development.

**'KCDP 9-23**

*Support and promote the delivery of the Strategic Development Locations (SDLs) as set out in the SIFP for the Shannon Estuary subject to the implementation of mitigation measures outlined in the SEA and AA undertaken on SIFP and zoned in the Local Authority Development Plans.'*

**'KCDP 9-24**

*Support the promotion, marketing and seeking of financial and expert support for the Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary and specific projects emerging from the plan. Projects shall be subject to the relevant environmental assessment requirements including SEA, EIA, SFRA and AA as appropriate.'*

**'KCDP 9-25**

*Promote and facilitate the sustainable development of the Tarbert-Ballylongford landbank for industry, utilising the presence of deep water, existing infrastructure, natural resources, and waterside location to harness the potential of this Strategic Location. Proposals for marine related industry, general industrial development, and particularly those industries creating a synergism with existing uses and contributing to the development of a strategic energy hub at this location will also be encouraged.'*

**'KCDP 12-1**

*Support and facilitate the sustainable provision of a reliable energy supply in the County, with emphasis on increasing energy supplies derived from renewable resources whilst seeking to protect and maintain biodiversity, archaeological and built heritage, the landscape and residential amenity and integration of spatial planning and energy planning in the county.'*

**'KCDP 12-3**



*Facilitate the sustainable expansion of the gas network, including the facilitation of a gas importation facility in the Tarbert/Ballylongford Landbank.'*

Section 12.2 of the Development Plan supports the strengthening of the gas network "to progress development of infrastructure to enable strategic energy projects in the county, including the Tarbert/Ballylongford Landbank".

### **6.1.2 Clare County Development Plan 2023-2029**

The following Development Plan objectives are applicable to the potential site and the Conceptual Development.

#### **'CDP6.10**

*It is an objective of Clare County Council:*

*To proactively implement the Strategic Integrated Framework Plan for the Shannon Estuary including the mitigation measures identified in Volume 9 of this Plan; and*

*To support the promotion, marketing and seeking of financial and expertise support for the Strategic Integrated Framework Plan for the Shannon Estuary and specific projects emerging there from.'*

#### **'CDP11.44**

*It is an objective of Clare County Council:*

*To promote and facilitate the sustainable development, maintenance and upgrading of electricity and gas network grid infrastructure, to integrate renewable energy sources, thereby creating a secure and efficient energy supply and storage system for County Clare which is ready to meet increased demand as the regional economy grows.'*

#### **'CDP11.46**

*It is an objective of Clare County Council:*

*To facilitate the delivery and expansion of the natural gas infrastructure throughout the county for both domestic and business/industry use and to have regard to the location of existing gas infrastructure in the assessment of planning application;*

*To promote renewable gas leading to carbon emission reductions in agriculture, industry, heating and transport as well as sustainable local employment opportunities;*

*To support the production and storage of green hydrogen and the transition of the gas network to a carbon neutral gas network by 2050, which will assist County Clare, the Region and Ireland in becoming a low carbon society;*

*To support investment in the sustainable development of the agricultural biogas sector and regional gas supply projects which strengthen gas networks in the region and assist integration of renewable gas with the grid network;*

*To support investment in developing renewable gas and provision of a CNG refueling infrastructure which will help reduce greenhouse gas emissions in both the agriculture and transport sectors and support carbon capture and storage initiatives, which have the potential to decarbonize power generation at scale;*

*To facilitate the strengthening of the gas network sustainably to service settlements and employment areas in County Clare and to facilitate progress in developing the infrastructure to enable strategic energy projects in the county including those identified in the Strategic Integrated Framework Plan for the Shannon Estuary (SIFP); and,*

*To ensure compliance with the environmental requirements of Objective CDP3.3 of this plan.'*

**'CDP12.1**

*It is an objective of Clare County Council:*

*To support and implement the inter-jurisdictional Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary in conjunction with the other relevant local authorities and agencies. All proposed developments shall be in accordance with the SEA Directive, Birds and Habitats Directives, Water Framework Directive and Shellfish Waters Directive, Floods Directive and EIA Directive. All proposed developments shall incorporate the Mitigation Measures as contained in the SIFP for ensuring the integrity of the Natura 2000 Network.*

*To proactively market the Strategic Development Locations in County Clare at Inishmurry/Cahiracon and Moneypoint as potential locations for future economic development.'*

### **6.1.3 Limerick City and County Development Plan 2022-2028**

The following Development Plan objectives are applicable to the potential site and the Conceptual Development.

**'ECON 056**

*It is an objective of the Council to support and facilitate the Strategic Integrated Framework Plan for the Shannon Estuary.'*

**'ECON 057**

*It is an objective of the Council to safeguard the Strategic Development Locations at Foynes Port, Foynes Island and Aughinish Island for the sustainable growth and development of marine related industry and industrial development at Askeaton. All proposed developments shall be in accordance with regional and national priorities and the SEA Directive, Birds and Habitats Directive, Water Framework Directive, Shellfish Waters Directive, Floods Directive and EIA Directive. Buffer zones shall be incorporated into proposals for developments where necessary to preserve potentially valuable habitats, for example, areas of estuary, shallow bays and inlets, mudflats, lagoon, salt marsh and woodland habitat, which occur at or surrounding these Strategic Development Locations. The extent of such buffer distances shall be established in consultation with relevant statutory bodies. Detailed*

**'IN 016**

[illegible]

## 7 Site & Route Selection Process & Methodology

This section sets out the methodology and outcomes for the site and route selection process undertaken to identify the emerging Preferred Site and associated pipeline route for the Strategic Gas emergency Reserve (SGER). The process was designed to be systematic, transparent and aligned with statutory requirements and best practice guidance.

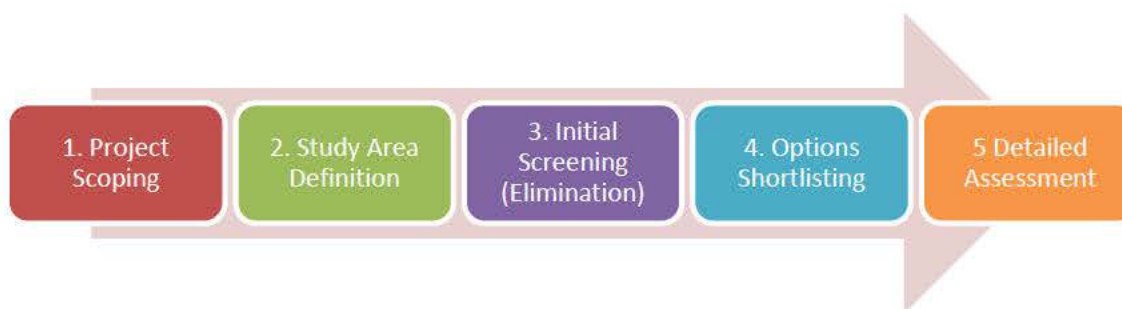
The methodology comprises five distinct steps applied to both the site selection process and the pipeline route selection process culminating in the identification of the emerging preferred site and route. The methodologies are described in greater detail in the following sections.

The process is iterative and decisions at each stage may be revisited if material new information arises during subsequent stages. Professional judgement was applied throughout.

### 7.1 Site Selection Process Overview – 5 Steps

This section sets out the methodology, assessment process and the outcomes of the site selection assessment. This assessment identified and appraised the potential options for the location of the development works required to facilitate the preferred technology option and to identify “Emerging Preferred Site(s)”. The site selection process involves the development of a structured and systematic process for the purpose of identifying the Emerging Preferred Site(s). An overview of the methodology is illustrated in Figure 7-1. These five distinct steps provide the framework for a project specific narrative, recording the project development process and decision-making regarding site selection. The process is an iterative one and will continue to be informed by ongoing work in subsequent stages; new information may require re-evaluation of decisions made in previous stages.

Given the specified technical requirements for a project of this nature, such as water depth, sheltering requirements etc, there is likely to be only a select number of coastal locations that can satisfy these requirements. The ‘Initial Screening’ approach has included the ‘must have’ technical project requirements, which are fundamental to the success of the project and applied these as Primary and Secondary Constraints. Environmental and ecological constraints have been considered at a later step.



The initial site selection process has focused on the FSRU location. As such, the pipeline route selection criteria was undertaken separately (commencing at Step 4 of this Site Selection Process) and ultimately incorporated into the site selection process (Step 5).

## 7.2 Route Selection Process

The pipeline route selection process is focused on FSRU jetty and onshore gas plant sites identified in Step 4b of the Site Selection Process for the Strategic Gas Emergency Reserve. The process is based on the Strategic Gas Emergency Reserve satisfying the N-1 case.

A study area for the route selection process will be developed based on the location of the potential sites identified in Step 4b of the Site Selection Process and the nearest viable connection point to the gas transmission network.

The purpose of the route selection is to identify and appraise the potential options for the preliminary route corridors and to identify "Emerging Preferred Route(s)".

The route selection involves the development of a structured and systematic process for the purpose of identifying the Emerging Preferred Route(s) for the shortlisted sites. The pipeline route selection process is proposed to dovetail with the site selection process in Step 5, with step 5 being a combined detailed assessment and MCA of the preferred sites and associated routes.

A 5-step process as indicated below has been established by the project team based on professional experience in undertaking pipeline route selections for infrastructure projects, IS 328 and GNI pipe routing guidance and where relevant the EPA's 2022 EIAR guidance has been referred to. The methodology and process is similar to that used by GNI in other pipeline routing assessments, with the exception of step 4b which has been defined for this specific process.

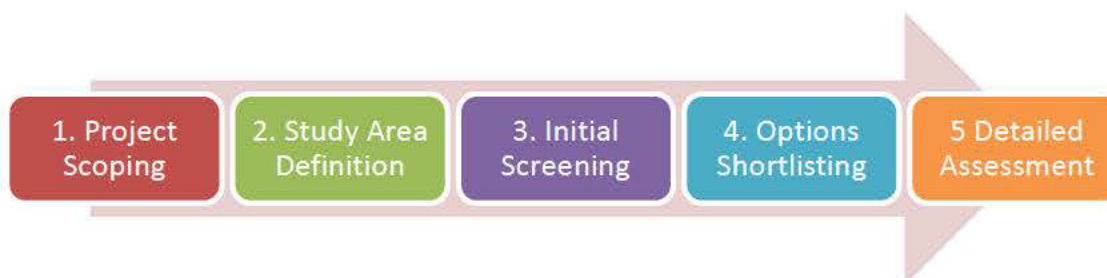


Figure 7-2 Pipeline Route Selection Process



### 7.3 Site and Route Selection Interface

The site and route selection processes are designed to operate in parallel but converge at key stages to ensure the preferred site and its associated pipeline route are assessed as an integrated solution. This dovetailing approach is set out in Figure 7-3 and provides a systematic mechanism for evaluating reasonable alternatives.

The interface ensures that decisions on site suitability are informed by the feasibility of the associated pipeline route and vice versa. This is essential as the technical, environmental and planning constraints affecting the route can significantly influence the deliverability of the site option. By combining these assessments, the emerging preferred site and route option for the SGER can be identified.

The site and route selection processes interact in a number of ways as follows:

- Step 4 of Site Selection identifies up to three shortlisted sites based on strategic alignment and programme deliverability
- For each shortlisted site, Step 4 of Route Selection defines up to three potential 1 km wide pipeline corridors connecting the site to the NTS. These corridors are mapped and assessed against constraints.
- A preferred corridor for each site is then selected through qualitative screening against strategic objectives, ensuring that route feasibility supports the site's deliverability
- Step 5 combines both processes: the preferred 1 km corridor for each site is refined to approximately 100 metres and a Multi Criteria Analysis (MCA) is undertaken to evaluate the site and route together.

The combined site and route selection processes allow for the identification of the emerging preferred site and route for the SGER.



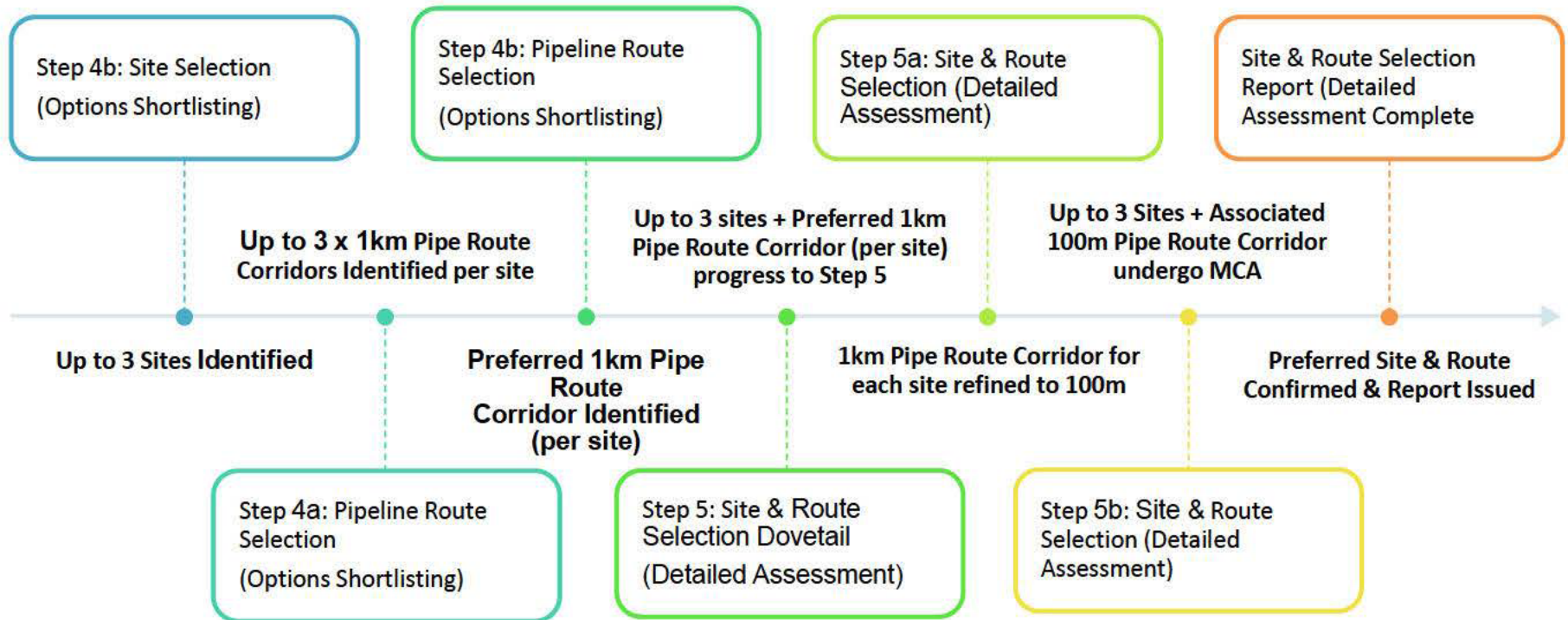


Figure 7-3 Overview of Site and Route Selection Interface

## **7.4 Site & Route Selection (Project Scoping – Step 1)**

### **7.4.1 Project Need**

In 2022, 26% of Ireland's gas demand was supplied from indigenous sources, i.e. the Corrib gas field and small volumes of biomethane. The balance of supply, 74%, was met from the UK via Moffat in Scotland. As the year-on-year production from the Corrib gas field declines, Ireland will increasingly rely on imports of gas from the UK via the single supply point, which is predicted to provide 90% of gas by 2030.

Due to the decline in North Sea production, the UK is expected to increasingly import gas from Norway, Russia, Qatar and various other countries outside of Europe. Therefore, there is potential for a greater risk of supply disruption associated with the gas supply route from the UK. The Government's 'National Risk Assessment 2023 – Overview of Strategic Risks' identifies the lack of diversity of supply sources and storage as a risk for security of supply.

The Department of the Environment, Climate and Communications (DECC) carried out a Review of the Security of Energy Supply of Ireland's Electricity and Gas Systems. This review focused on the security of energy supply up to 2030, but within the context of ensuring a sustainable transition to renewable energy by 2050. The review considered the risks to both gas and electricity supplies and assessed a range of measures including the need for additional capacity of indigenous renewable energy, importing energy, energy storage, fuel diversification and renewable gases (such as hydrogen). The review included technical analysis conducted by CEPA and the results of the DECC led public consultation.

The review concluded that natural gas supplies and infrastructure are adequate to meet demand projections, but do not have adequate resilience in case of a major disruption to gas imports. Ireland is an outlier in this regard compared to other EU countries. The review identified renewable gas-compatible storage solutions as an enduring energy security need as well as a Strategic Gas Emergency Reserve on a transitional basis to address security needs in the medium-term.

Gas storage is used as a means of providing security of supply in many countries, as it delivers an additional reserve of gas to meet occasions when there is strong demand or supply disruptions. Ireland currently has no operating gas storage facilities. Establishing large scale renewable compatible gas storage can offer an enduring solution to satisfy security of supply to Ireland's energy system and will allow Ireland to comply with the EU Gas Security of Supply Regulation. In the absence of a proposed Emergency Reserve, Ireland will remain non-compliant and could become susceptible to gas outages. It is proposed that the natural gas reserve will operate on a transitional basis until the technology to produce renewable gases matures and replaces natural gas in line with the National Hydrogen Strategy and National Biomethane Strategy.

Gas Networks Ireland (GNI) was engaged to review potential Strategic Gas Emergency Reserves, in which two emerging proposals were determined that would be capable of responding to an N-

1 (ROI+IOM) case and a Full UK Outage (ROI+IOM+NI) case. These would take the form of either a FSRU, which would allow for the importation of and storage of LNG within Ireland's jurisdictional waters, or the Onshore Salt Cavern Storage located in Larne, Northern Ireland. The FSRU and salt cavern would be connected to the national grid network for injection in case of a supply emergency. The N-1 case would rely on the FSRU only, while the Full UK Outage case would rely on the FSRU and the Onshore Salt Cavern.

This review was prepared on the basis of the Strategic Gas Emergency Reserve satisfying the N-1 case. For the N-1 calculation, the largest piece of gas infrastructure, as defined in the Regulation, is the loss of SWSOS IC2. Therefore, the N-1 failure mode constitutes a partial disruption to the gas supply from the Moffat entry point..

#### **7.4.2 Project Concept**

This section provides a description of the emerging technology option which has been considered for the site selection process. For the initial site selection criteria, the process sought to accommodate the likely size of the development without being overly conservative. The detailed characteristics of the development concept including the FSRU and LNGC design and suitability will be subject to detailed risk assessment to confirm suitability of access etc. The project concept can be summarised as follows:

##### **7.4.2.1 LNG Jetty & Vessels**

The project concept will include a jetty that can accommodate a permanently moored FSRU ship. The proposed FSRU will be up to approximately 300m long, up to approximately 46m wide with a draft of up to approximately 13m and a height of up to approximately 26m based on a typical FSRU arrangement. LNG will be stored onboard the FSRU with the storage capacity of between 174,000 m<sup>3</sup> and 200,000 m<sup>3</sup> (based on current understanding of market availability). LNG will be regasified onboard at rates required to meet a total daily demand of approximately 11 million Sm<sup>3</sup>/d (approximately 121 GWh/day). The heat required for LNG regasification will primarily be from seawater through heat exchangers, via an aqueous glycol closed loop that may be supplemented by heat from gas fired heaters during periods when the ambient sea water temperatures are too low to provide sufficient heat. The FSRU will include onboard power generation plant of approximately 21 MW capacity (propulsion & onboard power) based on comparison with existing vessels of similar capacity.

The jetty will also be required to accommodate LNG Carrier (LNGC) visits to supply LNG to the FSRU when the stored LNG volumes drop below a predetermined level. It is anticipated that the majority of vessels visiting the terminal will be between 180,000 to 155,000m<sup>3</sup>. In the event of a supply interruption, nearby ports such as Milford Haven (which is capable of taking Q-Max and smaller vessels) may be required to take the first available pre-qualified LNGC vessels until a stable supply chain is developed. Visiting LNGC will be sourced in the market, however for the

purpose of site selection it has been assumed that the LNG berth will need to accommodate a range of LNGC vessel sizes (refer to Table 7-1).

*Table 7-1 Typical Range of LNGC Sizes*

| <b>LNGC</b>       | <b>Capacity</b>       | <b>Length</b> | <b>Width</b> | <b>Draft</b> |
|-------------------|-----------------------|---------------|--------------|--------------|
| Conventional Size | 180,000m <sup>3</sup> | 300m          | 48m          | 12.5m        |
| Q-Flex            | 217,000m <sup>3</sup> | 315m          | 50m          | 11m          |
| Q-Max             | 266,000m <sup>3</sup> | 345m          | 55m          | 12m          |

In normal operation the FSRU will be in standby mode with minimum send out levels of up to approximately 50 million standard cubic feet per day (mmscfd). Based on maintaining a minimum inventory of 50%, it is estimated that up to approximately 12 LNGC visits per year will be required. In an N-1 operational event, the FSRU will be in full operational mode with send out levels of approximately 390mmscfd. When operating in N-1 mode, it is estimated that up to approximately 24 LNGC visits per year will be required. In the peak winter demand period, this would equate to 1 LNGC visit during the initial 10-day winter period, a second LNGC visit within the first 30-day winter period and a third and fourth LNGC visit within the first 90-day winter period. LNG will be transferred from the LNGC, via connecting cryogenic hoses, into the storage tanks of the FSRU.

The jetty will consist of an unloading platform and mooring/breasting dolphins, and will accommodate loading arms, gas piping and associated infrastructure required to transfer gas to shore. It is proposed that three to four 60-80t bollard pull tugs would be required for each carrier berthing and three pull tugs for departure. When an LNGC is alongside it is estimated that one tug will be required to standby therefore sufficient space will need to be provided. No tugs will be required if there is no LNGC. For the purposes of this report, it is assumed that space will be required to accommodate four no. pull tugs unless an alternative location/supply of tug capacity is available within the proximity of the jetty.

#### *7.4.2.2 Onshore Gas Plant and Above Ground Installation*

Onshore facilities will be required including gas conditioning equipment, a control room, a guard house, workshop, maintenance buildings, administrative building, instrument air generator, and a fire water system. An Above Ground Installation (AGI) will also be required at the point of transfer of the gas into the pipeline connecting the LNG reception facilities with the gas grid. The AGI is to include an odorization facility, gas metering plant, pressure control equipment and a pipeline protection system. A medium voltage (10/20 kV) connection to supply power will be required. A 20ha site limitation has been identified by the Engineering Team as the minimum required area to provide the relevant onshore gas plant, AGI, provision of landscaping, drainage measures and provision of suitable space to allow for future-proofing/transition to renewables.

#### *7.4.2.3 Pipeline*

A gas pipeline will be required to connect the onshore gas plant to the national gas transmission

network. There are a number of pipeline corridor requirements that were considered including minimum dimensions, clearances, and land use constraints necessary to ensure the protection of pipelines and adequate access and space is available for pipeline construction, future inspection, and repair is provided. Significant local restrictions and obstacles inevitably will determine the extent to which these requirements are achieved over the entire length of the route. At such locations specific construction and pipeline protection measures will be required.

### **7.4.3 Technical Project Requirements (Site and Pipeline Route)**

Based on the above project concept the following technical requirements for the site selection process are identified below and further expanded upon in Section 7.4. The site selection process has been designed to incorporate flexibility to accommodate for any future development of the technical project requirements.

#### **7.4.3.1 LNG Jetty**

- Must accommodate safe and secure mooring of an FSRU of up to approximately 300m length, up to approximately 46m width with a draft of up to approximately 13m.
- Should be capable of regularly receiving and providing secure berthing for a range of LNG Carriers as set out in Table 7-1. The LNGc is to be moored alongside the FSRU (seaward side) in a ship-to-ship transfer configuration for the unloading of LNG into the FSRU.
- For the purpose of site selection, it is assumed that the jetty is to have capacity to accommodate up to 4 x 60-80t bollard pull tugs, unless there is a suitable anchorage or the proposed location can provide access to adequate tug capacity in the immediate vicinity.
- Must have access to a deep-water channel greater than 13m depth below the level of chart datum.
- Must have access to a harbour with adequate entrance.
- Must have access to a suitable navigational harbour channel.
- Must be capable of providing adequate sheltering.
- Must be capable of providing sufficient turning circles for the LNGC.
- Must be in a location that is suitably separated from sensitive interfaces.
- Must be in a location that can provide a suitable safety exclusion zone.
- Ability to utilise waste heat from uses in proximity should be considered.
- Should have immediate adjacency to the jetty and onshore site for gas conditioning/compression as appropriate to further transfer of gas into the national gas grid.

#### **7.4.3.2 Onshore Gas Plant**

- Should provide an onshore site area of c. 20ha to accommodate the necessary infrastructure including firewater tanks, LNG control building, warehouse, compressor building etc. [which may be further reduced as the project definition matures.]
- An AGI to include an odourisation facility, chromatography, gas metering, pressure control equipment and pipeline protection system. The AGI will facilitate the export of natural gas to the national gas transmission network.
- Must have ability to access the existing road network.
- Must ability to access services and utilities.
- The site will require a connection from the electrical transmission grid and the national gas distribution network.

#### 7.4.3.3 Pipeline

- Technical project requirements for the pipeline are to be in accordance with I.S. 328 guidance. Initial requirements include:
  - Must have an installed pipeline capacity to supply up to 21 million MSm<sup>3</sup>/d (approximately 226 GWh/day) of natural gas to the Irish gas transmission network via a 24" (NB) pipeline.

## 7.5 Site Selection (Study Area Definition – Step 2)

### 7.5.1 Scope of the Study Area

The purpose of defining a suitable study area is to facilitate the identification of key constraints within the study areas, to allow alternatives to be examined, to develop feasible site and route corridor options and to carry out an assessment of these options leading to the identification of an emerging preferred site/corridor.

The general principle used to define the location and extent of any study area is the same i.e., that it should be bound by natural or strategic, administrative, or national boundaries if/where appropriate and should be large enough to capture the following:

- GNI strategic requirements (informed by the Project Need), connection points / fixed points, etc.
- Existing and proposed GNI infrastructure
- Resilience requirements
- Associated / relevant infrastructure

It is noted that while the study area boundaries offer a broad outline to the study area for the proposed project, they should not be considered fixed or rigid. The study area may be altered to reflect more detailed information as the project develops, or it may be the case that the final solution may not be entirely within the original defined study area.

Acknowledging the national importance of the project and its strategic objective to 'deliver a solution as soon as possible', the initial focus of the site selection process was confined to the Republic of Ireland and its coastal (territorial) waters where expeditious delivery is more feasible.

The site selection study area encompasses all counties with coastal access, necessary for siting the FSRU and for receiving LNG Carriers to supply LNG to the FSRU as required. The initial study area included the counties of Donegal, Leitrim, Sligo, Mayo, Galway, Clare, Limerick, Kerry, Cork, Waterford, Wexford, Wicklow, Dublin, Meath, and Louth.





Figure 7-4 Step 2: Study Area Definition

## 7.6 Site Selection (Initial Screening – Step 3)

### 7.6.1 Introduction

The purpose of Step 3 'Initial Screening' was to identify major constraints within each study area to avoid these where possible. This was primarily a desktop exercise. The main focus of this stage was the LNG Jetty's location; the pipeline route selection process is detailed in Section 7.7.

Step 3 uses the Technical Project Requirements to identify primary and secondary constraints based on industry guidance. These constraints were then used to identify suitable sites. Other constraints such as ecological were considered at later stages.

Primary Constraints typically relate to major technical obstacles. Project technical requirements as detailed in Section 7.2.3 'must' be met, whereas primary constraints are those critical or related to major technical hazards. These project-specific technical requirements have been identified through literature review of industry guidance, engagement with expert maritime advisors and professional experience.

Secondary Constraints are those which are still critical but are considered less major technical obstacles which could potentially be mitigated against. These constraints have also been identified



through a literature review, engagement with expert maritime advisors and professional experience.

The Initial Screening was undertaken in two steps: reducing the number of parcels by applying the primary constraints and then applying the secondary constraints. The reduced number of land parcels were then brought forward to Step 4.

## 7.6.2 Screening -Primary Constraints

This sub-section sets out the Primary Constraints and their basis for inclusion. Primary constraints were screened on a Pass / Fail basis.

### 7.6.2.1 *Absence of Existing Port Company with Management & Safety Systems in Place*

In line with Strategic Objectives 1, 2, 3 and 5, the solution is to be delivered as soon as possible. As outlined above, the FSRU which will be stationed permanently at a jetty. It is anticipated that there will be a small number of LNGC visits a year during normal operation. This would increase significantly under the N-1 operation case.

Given the relatively low number of proposed visits per year in a normal operation/standby case, it is considered impractical, inefficient use of resources and uneconomical to select a site which would require the establishment of a new port company. Being located within an existing Port Company which has existing management / systems in place, is therefore considered a primary requirement. It is noted that these management systems may need revisions / amendments.

The Harbours Act 1996 & 2015, National Ports Policy and Irish Maritime Development Office provides a list of existing Irish



Port Companies. The following figure indicates the location of the existing fourteen (14) Port Companies within the Study Area.

For an LNG project which will entail the transportation of hazardous cargo by large vessels, and the handling and storage of significant quantities of hazardous cargo in port; the safe and competent management of risks associated with these operations have been deemed as an important factor. In this regard, controls which are typical to existing operational Port Companies, include the following:

- *Navigation Services:* Clear channels of communications for safe vessel navigation, appropriate guidance for all port users including port entry and departure guidelines, signage/buoys/markings, pilotage, tug assistance, etc.
- *Traffic Control:* The implementation of vessel traffic management systems to coordinate ship movements, manage berthing schedules, and ensure collision avoidance.
- *Safety and Security:* Enforce strict safety protocols, security zones, and surveillance systems to protect LNG operations, especially during sensitive operations including berthing and cargo transfer operations.
- *Emergency Response:* Well-coordinated emergency response plans, including firefighting and spill containment capabilities.
- *Environmental Management:* The monitoring and management of the environmental impact of the LNG operations, ensuring compliance with relevant regulations and minimising the impact on local ecosystems. This will include facilitating as appropriate the necessary services for visiting vessels in terms of waste disposal and management.
- *Stakeholder Coordination:* Facilitate communication between terminal operators, shipping companies, regulatory bodies, leisure users and emergency services.

Each of these components will play a role in ensuring efficient, safe, and environmentally responsible LNG terminal operations within controlled waterways.

The following was considered a pass/fail in meeting this primary constraint:

**Pass:** Areas located within the statutory jurisdiction of an existing Port Company; and

**Fail:** Areas located outside the statutory jurisdiction of an existing Port Company.

#### 7.6.2.2 *Absence of Safety of Navigation*

Safe navigation including adequate harbour entrance/guidance, as well as a navigational channel with minimum width and water depth to allow access to berth is required. Without these the safe navigation of the FSRU and LNFC may not be possible. As such in line with Strategic Objection No. 5; absence of safety of navigation is considered a primary constraint.

SIGTTO IP 14 and the 2024 Liquefied Gas Terminals: Site Selection, Design and Operation of Marine Facilities recommend that at the stage of site selection (subject to considerations in terms of the number and sizes of vessels to be accommodated), technical considerations in relation to ship shore interface are required. This, with respect to safe port / terminal approach is achieved by ensuring the required depth of sheltered water, provision of sufficient channel width and suitable harbour entrance width.

The size and type of vessel will influence the design and location of the jetty, and the water depth required. For the purposes of Step 3; the type of vessel selected is the above referenced FSRU and a conventional size LNGC. The majority of global receiving terminals can accommodate a conventional size FSRU, whereas only c.32% of global receiving terminals are able to accommodate the largest Q-Max vessel. The ability for a range of LNGCs to access the proposed site is considered in further detail in Step 5 of the site selection process for shortlisted sites.

The manoeuvring characteristics of an LNGC in a port will be affected by wind and speed. Due to the features of the cargo tanks, LNGCs, in general, have higher freeboard and a wider body than other large ships, with a relatively shallow draft. The windage area of an LNGC can be in excess of 7,000m<sup>2</sup> which makes LNG vessels particularly challenging to handle in high winds.

Safety of navigation is therefore adopted as a primary requirement as inability to provide this may result in an outcome that does not meet and exceed industry best practice. For the purposes of this exercise the following criteria were used in determining safety of navigation and were considered a pass/fail as follows:

Adequate harbour entrance

**Pass:** Harbour entrance to be at least equal to or wider than the length of the ship, i.e. 300m for a Conventional LNGC<sup>20</sup> and the FSRU.

**Fail:** Harbour entrance less than the length of the ship, i.e. 299m for a Conventional LNGC<sup>21</sup> and the FSRU.

Adequate navigational harbour channel

**Pass:** Harbour channel has a minimum width of approximately five times the beam of the ship<sup>22</sup>, as such the harbour channel should be approximately 240m to accommodate the technical requirements of a Conventional LNGC.

**Fail:** Harbour channel has a minimum width of less than five times the beam of the ship<sup>23</sup>, i.e. less than approximately 240m.

Adequate water depth for access

**Pass:** Water depth for access more than 13 meters below the level of chart datum<sup>24</sup>.

**Failure:** Water depth for access less than 13 meters below the level of chart datum<sup>25</sup>.

It is noted that consideration was also given to existing Port Masterplans where proposals were being developed to increase water depths [Such as Port of Galway] and further develop the existing harbour areas. The adequacy of each port was assessed against the relevant constraint to determine whether it could potentially meet the project requirements at some stage in the future. In all cases, this was found not to be achievable, e.g. proposals to increase water depths at Port of Galway and Dublin Port were not sufficient to achieve a water depth of greater than 13m.

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<sup>20</sup> *Harbour Approach Channels Guidance* - PIANC Report No. 121

<sup>21</sup> *Harbour Approach Channels Guidance* - PIANC Report No. 121

<sup>22</sup> SIGTTO, Information Paper No.14, Appendix

<sup>23</sup> SIGTTO, Information Paper No.14, Appendix

<sup>24</sup> SIGTTO, Information Paper No.14, Appendix.

<sup>25</sup> SIGTTO, Information Paper No.14, Appendix.

### 7.6.2.3 *Incompatible Existing Sensitive Receptors*

The nature of the development i.e., being a significant industrial development, will mean it will be incompatible with sensitive land receptors and should be distanced from populated areas . Further, Strategic Objective No. 5 is to meet or exceed best practice in terms of safety and the environment, as such, a primary requirement is avoiding incompatible sensitive receptors is considered a primary requirement. It is noted that requirements such as the COMAH Directive will stipulate certain separation distances; however, these distances will be determined during the detailed assessment phase of the project post site selection. Based on professional judgement; to ensure that the project meets or exceeds best practice in terms of affecting its immediate environment a project buffer of 500m from incompatible sensitive receptors has been applied from the site boundary.

Sensitive receptors as those described in County Development Plans (CDP) include residential developments, schools, hospitals, nursing homes, places of worship, graveyards, prisons, education facilities, sports clubs and facilities, childcare facilities, historical sites/buildings and museums, amenity areas etc. The relevant CDP have been reviewed for each location to determine if there are any additional sensitive receptors.

For the purposes of this exercise the following criteria were used in determining proximity to incompatible sensitive receptors and were considered a pass/fail as follows:

**Pass:** Development site boundary located 500m or greater from a sensitive receptor.

**Fail:** Development site boundary located less than 500m from a sensitive receptor.

### 7.6.2.4 *Step 3 – Primary Constraints Outcomes*

Table 7-2 provides outcome of Step 3: Initial Screening Primary Constraints (Stage 1) of the site selection process. For the purpose of this assessment the following data sets were used:

- Port records;
- Publicly available bathymetry data;
- OS Base Mapping;
- Open Street Map;
- Buildings (open source data);
- Aerial interpretation and ground truthing;
- Co Co Beaches Directory; and
- Co Co Graveyard Directory
- Other publicly available data sets

Fourteen existing Ports were identified. Of these, the overriding constraint was adequate water depth for access, with the majority too shallow to cater the required depth of ships.

After applying the Initial Screening - Primary Constraints to the Study Area, three locations - the Shannon Estuary, Bantry Bay and Cork Harbour - were identified for progression to the Initial Screening – Secondary Constraints stage.

Table 7-2 Results of the Step 3 Initial Screening – Stage 1 Primary Constraints

|                                                                 | Galway | Shannon Estuary | Bantry Bay    | Cork          | Waterford | Rosslare | Arklow | Wicklow | Dublin | Dun Laoghaire | Drogheda | Dundalk | Greenore | Killybegs |
|-----------------------------------------------------------------|--------|-----------------|---------------|---------------|-----------|----------|--------|---------|--------|---------------|----------|---------|----------|-----------|
| Initial Screening Stage 1 – Primary Constraints                 |        |                 |               |               |           |          |        |         |        |               |          |         |          |           |
| Existing Port Company with Management & Safety Systems in Place | Yes    | Yes             | Yes           | Yes           | Yes       | Yes      | Yes    | Yes     | Yes    | Yes           | Yes      | Yes     | Yes      | Yes       |
| Navigation Safety                                               |        |                 |               |               |           |          |        |         |        |               |          |         |          |           |
| Adequate harbour entrance                                       | Yes    | Yes             | Yes           | Yes           | Yes       | Yes      | No     | No      | Yes    | No            | No       | Yes     | Yes      | Yes       |
| Adequate navigational harbour channel                           | Yes    | Yes             | Yes           | Yes           | Yes       | Yes      | No     | No      | Yes    | Yes           | No       | Yes     | Yes      | Yes       |
| Adequate water depth                                            | No     | Yes             | Yes           | Yes           | No        | No       | No     | No      | No     | No            | No       | No      | No       | No        |
| Existing Sensitive Receptors<br>n/a (screened out)              | n/a    | GIS to verify   | GIS to verify | GIS to verify | n/a       | n/a      | n/a    | n/a     | n/a    | n/a           | n/a      | n/a     | n/a      | n/a       |
| Pass/Fail                                                       | Fail   | Pass            | Pass          | Pass          | Fail      | Fail     | Fail   | Fail    | Fail   | Fail          | Fail     | Fail    | Fail     | Fail      |



### 7.6.3 Screening -Secondary Constraints

Following the Primary Constraints assessment, the identified parcels were subject to an assessment of the Secondary Constraints. Secondary Constraints will be avoided where possible, and mitigation will be proposed where avoidance is not practicable. This section sets out the Secondary Constraints and basis for inclusion.

#### 7.6.3.1 *Absence of Adequate Sheltering*

To minimise the risk of downtime associated with adverse weather/metocean conditions, the industry guidance notes that jetties should be located such that dynamic forces on ship's moorings are limited. Extreme weather events such as hurricanes are infrequent. In respect of the berth location: wind, waves and currents are key considerations. In sheltered waters, waves have a short fetch and minimal impact on a vessel. Swells however can cause the moorings for both the FSRU and LNGC to surge increasing the risk of failure. Reflected swells and waves can also make berthing tug operation and berthing challenging. A potential mitigation measure is to construct a breakwater. This would require detailed technical consideration.

Prevailing wind conditions will also need to be considered, high winds at right angles to a berth can impact moorings, berthing and emergency departures. In frequent high wind locations, it is beneficial to align the berth to the prevailing wind.

High currents may limit berthing windows to the turn of the tide when currents are low and where it is possible to manoeuvre the LNGC without increased risk. High currents at the berth can impact mooring loads and reduce operating parameters.

Using an example of LNG Carrier of approximately 135,000m<sup>3</sup> capacity, waves that are likely to have damaging effect on moorings are those approaching from directly ahead or astern, heights exceeding 1.5 metres and periods greater than 9 seconds. As such, a secondary constraint will be those jetty locations and orientations susceptible to wave heights which would approach from directly ahead or astern and periods greater than 9 seconds.

It is noted that engineered solutions may include breakwater construction or revetements to mitigate against wave height, and as such, a pass mark will be allocated where it is deemed that a breakwater may be constructed that could address lack of sheltering. The potential impact of including such a mitigation including cost, consenting and programme are considered at Step 4 & 5.

For the purposes of this exercise the following criteria were used in determining adequate sheltering and were considered a pass/fail as follows:

#### Wave Height

**Pass:** Jetty location & orientation not likely susceptible to wave heights which would approach from directly ahead or astern exceeding 1.5 metres and periods greater than 9 seconds (with or without a breakwater).



**Fail:** Jetty location & orientation is susceptible to wave heights which would approach from directly ahead or astern exceeding 1.5 metres and periods greater than 9 seconds (even with a breakwater or breakwater not feasible).

#### 7.6.3.2 *Inadequate Available Turning Circles for LNGC*

The optimum configuration of the moored vessel(s) at the LNG jetty is for the vessels to be facing outward bound i.e. the vessel nose towards the port/harbour entrance/exit. As recommended in the relevant guidance, this configuration ensures that in the event of an onshore emergency, the LNGC can detach and depart independently (i.e., potentially without tug assistance). Consequently, upon entry, the LNGC must execute a turn before manoeuvring to moor alongside the FSRU.

The selected site will be required to accommodate the turning area/swinging circle required for an LNGC. As per industry guidance, turning areas should have a minimum diameter of two to three times the ship's length. i.e. 600m to 900m for a ship up to 300m long ship. As such, the selected site should be able to accommodate a turning circle of between i.e. 600m to 900m.

It may be possible to turn the LNGC with a turning circle as short as 1.5 times the length of an LNGC however this requires sheltered waters and suitable tugs. At this stage, it is recommended that turning circles should be at least 600m. (twice a conventional LNGC and 1.7 times the length of a Q-max (as they are not expected to use the terminal frequently)). A minimum of three ASD (or similarly manoeuvrable) tugs should be available for a 180,000m<sup>3</sup> vessel or smaller. A larger vessel may require four tugs during arrival. Final tug requirements will be an outcome from the full mission bridge simulations.

It is noted that engineered solutions may include capital dredging to create the required turning circle, as such, a pass mark will be allocated where it is deemed based on professional judgement that dredging may be carried out that could address current lack of available turning circle. The potential impact of including such a mitigation including cost, consenting and programme are considered at Step 4 & 5.

It is also noted that the turning circle can often include an adjacent channel. In these instances, passing ship operations would need to be considered to ensure there is no interference. As such, turning circles that extend into an adjacent channel will also be considered a 'pass' with impacts on existing port operations considered at Step & 5.

For the purposes of this exercise the following criteria was used in determining adequate available turning circles and will be considered a pass/fail as follows:

##### Turning Circles for LNGC

**Pass:** Location is provided with adequate turning circle outside or within the channel (with or without dredging).

**Fail:** Location cannot provide adequate turning circle outside or within the channel (even with dredging).

### 7.6.3.3 *Unavailable Area for Safety Exclusion Zone*

Industry guidance suggests that a safety zone of at least 200m from the manifold is required. This distance is to be revised upon further project evaluation such as vapour dispersion simulations and local pilotage consultation. As such, for the purpose of secondary constraints, a site must be able to accommodate a control zone of 200m around the FSRU and a moored LNGC. This is to ensure a sufficient distance between passing vessels and on moored vessels e.g. for a vessel at 6 knots the passing distance should be at least 6 times the beam of the vessel. The final safety zone has been determined through the detailed Quantitative Risk Assessment (QRA).

For the purposes of this exercise the following criteria is used in determining suitable area for control zone:

#### Safety Exclusion Zone

**Pass:** Location is provided with a buffer of at least 200m from the manifold.

**Fail:** Location cannot provide a buffer of at least 200m from the manifold.

### 7.6.3.4 *Inappropriate Landforms Avoided*

The onshore site must provide safe access and have suitable topography that meets the technical requirements of the project. Therefore, unsuitable landforms, such as cliff areas or areas subject to landslide risk will be excluded.

#### Suitable Topography

**Pass:** Location does not include a cliff area or are at risk of landslide.

**Fail:** Location includes a cliff area or are at risk of landslide.

### 7.6.3.5 *Step 3 – Secondary Constraints Outcomes*

Table 7-3 provides a record of the outcome of Step 3 Initial Screening Stage 2: Secondary Constraints of the site selection process. For the purpose of this assessment the following data sets were used:

- Wave Height
- OS Base Mapping
- Risk of Landslides (<https://www.gsi.ie/en-ie/data-and-maps/Pages/Geohazards.aspx>)
- Google Earth

Of the three existing Ports considered, only Shannon Estuary passed, with no requirement for additional mitigation. Bantry Bay would require the construction of a revetment / breakwater approx. 1600m from shore to create suitable sheltered conditions. Cork would require capital dredging to create a suitable turning circle. The location of the turning circle would be on the primary navigation route to the Port of Cork. Anecdotal it may be possible to control the waterways to achieve a turning circle, but no evidence has been provided to date and additional operational constraints may apply.

Table 7-3: Results of the Step 3 Initial Screening – Stage 2 Secondary Constraints

| Initial Screening Stage 2 – Secondary Constraints                                                                                                    | Shannon Estuary                                                                                                                                                                                                                                                                                                                                                                                                                                      | Bantry Bay                                                                                                                                 | Cork                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Absence of Adequate Sheltering                                                                                                                       | Yes<br>Study completed based on publically available data, as secondary source- requires verification                                                                                                                                                                                                                                                                                                                                                | No - but potential for mitigation. Revetment / breakwater required approx. 1600m from shore to allow navigation of ships around revetment. | Yes<br>Study completed based on publically available data as secondary source- requires verification                                                                                                                                                                                                                                              |
| Inadequate Available Turning Circles for LNGC (with/without dredging)                                                                                | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Yes                                                                                                                                        | No but potential for mitigation. Capital dredging required to create turning circle. Location of turning circle is on the primary navigation route to Port of Cork. Anecdotal it may be possible to control the waterways to achieve a turning circle but no evidence has been provided to date and additional operational constraints may apply. |
| Unavailable Area for Safety Exclusion Zone (Assume jetty extends into 13m deep water, 2 moored boats side by side ( + 100m deep) +10% = 310m buffer) | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Yes                                                                                                                                        | Yes                                                                                                                                                                                                                                                                                                                                               |
| Inappropriate Landforms Avoided                                                                                                                      | Using GSI data sets, specifically the Landslide Susceptibility Classification and Landslide Events data, it is evident that at the regional scale analysed in step 3, there is an opportunity to identify land parcels or sites in areas which are not subject to high landslide risk. Similarly it is evident that areas clearly unsuitable for development, such as cliffs or regions with slopes exceeding a 1 in 5 (20%) incline can be avoided. |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                   |
| Pass/Fail                                                                                                                                            | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Pass (with mitigation)                                                                                                                     | Pass (with mitigation)                                                                                                                                                                                                                                                                                                                            |



## 7.7 Site Selection (Options Shortlisting – Step 4)

### 7.7.1 Introduction and Overview of Step 4

Step 4 of the Site Selection Process involves the identification of land parcels within the three remaining ports as determined at the end of Step 3 and seeks to identify a shortlist of potential site options that can be advanced for detailed assessment in Step 5. Step 4 involves both qualitative and programme-based screening to ensure that only sites that are strongly aligned with the Project's strategic objectives and have a reasonable expectation of achieving the timing set out within the N-1 project programme are brought forward to Step 5.

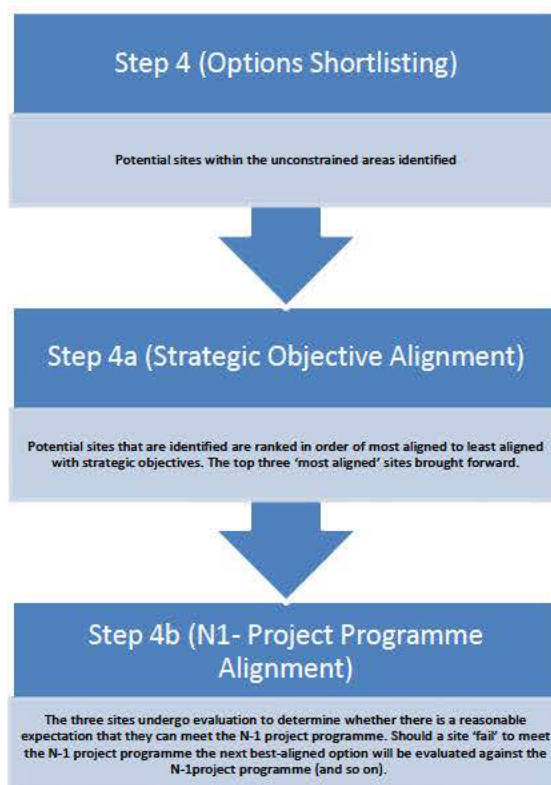
The process begins with the identification of site options of sufficient size within the residual lands, followed by mapping of each site option. Where appropriate and feasible site visits and vantage point surveys were undertaken to validate desk-based findings, and initial stakeholder engagement was undertaken by GNI. Principles for guiding site identification are established at this stage but remain iterative, allowing for re-evaluation should material new information arise.

At Step 4a a high-level qualitative assessment was undertaken to test the alignment of potential site options with the project's strategic objectives. Sites are ranked by the extent to which they align with the strategic objectives. The three "most aligned" sites were advanced to Step 4b for evaluation in terms of alignment with the N-1 Project Programme.

Step 4b tested potential site options on their ability to support an accelerated delivery schedule mandated by Government. High-level schedules were developed to determine whether there is a reasonable expectation that they can meet the N-1 project programme, starting with those sites identified as "most aligned" with the strategic objectives in Step 4a.

The overall purpose of Step 4 is to ensure that no more than three sites – those demonstrating strong strategic alignment and reasonable expectation of meeting the N-1 project programme.

Step 4 is set out in further detail in the following sections.



### 7.7.2 Identification of Site Options

Following completion of the initial screening process under Step 3, which identified unconstrained

areas within the Shannon Estuary, Cork Harbour and Bantry Bay, Step 4 commenced with the identification of potential site options within these areas.

The identification of potential site options was guided by the technical project requirements established in Step 1 for the onshore gas terminal and associated infrastructure. These these 'technical project parameters' include a mix of 'must have' technical requirements and other technical considerations that assist in comparing/evaluating options. The 'technical project parameters' include but are not limited to:

- Preferably an onshore site area of c. 20ha
- Must have the ability to access the existing road network.
- Must have the ability to access services and utilities.
- Must have the ability to gain connection from the electrical transmission grid and to the national gas distribution network.
- Must be a location that is suitably separated from sensitive receptors.
- Preferably located in a proximity to other land uses that may be able to supply waste heat to the site
- Preferably be immediate adjacent to the jetty and onshore site for gas conditioning / compression as appropriate for transfer of gas into the national gas grid.

Each of the three areas identified in Step 3 presented distinct physical and geographical characteristics, requiring the application of area - specific considerations and refinement of local study areas. These considerations and refinements are as follows:

#### **Shannon Estuary**

- Proximity to the existing gas infrastructure: No sites were considered further west than Cloonaman due to distance from NTS and the availability of better alternatives.
- Impact on designated sites. No sites were considered east of Aughinish due to the reduced water depth, potential for dredging within a designated site in the context of the availability of better alternatives.

#### **Cork**

- The southern extent of the existing Port Boundary (Southern Roches Point to Church Bay)
- The extent of the existing navigable waters, restricting the Northern boundary of potential sites
- Avoidance of impact on Camden Fort and surrounding areas used for local tourism

#### **Bantry Bay**

- Focused on Whiddy Island and protected by the construction of a revetment / breakwater approx. 1600m from shore to create suitable sheltered conditions.

An initial list of 20 potential sites was identified for assessment as part of Step 4a. Following engagement by GNI with relevant stakeholders, and the identification of additional potential options, the total number of potential sites increased to 23. Of these, 20 are located within the Shannon Estuary, 2 within Cork harbour and 1 within Banty Bay.

Figure 7-5 provides a high-level overview of the locations of all identified sites within the Shannon Estuary, with Table 7-4 setting out a non-technical description of each site.

Figure 7-6 provides a high-level overview of the locations of all identified sites within Cork Harbour, with Table 7-5 setting out a non-technical description of each site.

Figure 7-7 provides a high-level overview of the locations of all identified sites within Bantry Bay, with Table 7-6 setting out a non-technical description of each site.



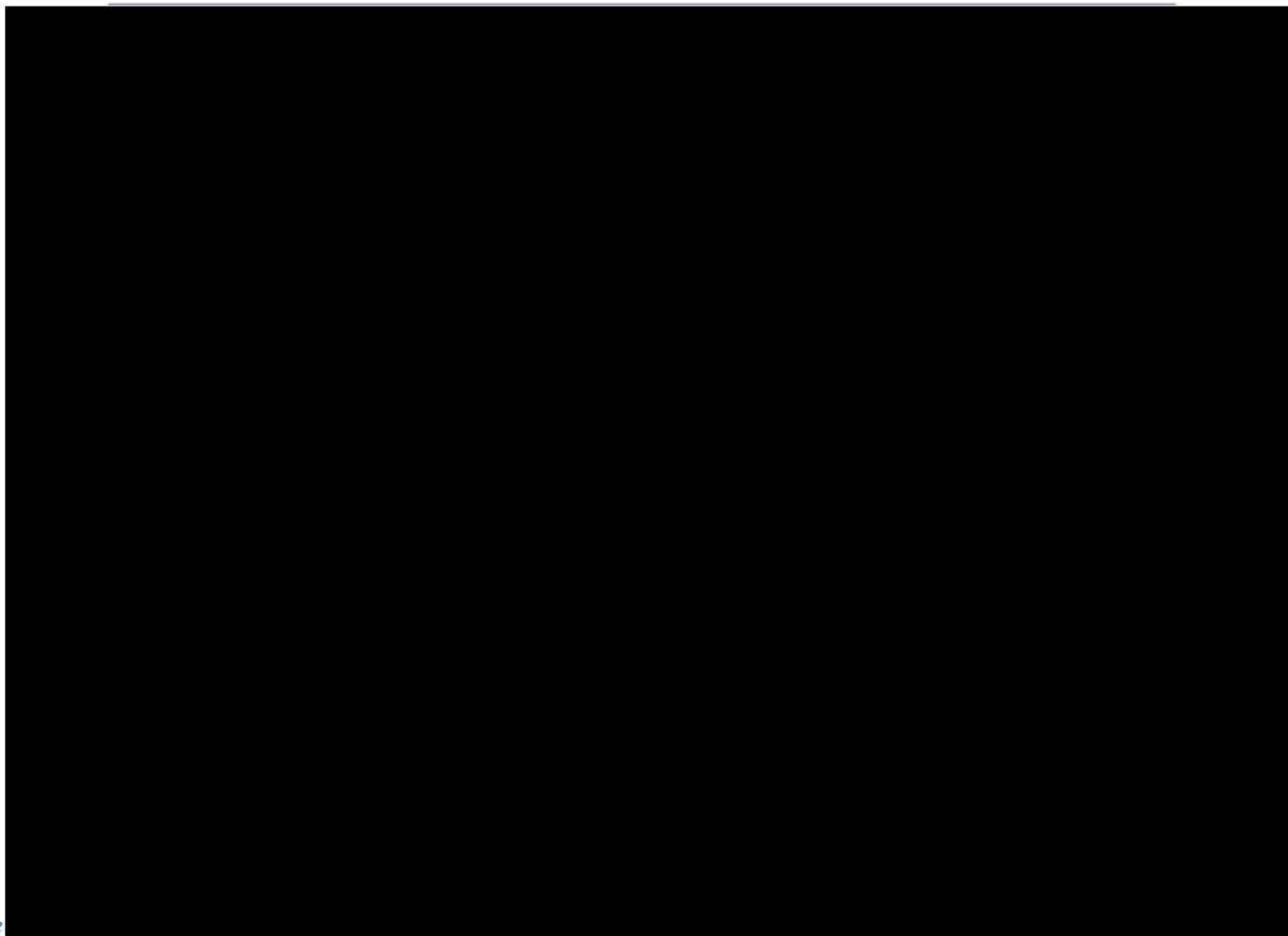


Figure 7-5 Ste

[illegible]

| Site Designation | Site Name | Non-Technical Description                                                                                                                                                                                                                                                                                                |
|------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SE7              | Cahiracon | Site SE7 is a greenfield location comprising agricultural land and mixed forest. Identified as Strategic Development Zone for Marine Development under the Clare County Development Plan and in the Shannon Integrated framework Plan (SIFP). Site approximately 250 metres to deep water and approximately 700m to NTS. |
| ■                | ■         | ■                                                                                                                                                                                                                                                                                                                        |
| ■                | ■         | ■                                                                                                                                                                                                                                                                                                                        |
| ■                | ■         | ■                                                                                                                                                                                                                                                                                                                        |
| ■                | ■         | ■                                                                                                                                                                                                                                                                                                                        |
| ■                | ■         | ■                                                                                                                                                                                                                                                                                                                        |
| ■                | ■         | ■                                                                                                                                                                                                                                                                                                                        |
| ■                | ■         | ■                                                                                                                                                                                                                                                                                                                        |

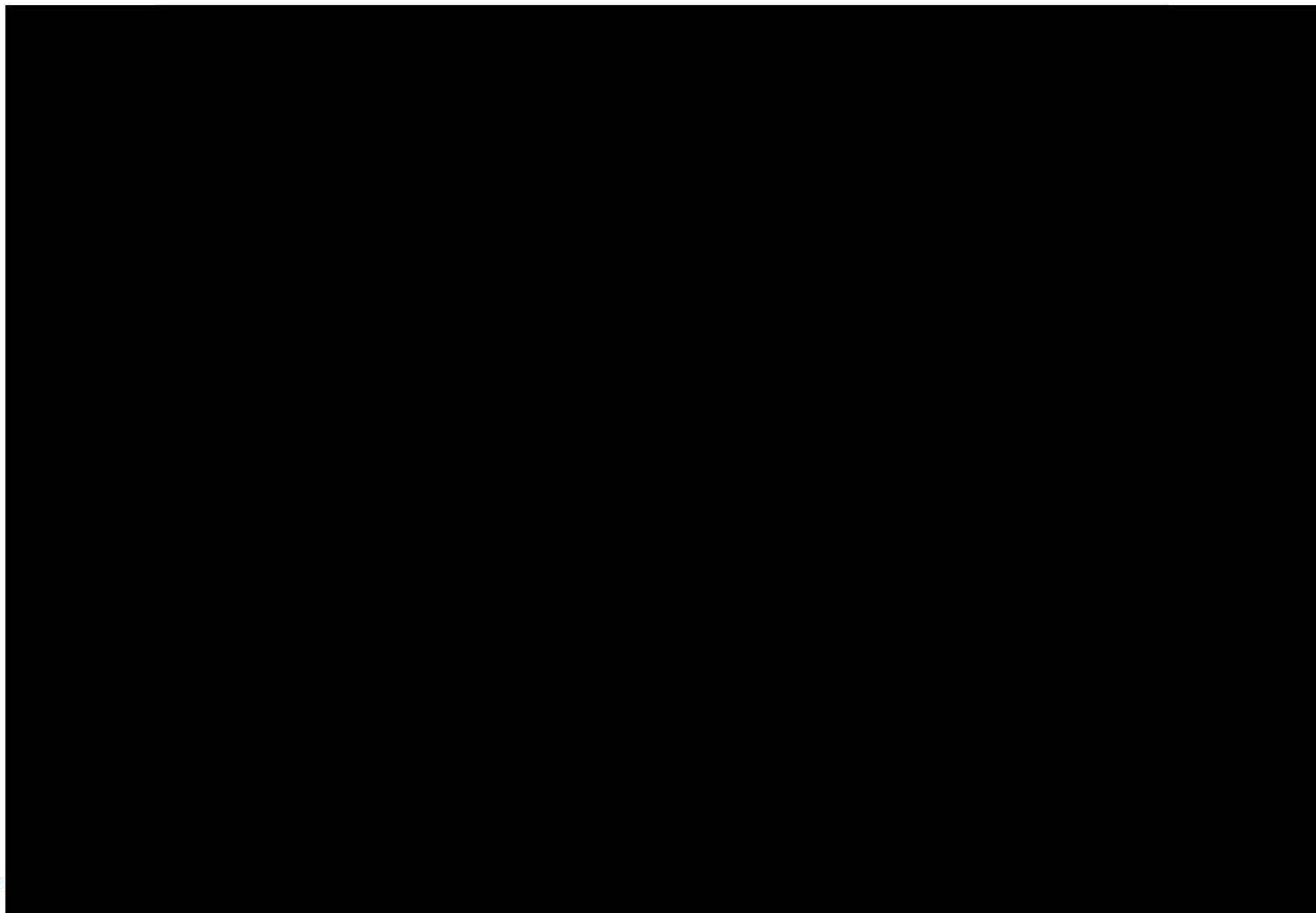
| Site Designation | Site Name | Non-Technical Description |
|------------------|-----------|---------------------------|
| █                | █         | █                         |
| █                | █         | █                         |
| █                | █         | █                         |
| █                | █         | █                         |
| █                | █         | █                         |

F

Table 7-5: Summary of the potential site options in Cork Harbour

| Site Designation | Site Name | Non-Technical Description |
|------------------|-----------|---------------------------|
| ■                | ■         | ■                         |
| ■                | ■         | ■                         |





Figure

*Table 7-6: Summary of the potential site options in Bantry Bay*

| Site Designation | Site Name | Non-Technical Description |
|------------------|-----------|---------------------------|
| █                | █         | █                         |

### 7.7.3 Site Selection - Step 4 – Options Shortlisting

#### 7.7.4 Site Selection - Step 4a Strategic Objectives Alignment

Step 4A is the first stage of the shortlisting process and applies a high-level qualitative screening to the potential sites identified. The purpose of this step is to rank potential site options according to their alignment with the project's strategic objectives ensuring that only those options which best support the strategic objectives of the SGER project progress to Step 4b.

GNI has defined 5 strategic objectives for the project. These are:

1. Deliver a solution as early as possible that will:
  - a. satisfy Ireland's compliance with EU N-1 infrastructure standard;
  - b. enable rapid recovery from a system disruption; and
  - c. provide sufficient resilience of gas supply to ensure future (2030) energy gas demand is reliably met.
2. Achieve a cost-effective, affordable solution that optimises EU grant funding and cost recovery options.
3. Design permanent or onshore enabling infrastructure in a manner that maximises potential future renewable gas uses to the extent possible, balancing cost and other efficiencies such as time to deployment.
4. Achieve a solution that is, in so far as practicable, consistent with the Climate Action and Low Carbon Development Act 2015–2021.
5. Meet or exceed industry best practice in relation to safety and the environment.

Using these strategic objectives a variety of alignment criteria and assessment metrics were developed against which each site was assessed. The Strategic Objective Alignment Criteria are set out in Table 7-7.

Table 7-7: Site Selection Step 4a Strategic Objective Alignment Criteria and metric.

| Strategic Objective                     | Alignment Criteria                                                    | Assessment Metric                                                                                                                                                                                  |
|-----------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Deliver a solution as early as possible | Availability of reliable baseline (ecological) data                   | Preference will be given to a site with the greatest availability of reliable baseline (ecological) data in terms of quality and quantity.                                                         |
|                                         | Avoidance of areas which are at risk from fluvial and tidal flooding. | Preference will be given to sites that are not located in areas which are at risk of flooding which increases construction costs & time and potentially compromise the resilience of the solution. |
|                                         | Existing Brown field sites &/or favourable zoning                     | Preference will be given to sites that are within an existing brownfield site and/or industrial zoned land.                                                                                        |



| Strategic Objective                                                                                                                                                                                          | Alignment Criteria                                                 | Assessment Metric                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                              | Planning History                                                   | Preference will be given to sites with relevant historical planning permissions or relevant planning history.                                                                                                                                                                                                                           |
| Achieve a cost-effective, affordable solution that optimises EU grant funding and cost recovery options                                                                                                      | Proximity to existing pipeline infrastructure                      | Preference to be given to a site that is closer to transmission network infrastructure over one that is further away.                                                                                                                                                                                                                   |
|                                                                                                                                                                                                              | Proximity to the existing public road network                      | Preference will be given to sites that are in closer proximity to the existing public road network.                                                                                                                                                                                                                                     |
|                                                                                                                                                                                                              | Proximity to existing utility network (e.g. power supply)          | Preference will be given to sites that are in closer proximity to the existing utility network.                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                              | Appropriate ground conditions (geotechnical stability / lithology) | Preference will be given to avoiding areas of poor ground which increases construction costs & time and environmental risks (e.g. peat, lake deposits, soils containing alluvial or fluvioglacial deposits and shallow rock or karst features).                                                                                         |
| Design permanent or onshore enabling infrastructure in a manner that maximises potential future renewable gas uses to the extent possible, balancing cost and other efficiencies such as time to deployment. | Not applicable to this step.                                       | The ability of the technology to maximise potential future renewable gas use has been considered in the technology design. This strategic objective will also be considered as the design of the technology is progressed to detailed design. As such, this strategic objective is not considered relevant to this step in the project. |
| Achieve a solution that is, in so far as practicable, consistent with the Climate Action and Low Carbon Development Act 2015–2021.                                                                           | Not applicable to this step.                                       | Alignment with this strategic objective has been considered in technology design. Whilst not considered at this step, further consideration of consistency with the Climate Action and Low Carbon Development Act 2015–2021 is applied in Step 5.                                                                                       |
| Meet or exceed industry best practice in relation to safety and the environment.                                                                                                                             | Designated sites                                                   | Preference will be given to sites that are not located within designated areas and/or have no path, source, receptor connection to a designated site.                                                                                                                                                                                   |
|                                                                                                                                                                                                              | Avoidance of impacts to cultural heritage interests                | Preference will be given to sites that avoid impacts to National Monuments, archaeological sites as identified in the Record of Monuments and Places (RMP), structures listed in the Record of Protected Structures (RPS), and Architectural Conservation Areas]                                                                        |
|                                                                                                                                                                                                              | Avoidance of / minimise impacts to sensitive waters                | Preference will be given to sites that avoid / minimise impacts to recreational waters, designated bathing waters, designated nutrient sensitive waters, designated shellfish waters and aquifers designated as extremely vulnerable.                                                                                                   |

| Strategic Objective | Alignment Criteria                        | Assessment Metric                                                                                           |
|---------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|                     | Avoidance of Highly Sensitive Landscapes. | Preference will be given to sites that avoid sensitive landscape areas as designated with the relevant CDP. |

Each potential site was assessed against the defined strategic objective alignment criteria and assessment metrics developed. In determining the scoring professional judgement was applied to identify clear preferences between sites. Where sites were considered very similar in relation to a criterion, a neutral score was allocated.

For simplicity, a scoring of 1 – 5 was used to indicate the level of alignment with 'Fully Aligned' recorded as '1', neutral as a '3' and 'Not Aligned' as '5'. With the lowest score being the most aligned site and so on. The Step 4a scoring matrix is set out in Table 7-8.

Table 7-8 Step 4a Scoring matrix

| Legend             |   |
|--------------------|---|
| Fully Aligned      | 1 |
| Mostly Aligned     | 2 |
| Neutral            | 3 |
| Mostly Not Aligned | 4 |
| Not Aligned        | 5 |

Notwithstanding this scoring, the site with the most preferences in the categories was also considered in determining the preferred site.

The Step 4a scoring is summarised in Table 7-9. A summary of key differentiators is presented thereafter with a detailed record of assessment included in Appendix 2.

Table 7-9 Step 4a Strategic Alignment Summary Matrix

| Strategic Objective                         | Alignment Criteria                                                                                                                                        | SE7       | Cahiracoon |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|
| <b>High Level Non-Technical Description</b> |                                                                                                                                                           |           |            |
| Deliver a solution as early as possible     | With the greatest availability of reliable baseline (ecological) data in terms of quality and quantity.                                                   | 3         |            |
| <b>Technical / Economic</b>                 |                                                                                                                                                           |           |            |
| Deliver a solution as early as possible     | that are not located in areas which are at risk of flooding which increases construction costs & time and potentially                                     | 1         |            |
| Deliver a solution as early as possible     | that are within an existing brownfield site and/or suitably zoned land.                                                                                   | 1         |            |
| Deliver a solution as early as possible     | that do not contain unauthorised structures                                                                                                               | 1         |            |
| Deliver a solution as early as possible     | are in closer proximity to the existing utility network (MV [10/ 20 kV] power supply & water) and estimated capacity                                      | 3         |            |
| Deliver a solution as early as possible     | is closer to gas transmission network infrastructure over one that is further away.                                                                       | 1         |            |
| Deliver a solution as early as possible     | that avoid areas of poor ground which increases construction costs & time and environmental risks (e.g. peat, lake deposits, soils containing alluvial or | 3         |            |
| <b>Environmental</b>                        |                                                                                                                                                           |           |            |
| Deliver a solution as early as possible     | are not located within designated areas and/or have no source, pathway, receptor connection to a designated site.                                         | 5         |            |
| Deliver a solution as early as possible     | avoid impacts to National Monuments, archaeological sites as identified in the Record of Monuments                                                        | 1         |            |
| Deliver a solution as early as possible     | avoid / minimise impacts to recreational waters, designated bathing waters, designated nutrient sensitive waters.                                         | 3         |            |
| Deliver a solution as early as possible     | avoid sensitive landscape areas as designated with the relevant County Development Plan.                                                                  | 4         |            |
| <b>Score</b>                                |                                                                                                                                                           | <b>26</b> |            |



#### 7.7.4.1 Overview of Key Differentiators

##### *Availability of Reliable Baseline (Ecological) Data:*

SE15 is uniquely advantaged, with extensive, high-quality ecological data supporting expedited assessment and reduced consenting risk. A number of other sites have broad and relatively robust datasets that offer advantage if a year of focused surveys can address potential gaps. Most greenfield and unzoned sites lack sufficient baseline data, necessitating extended surveys.

##### *Technical / Economic Criteria:*

Flood Risk: Nearly all sites are not at material risk of flooding.

Brownfield Status and/or Zoning: Sites that are brownfield or fully zoned for suitable land use (e.g., [REDACTED] SE7, [REDACTED] etc) are strongly favoured, benefiting from planning policy support etc. Greenfield, unzoned sites (e.g., [REDACTED]) face significant planning hurdles.

Absence of Unauthorised Structures: All sites are free from unauthorised structures.

Proximity to Utility Networks: Most sites are within a reasonable distance of utility networks; only fully serviced sites [REDACTED] have a slight advantage.

Proximity to Gas Transmission Network (NTS): Sites with direct or very close access to the NTS (e.g., [REDACTED], SE7, [REDACTED]) are strongly preferred, minimising pipeline length, construction complexity, and etc. Sites requiring long pipelines (e.g., [REDACTED] [REDACTED]) are materially disadvantaged, with [REDACTED] being uniquely challenged due to its extreme distance [REDACTED].

Ground Conditions: Sites with significant issues or evidence of made ground (e.g., [REDACTED] [REDACTED]) are materially disadvantaged due to increased construction risk and cost.

##### *Environmental Criteria*

Location Relative to Designated Areas: Most sites are adjacent to or within designated European sites (SAC/SPA).

Archaeological and Cultural Heritage Constraints: Most sites have no or only minor archaeological constraints; only a few (e.g., [REDACTED]) have material risks that could impede progress.

Impacts to Recreational Waters and Aquifers: [REDACTED] are close to shellfish waters. Other sites have no or minor impact on recreational waters, bathing, shellfish waters..

##### *Landscape and Visual Sensitivity*

Most sites have no or only minor impact except for certain sites adjacent to sensitive landscapes, scenic routes or protected views (e.g., [REDACTED], SE7 [REDACTED])

#### 7.7.4.2 Step 4a Ranking of 'most aligned' sites

At the completion of Step 4a, the ranking of “most aligned” site options was identified. This ranking is set out in Table 7-10.

*Table 7-10 Step 4a Ranking of 'most aligned' site options*

| Site Ref | Site Name | Rank |
|----------|-----------|------|
| SE7      | Cahiracon | 2    |
| SE7      | SE7       | 3    |
| SE7      | SE7       | 4    |
| SE7      | SE7       | 5    |
| SE7      | SE7       | 6    |
| SE7      | SE7       | 7    |
| SE7      | SE7       | 8    |
| SE7      | SE7       | 9    |
| SE7      | SE7       | 10   |
| SE7      | SE7       | 11   |
| SE7      | SE7       | 12   |
| SE7      | SE7       | 13   |
| SE7      | SE7       | 14   |
| SE7      | SE7       | 15   |
| SE7      | SE7       | 16   |
| SE7      | SE7       | 17   |
| SE7      | SE7       | 18   |
| SE7      | SE7       | 19   |
| SE7      | SE7       | 20   |
| SE7      | SE7       | 21   |
| SE7      | SE7       | 22   |
| SE7      | SE7       | 23   |
| SE7      | SE7       | 24   |
| SE7      | SE7       | 25   |
| SE7      | SE7       | 26   |
| SE7      | SE7       | 27   |
| SE7      | SE7       | 28   |
| SE7      | SE7       | 29   |
| SE7      | SE7       | 30   |
| SE7      | SE7       | 31   |
| SE7      | SE7       | 32   |
| SE7      | SE7       | 33   |
| SE7      | SE7       | 34   |
| SE7      | SE7       | 35   |
| SE7      | SE7       | 36   |
| SE7      | SE7       | 37   |
| SE7      | SE7       | 38   |
| SE7      | SE7       | 39   |
| SE7      | SE7       | 40   |
| SE7      | SE7       | 41   |
| SE7      | SE7       | 42   |
| SE7      | SE7       | 43   |
| SE7      | SE7       | 44   |
| SE7      | SE7       | 45   |
| SE7      | SE7       | 46   |
| SE7      | SE7       | 47   |
| SE7      | SE7       | 48   |
| SE7      | SE7       | 49   |
| SE7      | SE7       | 50   |
| SE7      | SE7       | 51   |
| SE7      | SE7       | 52   |
| SE7      | SE7       | 53   |
| SE7      | SE7       | 54   |
| SE7      | SE7       | 55   |
| SE7      | SE7       | 56   |
| SE7      | SE7       | 57   |
| SE7      | SE7       | 58   |
| SE7      | SE7       | 59   |
| SE7      | SE7       | 60   |
| SE7      | SE7       | 61   |
| SE7      | SE7       | 62   |
| SE7      | SE7       | 63   |
| SE7      | SE7       | 64   |
| SE7      | SE7       | 65   |
| SE7      | SE7       | 66   |
| SE7      | SE7       | 67   |
| SE7      | SE7       | 68   |
| SE7      | SE7       | 69   |
| SE7      | SE7       | 70   |
| SE7      | SE7       | 71   |
| SE7      | SE7       | 72   |
| SE7      | SE7       | 73   |
| SE7      | SE7       | 74   |
| SE7      | SE7       | 75   |
| SE7      | SE7       | 76   |
| SE7      | SE7       | 77   |
| SE7      | SE7       | 78   |
| SE7      | SE7       | 79   |
| SE7      | SE7       | 80   |
| SE7      | SE7       | 81   |
| SE7      | SE7       | 82   |
| SE7      | SE7       | 83   |
| SE7      | SE7       | 84   |
| SE7      | SE7       | 85   |
| SE7      | SE7       | 86   |
| SE7      | SE7       | 87   |
| SE7      | SE7       | 88   |
| SE7      | SE7       | 89   |
| SE7      | SE7       | 90   |
| SE7      | SE7       | 91   |
| SE7      | SE7       | 92   |
| SE7      | SE7       | 93   |
| SE7      | SE7       | 94   |
| SE7      | SE7       | 95   |
| SE7      | SE7       | 96   |
| SE7      | SE7       | 97   |
| SE7      | SE7       | 98   |
| SE7      | SE7       | 99   |
| SE7      | SE7       | 100  |

Upon completion of the high-level screening at Step 4a sites then undergo further evaluation to determine whether there is a reasonable expectation that they can meet the N-1 project programme, starting with those sites identified as “most aligned” with the strategic objectives in Step 4a.

### **7.7.5 Site Selection - Step 4b - N1 Project Programme Alignment**

Annex II of 'Securing Ireland's Gas Supplies' requires Gas Networks Ireland (GNI), as the independent Gas Transmission System Operator (TSO), to prepare a detailed proposal that will deliver a solution that can be implemented quickly. Strategic objective No. 1 is to 'deliver a solution as early as possible'. Accordingly, the ability of a site to support accelerated delivery of the Strategic Gas Emergency Reserve (SGER) in line with timeframes identified by the government is a critical factor in the site selection process.

The agreed site selection methodology, generally and specifically Step 4b, ensures that only sites that have a reasonable expectation of achieving the timing set out within the N-1 project programme will be brought forward to Step 5. This may result in the exclusion of sites that perform well against other criteria but cannot meet the N-1 programme and hence the "project need."

Following completion of high-level screening at Step 4a, sites identified as 'most aligned' with strategic objectives are evaluated in Step 4b to determine if there is a reasonable expectation of meeting the N-1 programme. Sites deemed capable of meeting the programme receive a 'pass' score. Conversely, sites that are unlikely to meet the programme receive a 'fail' score and are excluded from Step 5. If a site fails, the next best-aligned site from Step 4a is evaluated. This process continues until either three sites are identified that can meet the N-1 programme, or no further sites remain, in which case fewer than three sites will be brought forward to Step 5.

The Preliminary Business Case (PBC), developed in early 2024 and submitted to the Department of the Climate, Energy and Environment (DCEE) (formerly DECC) in April 2024 included three delivery timeframes for the emerging N-1 solution. The evaluation contained in the PBC recommended the 'accelerated schedule' as the preferred option. This 'accelerated schedule' envisaged first gas within 73 months from approval of the PBC.

On 4 March 2025, Minister Darragh O'Brien received Government approval to proceed with the development of a State-led strategic gas emergency reserve based on the PBC. As such, the emerging N-1 Project Programme is that recommended within the PBC, i.e. 73 months from approval, targeting April 2031 (Q2 2031). The government approval also noted the Ministers intention 'to continue to explore all opportunities to expedite delivery of the project through national and EU legislation and regulations' and further encouraged 'GNI to accelerate all tasks to achieve final investment decision and to expedite the timeframe for delivery of the strategic gas emergency reserve'. These statements are consistent with the core assumptions underpinning the accelerated schedule set out in the PBC.

Starting with those sites identified as "most aligned" with the strategic objectives in Step 4a, High-level schedules were developed to evaluate whether there is a reasonable expectation that they can meet the N-1 project programme.

Given the inherent uncertainty associated with the high-level schedules developed as part of Step

4b, the term 'reasonable expectation' was interpreted to mean the ability to meet the emerging N-1 Project programme, defined in the PBC as 73 months, plus a contingency of 12 months, resulting in a threshold of approximately 85 months. This contingency reflects the reference class forecasting analysis undertaken during the development of the PBC, which was based on a P50 confidence level (i.e. the median of project outturns, where 50% of projects are completed earlier and 50% later).

Table 7-11 sets out a summary of the Steb 4b N-1 programme alignment evaluation.

Table 7-11 Step 4b N-1 Project programme Alignment Summary

| Site Ref | Site Name | Rank | 4b Programme | Reasonable Expectation of meeting N-1 | Comment           |
|----------|-----------|------|--------------|---------------------------------------|-------------------|
|          |           | 1    | ✓            | ✗                                     | Fail              |
| SE7      | Cahiracon | 2    | ✓            | ✓                                     | Pass              |
|          |           | 2    | ✓            | ✓                                     | Pass              |
|          |           | 4    | ✓            | ✗                                     | Fail              |
|          |           | 4    | ✓            | ✗                                     | Fail              |
|          |           | 6    | ✓            | ✗                                     | Fail              |
|          |           | 6    | ✓            | ✗                                     | Fail              |
|          |           | 8    | ✓            | ✗                                     | Fail              |
|          |           | 8    | ✗            | ✗                                     | Fail by reference |
|          |           | 8    | ✗            | ✗                                     | Fail by reference |
|          |           | 11   | ✓            | ✗                                     | Fail              |
|          |           | 11   | ✗            | ✗                                     | Fail by reference |
|          |           | 13   | ✗            | ✗                                     | Fail by reference |
|          |           | 13   | ✗            | ✗                                     | Fail by reference |
|          |           | 15   | ✗            | ✗                                     | Fail by reference |
|          |           | 15   | ✗            | ✗                                     | Fail by reference |
|          |           | 17   | ✗            | ✗                                     | Fail by reference |
|          |           | 17   | ✗            | ✗                                     | Fail by reference |



| Site Ref | Site Name | Rank | 4b Programme | Reasonable Expectation of meeting N-1 | Comment           |
|----------|-----------|------|--------------|---------------------------------------|-------------------|
|          |           | 19   | x            | x                                     | Fail by reference |
|          |           | 20   | x            | x                                     | Fail by reference |
|          |           | 21   | x            | x                                     | Fail by reference |
|          |           | 22   | x            | x                                     | Fail by reference |
|          |           | 23   | x            | x                                     | Fail by reference |

Based on this Project Programme Alignment evaluation, only two sites are considered to have a reasonable expectation of supporting accelerated delivery of the project 'as early as possible'.

These sites are:



- Site SE7 – Cahiracon

The Step 4b schedules for each of the sites are described in detail in the following sections. Appendix 3 contains details of Step 4b schedules prepared.

It is important to note that the high-level schedules prepared have been developed exclusively to support the Site Selection process and does not purport to represent the definitive master programme for the project. The schedules are intended solely as a high-level framework to inform comparative evaluation and should not be relied upon for detailed delivery sequencing, regulatory or contractual commitments.

#### 7.7.6 Step 4b - SE7 Schedule Overview, Logic and Sequencing

The schedules developed in respect of Site SE7 Cahiracon adopts a conventional infrastructure delivery model, structured around sequential and parallel workstreams. The critical path runs through, environmental assessment, planning / consenting, final investment decision (FID), and construction of the jetty and terminal (assuming EPC). The schedule, which is included in Appendix 3 reflects an accelerated scenario with no legal or procedural delays and is designed to support the delivery of the project 'as early as possible'.

The logic and sequencing are focused on several interdependent workstreams, Site selection is assumed to conclude in November 2025 (common to all Step 4b schedules). Environmental assessments and planning pack preparation are contingent on the availability of two years of baseline ecological data. One year of "no-regrets" surveys has been completed as of October 2025 in respect of this site, with a second year underway.

Front End Engineering Design (FEED) design is assumed to commence in April 2025 and continue for 12-month period. Project-specific impact assessments are scheduled to begin six (6) months after FEED initiation, dependent on the availability of engineering inputs and survey data. A six-month period is allocated for completion of the impact assessments and EIAR, accounting for in-combination effects. Planning pack development is programmed to run partially in parallel with EIAR preparation, with a two-month lag. Completion of the planning pack, legal review and GNI governance is assumed to take six months following EIAR completion.

As part of the Step 4b schedule development consideration was given to accelerating the commencement of project specific impact assessments earlier in the process (i.e. earlier than the 6-month period currently scheduled). Following careful consideration, it was concluded that the risks associate with this approach would outweigh potential benefits. In this regard the following key risks were noted:

- **Timing Misalignment:** There is a significant risk that project-specific impact assessments for the EIAR may commence before the FEED design is sufficiently mature. If the design evolves materially after assessments begin, this can result in misalignment between the EIAR and the final project scope, requiring substantial rework or amendment of the EIAR.
- **Material Design Changes:** The FEED stage is inherently iterative. Any major changes in design after impact assessments have started can undermine the validity of the EIAR, as the document is highly interdependent (e.g. an issue with one chapter is highly likely to impact on several other chapters within the EIAR) and relies on stable design inputs. This poses a risk of consenting / permitting refusal or requests for significant further information, leading to delays and increased costs.
- **Schedule Impact:** Risks identified include delays if surveys or assessments must be repeated due to design changes or incomplete data, e.g. Currently understood that flaring is not required, if this was to change then additional surveys may be required or other assessments repeated. An accelerated approach to the submission of the Planning Application further narrows the window for data collection and alignment.
- **Regulatory & Stakeholder Risks:** Regulatory bodies may impose onerous conditions or refuse consent if the EIAR does not accurately reflect the final design or if the design envelope is excessive. Stakeholder engagement and public consultation may also be compromised if project details change late in the process.

Planning and consenting activities are triggered by the completion of the planning pack and governance review. It is assumed that all statutory consents required to facilitate this, including Marine Usage Licences (MUL), Marine Area Consent (MAC) etc. are completed within 'minded to' periods and on an accelerated footing including pre-planning consultation etc. As highlighted previously, no allowance is made for judicial review or legislative challenge. A nine-month accelerated determination period is assumed for ACP decision. Stakeholder engagement and communications are programmed to run in parallel with environmental and planning activities.

Access to lands for surveys and investigations has already been secured by GNI. It is assumed that land acquisition and wayleave negotiations would continue on an amicable basis to obtain letters of consent to submit planning application in the first instance. Final negotiations are scheduled to conclude immediately upon receipt of planning consent, assuming no judicial reviews. It is



assumed that a compulsory purchase order (CPO) if required will not dictate the critical path. While the initial intention is to secure a negotiated agreement, in the event that a CPO is required, it is assumed that the necessary amendments to secondary legislation will be made to facilitate a planning application to be lodged without a requirement for the land to have been acquired in advance or without a requirement for consent to have been obtained from the relevant landowners in advance.

Engineering design (FEED) is assumed to commence in April 2026 and conclude within 12 months. FEED inputs relevant to project-specific impact assessments are expected to be available six months after FEED consultant mobilisation. The schedule assumes an EPC contract strategy, with the EPC contractor responsible for completing detailed 'for construction' design.

Procurement of main works contracts commenced in February 2025 with an expression of interest (EOI). Procurement is undertaken in parallel with other workstreams. Tenders are kept "live" until FID is secured. Planning decisions and associated conditions are assumed to trigger best and final offers (BAFO) in respect of competitions.

Final Business Case preparation is assumed to commence following submission of the planning application. The Final Business Case is finalised upon receipt of planning permission and associated consents and following BAFO from open competitions. An accelerated FID approval is assumed within four months of receiving the final grant of planning. Following FID, letters to successful and unsuccessful tenderers are issued, and contracts are executed immediately upon expiry of the standstill period. Again, no legal challenges to procurement decisions are assumed.

Construction and delivery timelines (Post FID) are based on a high-level schedule informed by global norms for the design and construction of similar facilities. For the Step 4b evaluation, a standardised construction schedule provided by GNI's peer review consultant was adopted across all sites, except for brownfield sites. This schedule which is presented in Appendix 3 estimates a total critical path of 33 months for the delivery of the terminal, including the FSRU berth and associated unloading equipment. The schedule accounts for the onshore facilities required to support the send out of re-gas to the GNI transmission network. The design, planning and construction of any network tie-in infrastructure and pipelines has not been explicitly considered, but would be expected to be completed within the same timeframe. The critical path is driven by onshore activities, specifically the procurement and integration of metering stations, which are identified as long lead items by GNI's consultant. This construction schedule provides a consistent baseline for comparative evaluation of programme alignment across sites as part of Step 4b. However, it is noted that site specific constraints and characteristics may influence the delivery timelines. As such a further update of the post FID schedule was prepared for the shortlisted sites by GNI's concept definition consultant to inform the Step 5 CBA evaluation.

The Step 4b for Site SE7 Cahiracon presents an accelerated programme aligned with the strategic objective of delivering the SGER as early as possible. The schedule reflects several optimistic assumptions. These include no delays in GNI governance, regulatory processes, landowner

negotiations, or procurement challenges. The four-month turnaround from planning approval to FID is aggressive particularly given dependencies on procurement competition BAFOs and internal governance. FEED design is a key input to both the consenting process and procurement of main contracts which requires careful interface management.

#### 7.7.7

[REDACTED]

[REDACTED]

#### 7.7.8 Site Selection – Step 5 – Detailed Assessment

Shortlisted sites and associated route corridors underwent combined MCA considering technical, environmental, planning and financial criteria. This process is described in Section 7.9.

### 7.8 Pipeline Route Selection Process

Following identification of the two “most aligned” site options in Step 4b, the Route Selection

Process to establish the preferred connection point to the gas transmission network was advanced to Step 2.

### 7.8.1 Pipeline Route Selection – Step 2 - Study Area Definition

Step 2 of the pipeline route selection process establishes the spatial context within which to develop feasible options and to carry out a systematic assessment of these options leading to a preferred solution which will form the basis for detailed design.

The pipeline Study Area is defined taking account of:

- Geographical catchment
- Natural or national administrative boundaries

The route selection study area(s) encompasses areas between the shortlisted sites as identified in Step 4b of the Site Selection Study (i.e. no more than three) and the nearest viable connection point to the gas transmission network.

The output of Pipeline Route Selection Step 2 is a map of the study area(s) which form the basis for subsequent stages.

### 7.8.2 Pipeline Route Selection – Step 3 - Initial Screening

The purpose of Step 3 is to identify major engineering constraints and environmental features within the defined study area to inform the development of potential pipeline route corridors. This stage provides an initial understanding of areas which may present significant challenges for construction, environmental compliance or planning allowing these factors to be considered in subsequent route design.

Initial screening is primarily a GIS-based exercise mapping both constrained and unconstrained lands. The Constraints considered as part of this step include those following table.

*Table 7-12 Pipeline Route Selection – Step 3 – Initial Screening*

| Initial Constraints                      | Defined As:                                                                                                          |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Centres of built development             | Areas with built development                                                                                         |
| Engineering considerations               | Crossings of Major roads, high density traffic routes, overhead cables, rivers, railways, other major pipelines etc. |
| Protected Areas                          | World Heritage Sites, SACs, SPAs, etc.                                                                               |
| Known underground activity               | Areas subject to mineral extraction and landfill.                                                                    |
| Areas susceptible to construction issues | Side slopes and difficult ground conditions arising from the geology, hydrology, soils of the area                   |



| Initial Constraints    | Defined As:                                                                                                                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High Amenity Landscape | Landscape Character Areas, the presence of any designated scenic routes, protected views and prospects, nearby landmarks or recorded monuments.<br><br>Public Open Spaces of high use.                                      |
| Topography             | Clearly unsuitable landforms, such those subject to landslide risk as per National Landslide Susceptibility Mapping will be identified.<br><br>Areas with a slope in excess of 1 in 5 (20%) will be identified.             |
| Nature conservation    | Identified NHAs and pNHAs.<br><br>Mature Vegetated areas, wetlands, nature reserves identified in County Development Plans                                                                                                  |
| Archaeology            | Identified archaeology, cultural and architectural heritage areas                                                                                                                                                           |
| Flooding               | Flood Zones as identified in OPW / CDP                                                                                                                                                                                      |
| Land Use Zoning        | land use zoning will be identified and areas where works would be prohibited or where works would conflict with Core Strategy / Growth targets of CDP or having regard for public safety issues would preferably be avoided |

It is important to note that this step does not apply a pass / fail approach. The presence of a constraint does not automatically exclude an area; rather it informs the design and evaluation of route corridors. Where constraints cannot be avoided, their severity will be assessed during later stages and mitigation measures may be proposed.

The output from Pipeline Route Selection Step 3 will be a map of lands within the study area and the relevant constraints identified. This will allow both the constrained lands and unconstrained lands to be easily identified. The Constraints mapping is incorporated in the book of drawings accompanying this report.

### 7.8.3 Pipeline Route Selection Step 4 Options Shortlisting

Step 4 of the pipeline route selection process is a critical stage that refines the study areas identified in Step 3 into defined route corridors for assessment. This step dovetails with the site selection process to ensure that each shortlisted site is paired with a viable pipeline route to the NTS.

Using the constraints maps developed in Step 3, three potential route corridors are identified for

each shortlisted site (i.e. SE7 Cahiracon and [REDACTED]), each approximately 1 kilometre wide. The corridors are intended to accommodate a range of viable pipeline routes therein for each of the shortlisted sites.

The identification process prioritised the shortest routes from point A to point B whilst avoiding the initial constraints (e.g. protected areas, archaeological sites etc) identified in Pipeline Route Selection Step 3 where possible and having cognisance of engineering feasibility (e.g. minimising crossings of major roads, rivers, other infrastructure)

Where constraints could not be fully avoided, engineering judgement was used to determine the severity of the constraint. Where the severity of the initial constraint was considered 'significant', then the affected area was avoided. Where an initial constraint was not considered 'significant', the area was included in the affected 1km wide route corridor.

The 1km route corridors identified for SE7 Cahiracon are detailed in Table 7-13 and Figure 7-8. Similarly, [REDACTED]

Table 7-13 Site SE7 : Cahiracon - 1km Pipe Corridors

| Corridor Ref    | Corridor Description                                                                    |
|-----------------|-----------------------------------------------------------------------------------------|
| Corridor SE7-01 | <b>Most Easterly Route:</b><br>Approximately 1.14km from the identified site to the NTS |
| Corridor SE7-02 | <b>Central Route</b><br>Approximately 0.89km from the identified site to the NTS        |
| Corridor SE7-03 | <b>Most Westerly Route</b><br>Approximately 1.26km from the identified site to the NTS  |



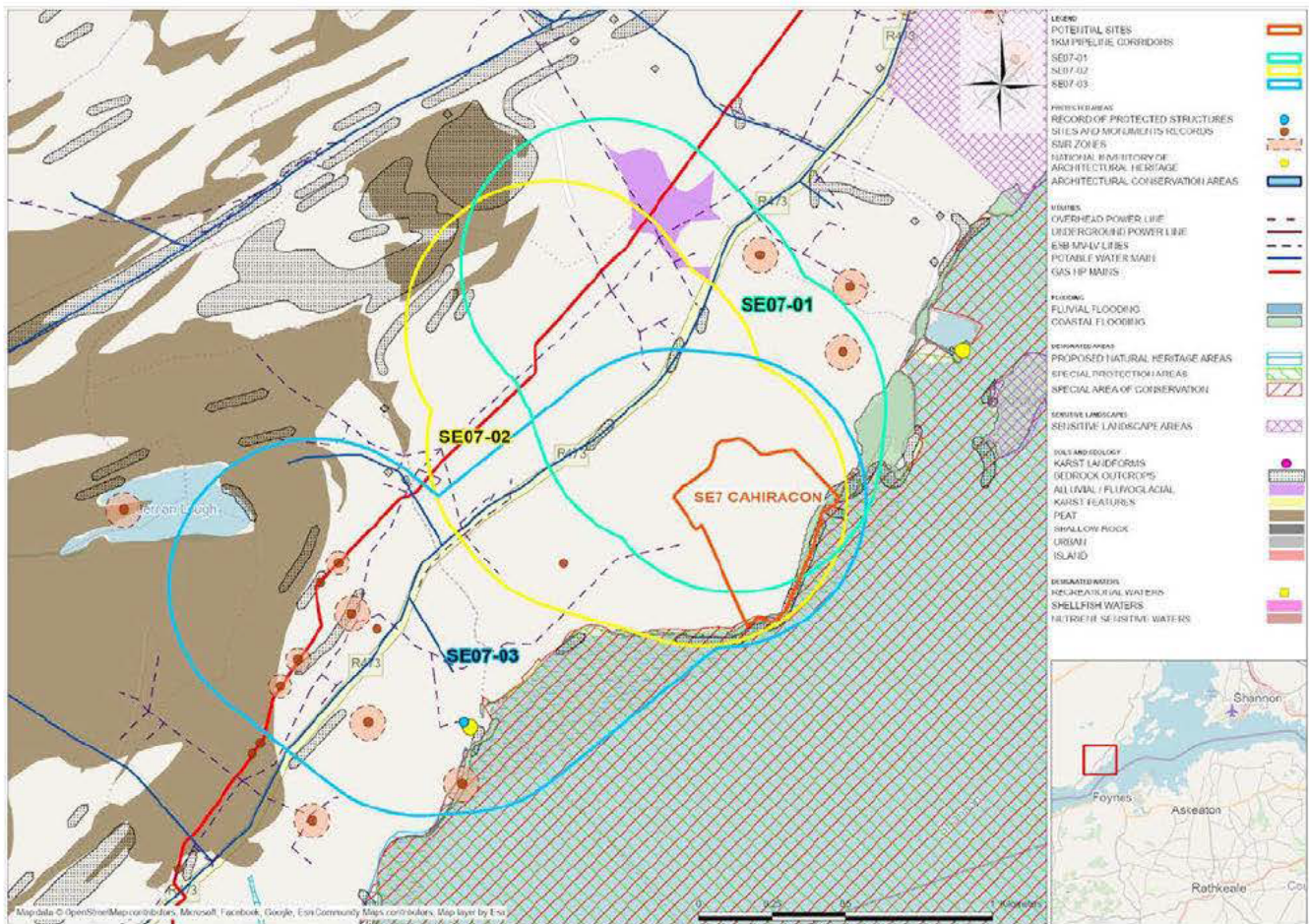
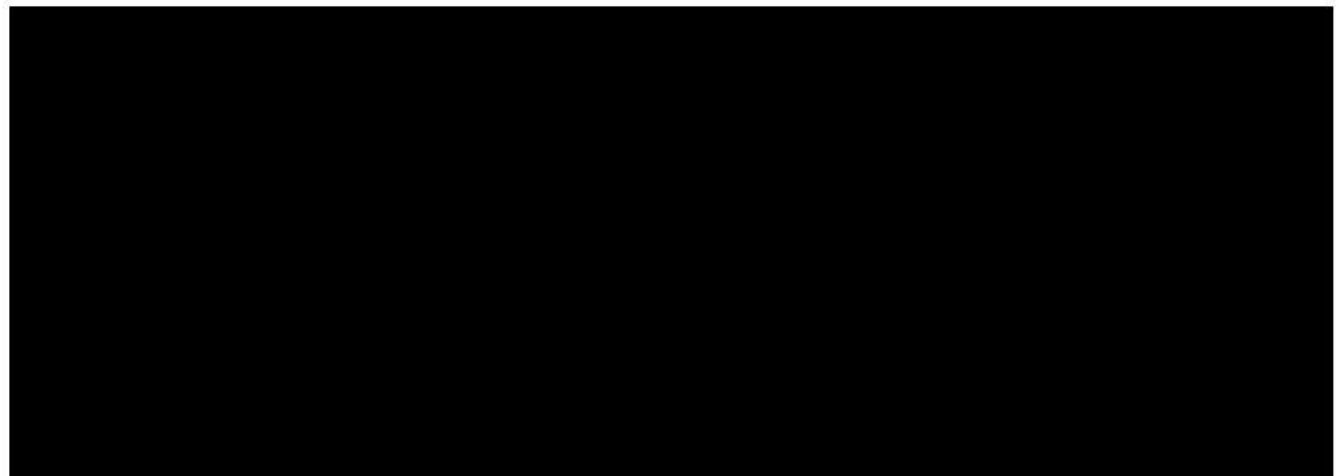


Figure 7-8 Site SE7 Cahiracon – 1km Pipeline Corridors



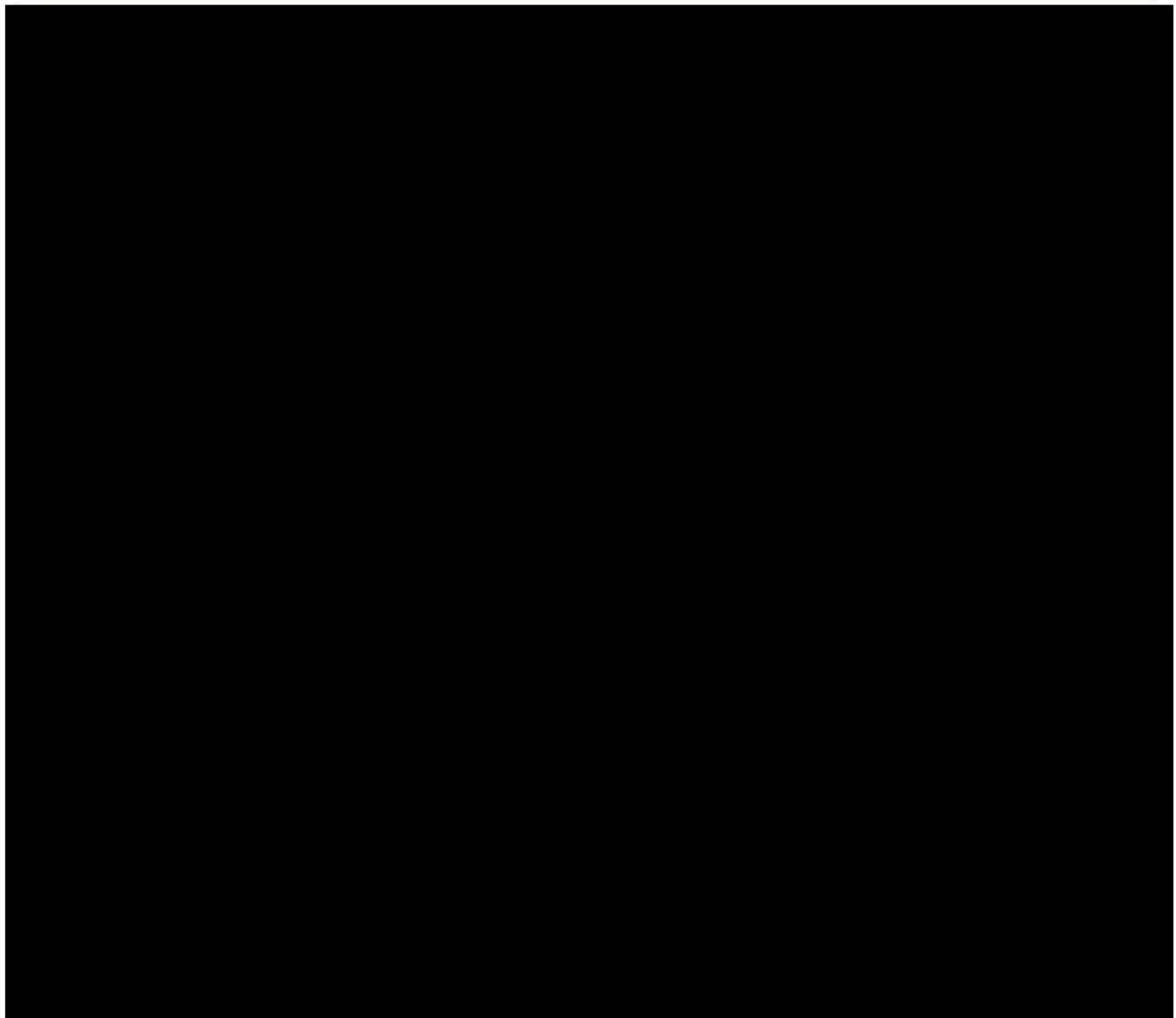


Table 7-15: Route Selection Step 4a Strategic Objective Alignment Criteria and metric.

| Assessment Metric                                                                                                                                                                                                        | Strategic Objective Alignment*                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preference will be given to a route corridor with the greatest availability of reliable baseline (ecological) data in terms of quality and quantity.                                                                     | <i>Deliver a solution as early as possible<br/>Meet or exceed industry best practice in relation to safety and the environment</i>                         |
| Preference will be given to a route corridor that is not located in areas which are at risk of widespread flooding which increases construction costs & time and potentially compromises the resilience of the solution. | <i>Deliver a solution as early as possible<br/>Meet or exceed industry best practice in relation to safety and the environment</i>                         |
| Preference will be given to avoiding areas of poor ground which increases construction costs & time and environmental risks (e.g. peat, lake deposits, soils containing alluvial or fluvioglacial deposits)              | <i>Deliver a solution as early as possible<br/>Achieve a cost-effective, affordable solution that optimises EU grant funding and cost recovery options</i> |



| Assessment Metric                                                                                                                                                                                                                                                                                                                | Strategic Objective Alignment*                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| and shallow rock or karst features).                                                                                                                                                                                                                                                                                             |                                                                                                                                     |
| Preference will be given to sites that are not located within designated sites and/or have no source, pathway, receptor connection to a designated site. Secondary preference will be given to a route that can likely be capable of meeting the requirements of Article 6(3) of the Habitats Directive (Appropriate Assessment) | <i>Meet or exceed industry best practice in relation to safety and the environment<br/>Deliver a solution as early as possible.</i> |
| Preference will be given to routes that avoid / minimise impacts to recreational waters, designated bathing waters, designated nutrient sensitive waters, designated shellfish waters and aquifers designated as extremely vulnerable.                                                                                           | <i>Meet or exceed industry best practice in relation to safety and the environment<br/>Deliver a solution as early as possible.</i> |
| Preference will be given to the shortest pipeline length                                                                                                                                                                                                                                                                         | <i>Achieve a cost-effective, affordable solution that optimises EU grant funding and cost recovery options</i>                      |
| Preference will be given to the route that minimises the number of land parcels that may need to be acquired                                                                                                                                                                                                                     | <i>Deliver a solution as early as possible.</i>                                                                                     |
| <i>Preference to avoid impacts to National Monuments, archaeological sites as identified in the Record of Monuments and Places (RMP), structures listed in the Record of Protected Structures (RPS), and Architectural Conservation Areas].</i>                                                                                  | <i>Deliver a solution as early as possible<br/>Meet or exceed industry best practice in relation to safety and the environment</i>  |
| <i>Preference will be given to the route which minimises special crossings (such as water, road, rail, infrastructure)</i>                                                                                                                                                                                                       | <i>Deliver a solution as early as possible.</i>                                                                                     |

*\*The ability of the technology to maximise potential future renewable gas use has been considered in the technology design and Strategic Objective No 3 will also be considered as the design of the technology is progressed to detailed design. Further, the design of the pipeline for transmission of hydrogen is a technical compliance matter as per ASME B31.12 and is included in the technical parameters for the pipeline. As such, this strategic objective is not considered relevant to this step in the project i.e. identification of sites*

*\*Alignment with Strategic Objective No 4 has been considered in technology design. Whilst not considered for the purpose of identifying specific sites, further consideration of consistency with the Climate Action and Low Carbon Development Act 2015–2021 is applied in Step 5.*

Each route corridor was assessed and ranked in order of most aligned with strategic objectives to least aligned for each of the sites shortlisted in Step 4b of the Site Selection Process. Where the route corridors were considered to be similar to one another, a neutral score was allocated across the route corridor options. The route corridor with the most preferences in the relevant categories was considered in determining the preferred route corridor.



Table 7-16 Pipeline Route Selection Step 4a Scoring matrix

| Scoring         |
|-----------------|
| Least Preferred |
| Neutral         |
| Most Preferred  |

The Step 4 scoring is summarised in **Error! Reference source not found.** and **Error! Reference source not found.** for SE7 Cahiracon respectively with brief narrative presented following each table. A more detailed record of the assessment is included in Appendix 4.

Table 7-17 Step 4 Pipeline Route Assessment Scoring – SE7 Cahiracon

| Step 4b Criteria                                                                                                                                                                                                                                                                                                                 | Site SE7Cahiracon |                 |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|-----------------|
|                                                                                                                                                                                                                                                                                                                                  | Site SE7          | Site SE7        | Site SE7        |
|                                                                                                                                                                                                                                                                                                                                  | Corridor SE7-01   | Corridor SE7-02 | Corridor SE7-03 |
| <b>Technical Criteria</b>                                                                                                                                                                                                                                                                                                        |                   |                 |                 |
| Preference will be given to the shortest pipeline length.                                                                                                                                                                                                                                                                        |                   |                 |                 |
| Preference will be given to the route that minimises the number of land parcels that may need to be acquired                                                                                                                                                                                                                     |                   |                 |                 |
| <b>Infrastructure and Utilities</b>                                                                                                                                                                                                                                                                                              |                   |                 |                 |
| Preference will be given to the route which minimises special crossings (such as water, road, rail, [significant] infrastructure)                                                                                                                                                                                                |                   |                 |                 |
| <b>Environmental Criteria</b>                                                                                                                                                                                                                                                                                                    |                   |                 |                 |
| Preference will be given to a route corridor with the greatest availability of reliable baseline (ecological) data in terms of quality and quantity.                                                                                                                                                                             |                   |                 |                 |
| Preference will be given to sites that are not located within designated sites and/or have no source, pathway, receptor connection to a designated site. Secondary preference will be given to a route that can likely be capable of meeting the requirements of Article 6(3) of the Habitats Directive (Appropriate Assessment) |                   |                 |                 |
| <b>Cultural Heritage</b>                                                                                                                                                                                                                                                                                                         |                   |                 |                 |
| Preference to avoid impacts to National Monuments, archaeological sites as identified in the Record of Monuments and Places (RMP), structures listed in the Record of Protected Structures (RPS), and Architectural Conservation Areas.                                                                                          |                   |                 |                 |
| <b>Hydrology and Hydrogeology</b>                                                                                                                                                                                                                                                                                                |                   |                 |                 |
| Preference will be given to a route corridor that is not located in areas which are at risk of widespread flooding which increases construction costs & time and potentially compromises the resilience of the solution.                                                                                                         |                   |                 |                 |
| Preference will be given to routes that avoid / minimise impacts to recreational waters, designated bathing waters, designated nutrient sensitive waters, designated shellfish waters and aquifers designated as extremely vulnerable                                                                                            |                   |                 |                 |
| <b>Soils and Geology</b>                                                                                                                                                                                                                                                                                                         |                   |                 |                 |
| Geological Heritage                                                                                                                                                                                                                                                                                                              |                   |                 |                 |
| Preference will be given to avoiding areas of poor ground which increases construction costs & time and environmental risks (e.g. peat, lake deposits, soils containing alluvial or fluvio-glacial deposits and shallow rock or karst features).                                                                                 |                   |                 |                 |
| <b>Pipe Corridor Scoring</b>                                                                                                                                                                                                                                                                                                     |                   |                 |                 |
| Identification of the preferred pipe corridor per site                                                                                                                                                                                                                                                                           |                   |                 |                 |

For SE7, Corridor SE7-02 was considered the most preferred in one of the identified criteria and least preferred in none of the criteria. Whereas closest route option also ranked most preferred in one criteria but least preferred in two criteria, confirming its ranking as second most preferred route corridor. The close scoring also reflects the very similar nature of the identified route corridors. Accordingly SE7-02 is considered the most preferred corridor for site SE7 and this combination of Site and Route Corridor will be brought forward to Step 5 of the Site and Route Selection process.





## 7.9 Site & Route Selection – Step 5 Detailed Assessment

### 7.9.1 Introduction

The purpose of Step 5 Detailed Assessment is to evaluate and compare the shortlisted sites and associated pipe routes brought forward from the above Step 4b.

A Multi-Criteria Analysis (MCA) approach was used that takes account of a wide range of environmental, planning, technical and economic criteria with a view to identify the least constrained option (the emerging preferred option) using a comparative evaluation process.

The MCA approach for the project was agreed as per the methodology at the commencement of the

site and route selection process and has been prepared in line with Site and Route Selection approaches tried and tested for other infrastructure projects in Ireland, particularly Uisce Éireann . The comparative evaluation process is qualitative although quantitative attributes will be relied upon, as appropriate, to inform the qualitative assessment (e.g., no. of river crossings or length of pipeline). Qualitative evaluation is a long-established and accepted process of decision making based on information and knowledge obtained to date, without implying whether one criterion is of greater or lesser importance than another (i.e., no weighting of criteria). The approach can record whether, in respect of a particular criterion, an option is 'Advantageous / More Preferred / More Favourable', 'Neutral' or 'Less Advantageous / Less Preferred / Less Favourable'. The reference to 'Preferred / Favourable' should be taken to mean 'least constrained' or 'better-fit' to meet the parameters of the project. The reference to 'Neutral' is that the results are broadly the same for every site option / route corridor in the study area. These issues include those for which it is reasonably assumed that standard or normal mitigation measures can and will be implemented and which will therefore be the same or similar for each identified site / route and those issues more appropriate addressed during subsequent detailed route design, and planning stages. Special or bespoke mitigation measures are not included here and must be considered on an individual basis including from a technical / economic perspective.

When evaluating options relative to each other, particular emphasis is placed on those constraints categorised as Primary Constraints (i.e. ecological and archaeological sites / features afforded protection at a World or European level). When comparing one criterion against another, emphasis is also placed on the significance of the likely impact, and whether or not, in general terms, potential impacts can be mitigated. It is reasonable that when comparing route corridors, if there are likely to be long term adverse significant residual impacts which cannot be mitigated which are associated with a particular criterion, then these are deemed to be more sensitive than a potential impact which can be mitigated.

As a qualitative approach was adopted expert judgement was applied in determining selection indicators. The selection of the final preferred site(s) was based on a cumulative consideration of the selection indicators. Table 7-19 below shows the selection indicators that were applied to compare specific site characteristics. A matrix that shows this comparison of the potential sites for each of the criteria is then provided later in this report.

*Table 7-19 Selection Indicators for Comparative Assessment of Sites*

| Classification Categories | Key |
|---------------------------|-----|
| More Favourable           |     |
| Neutral                   |     |
| Less Favourable           |     |



Both sites plus their pipe route were assessed against the identified MCA criteria along with a basis and justification provided for the indicator scoring. Assessments of potential sites involved both desktop studies and visual inspections of the shortlisted sites. The shortlisted sites were then assessed against the set criteria outlined below.

### 7.9.2 Multi-Criteria Analysis (MCA) Criteria

The outline criteria used in the MCA was identified by the project team at the commencement of the site selection process (i.e. at Step 1) and is identified in Table 7-20 below. As these criteria was identified at an early stage it was subject to review and refinement at the beginning of Step 5. The refinements related primarily to the methodology to be used in step 5 final assessment versus what had been initially set out as the proposed methodology at the commencement of step 1. In relation to the site assessment criteria, the methodological refinements and clarifications related to the Biodiversity, Odour and Noise and Vibration, Access and Traffic assessments. In relation to the pipe route selection assessment criteria, the methodological refinements and clarifications related to Biodiversity and Access and Traffic. All methodological refinements and clarifications which were made were reviewed and considered immaterial by the project team and had no impact on the earlier steps of the site selection process nor favoured one site over another. Examples of the refinement related to where the initial methodology for the Access and Traffic assessment as part of Step 5 proposed to undertake a traffic survey. Upon completion of step 4b and identification of the sites to be brought forward it was considered that traffic survey data would not be required, as such the methodology was refined.

The criteria outlined below (Table 7-2) is based on technical criteria for assessment of infrastructure of this nature defined by the ESP, expert maritime input, environmental guidance published by EPA and other relevant agencies and specific requirements for FSRU developments as outlined in the relevant guidance [SIGTTO /PIANC / Etc].

*Table 7-20 MCA Selection Criteria for Comparative Assessment of Sites*

| Section Reference | Heading   | Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.2.1             | Technical | <ul style="list-style-type: none"> <li>a) Land Availability</li> <li>b) Sufficient space to moor an FSRU and an LNGC side by side whilst allowing passing vessel and other port activities to continue.</li> <li>c) Inadequate Distance from Other Commercial Port Users / impacts on existing port operations</li> <li>d) Service and Utility Connections</li> <li>e) Safety</li> <li>f) Topography</li> <li>g) Construction Constraints</li> <li>h) Proximity to existing gas network and current capacity to service the development</li> </ul> |

| Section Reference | Heading       | Criteria                                                                                                                                                                                                                                                                                                                                               |
|-------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |               | <ul style="list-style-type: none"> <li>i) Avoidance of areas which are at risk from fluvial and tidal flooding.</li> <li>j) Appropriate ground conditions (geotechnical stability / lithology)</li> <li>k) Proximity to potential high-energy users</li> <li>l) Flexibility to receive a range of LNGCs</li> </ul>                                     |
| 7.2.2             | Environmental | <ul style="list-style-type: none"> <li>a) Biodiversity</li> <li>b) Geology and Hydrogeology</li> <li>c) Hydrology / Water quality</li> <li>d) Odour</li> <li>e) Noise and Vibration including underwater noise / vibration</li> <li>f) Air Quality</li> <li>g) Landuse</li> <li>h) Marine (Human)</li> <li>i) Climate</li> </ul>                       |
| 7.2.3             | Planning      | <ul style="list-style-type: none"> <li>a) Adjoining Land Use</li> <li>b) Planning History</li> <li>c) Archaeology, Cultural and Architectural Heritage</li> <li>d) Specific Development Plan Policies/Objectives</li> <li>e) Landscape and Visual Impacts</li> <li>f) Access and Traffic</li> <li>g) Local Receptors</li> <li>h) Landowners</li> </ul> |
| 7.2.4             | Financial     | <ul style="list-style-type: none"> <li>a) Capital Expenditure</li> <li>b) Operational Expenditure</li> </ul>                                                                                                                                                                                                                                           |

The assessment of technical, environmental and planning criteria for both the site and the associated pipeline route was undertaken independently by the Consultant's project team, entirely separate from the financial criteria assessment. The financial evaluation was carried out by a separate GNI appointed team and was only provided to the consultant after all other assessments had been completed, reviewed and approved. This approach ensured that the technical, environmental and planning considerations were assessed objectively and without influence from the financial criteria assessment.



### 7.9.3 MCA Category Weighting and Assessment matrix

As part of Step 5, an Analytic Hierarchy Process (AHP) was applied by GNI to determine the relative importance of the four key assessment categories, i.e. technical, environmental, planning and financial. AHP is a structured decision-making technique that facilitates pairwise comparison of



criteria using a defined descriptor scale of relative importance.

For the purpose of the MCA Category Weighting, the defined descriptor scale used was:

- **MS** = Much Stronger than
- **S** = stronger than
- **N** = Neutral
- **W** = Weaker than
- **MW** = Much Weaker than

When this scoring process is completed, the overall weightings are determined using the standard mathematical processes. The resultant weightings are identified in Table 7-21 below.

Table 7-21 MCA Category Weighting

|               | Weighting Results | Technical | Environmental | Financial (CBA) | Planning |
|---------------|-------------------|-----------|---------------|-----------------|----------|
| Technical     | 19.7%             | N         | N             | MW              | S        |
| Environmental | 28.0%             | N         | N             | N               | S        |
| CBA           | 43.0%             | MS        | N             | N               | S        |
| Planning      | 9.3%              | W         | W             | W               | N        |

Upon completion of the Step 5 MCA for the site and pipe route, scores are tallied to identify an unweighted score for each category (i.e. Technical / Environmental / Planning and Financial).

The Weighted Score (%) for each category and shortlisted option is calculated based on the following formula:

$$\text{Weighted Score (\%)} = (\text{Unweighted Score for Option under Consideration}) / (\text{Highest Unweighted Score for all Options}) \times \text{Weighting}$$

The above formula yields a Weighted Score (%) for each category which, when tallied, yields the Total Weighted Score for each Option. The option with the Highest Total Weighted Score represents the emerging preferred site and pipe route.

The Step 5 Site and Pipeline Route Assessment Matrix, developed using the weightings and calculation method, is presented in Table 7-22 as a template for reference:

Table 7-22 Step 5 Site and Pipeline Route Assessment Matrix Template

| Category               | Weighting     | Site and Route Option |                    |                  |                    |
|------------------------|---------------|-----------------------|--------------------|------------------|--------------------|
|                        |               | SE 7                  |                    | SE 15            |                    |
|                        |               | Unweighted Score      | Weighted Score (%) | Unweighted Score | Weighted Score (%) |
| Technical              | 19.7%         |                       |                    |                  |                    |
| Environmental Criteria | 28.0%         |                       |                    |                  |                    |
| Planning Criteria      | 9.3%          |                       |                    |                  |                    |
| Financial Criteria     | 43.0%         |                       |                    |                  |                    |
| <b>Total</b>           | <b>100.0%</b> |                       |                    |                  |                    |

## 7.9.4 Detailed Assessment

The below section provides a summary of the detailed assessment undertaken as part of step 5. For simplicity, a scoring was used to rank the most preferred as a '3', neutral as a '2' and least preferred as a '1'. The detailed analysis and background assessment tables supporting this summary are contained at Appendix 5. The assessment of each site against the agreed criteria is followed by an assessment of each associated pipe route against the agreed criteria. The results are then combined and assessed using the Step 5 assessment matrix outlined in Section 7.9.3.

### 7.9.4.1 Technical [Site]

Table 7-8 below outlines the summary results for the comparison of the SE7 and SE15 (does not include pipe route). In summary, both sites are considered neutral across most technical criteria indicating they are similarly suitable. There are two stand out criteria, the first relates to 'proximity to existing gas network' and the second relates to proximity to high-energy use clusters, this resulted in an overall scoring of 27 to 26 in favour of SE7.

In relation to 'proximity to existing gas network', Site SE7 was deemed 'more favourable' as it would require a pipeline of c. 650m of pipeline to connect the site to the existing national transmission network.

Regarding 'proximity to high-energy use clusters',

Site SE7 was deemed neutral, as while the site is in proximity to European Hydrogen Backbone represented by existing national transmission main and there is some potential for marine related industries and high energy users to develop in the future on the surrounding lands, the SIFP designation refers to Marine uses not high energy users developing in the surrounding lands as

such, this site was deemed 'neutral' and not 'less favourable'.

#### 7.9.4.2 Environmental [Site]

As set out in table 7-9 below, both SE7 and [REDACTED] are considered Neutral across all environmental criteria indicating similar suitability from an environmental criteria perspective, resulting in an overall scoring of 18 each for both SE7 [REDACTED].

#### 7.9.4.3 Planning [Site]

Table 7-10 above outlines the summary results for the comparison of the SE7 [REDACTED] sites in relation to planning criteria. In summary, both sites are considered neutral across a number of the planning criteria indicating they are similarly suitable, however there are clear differentiators between the two sites with the overall scoring being 18 compared to 14 in favour [REDACTED]

In relation to 'adjoining land use' criteria, SE7 was deemed 'less favourable' as it is within proximity and clear view to Cahiracon House which has long being touted for a future leisure/tourist redevelopment. Furthermore, there are recent planning permissions issued by Clare County Council for residential related works on the Cahiracon House Estate curtilage which surrounds SE7. Site [REDACTED] deemed 'neutral' as the surrounding land is largely agricultural with some permitted energy related infrastructure which would align with the project in proximity to the site.

[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED] Site SE7 was deemed 'neutral' as there was a historic grant of permission for an industrial type facility on the subject lands, although it was not energy related.

Under the criteria 'archaeology and cultural heritage, SE7 was deemed 'neutral' as it was noted that there was low to moderate sensitivity with no confirmed constraints but potential remains. [REDACTED] was deemed 'less favourable' as it has a high archaeological sensitivity with extensive confirmed features requiring significant mitigation.

[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED] SE7 was considered to be 'neutral' as it is zoned for marine related industry, without any specific reference to the lands being part of a future energy hub.

In relation to 'landscape and visual impacts' criteria, [REDACTED] was deemed 'neutral' as the site is not located in proximity to any scenic protections. SE7 was deemed 'less favourable' as it is located within a designated seascape character area and near a designated scenic route.



Table 7-23 Technical Criteria – Site Only

| Technical criteria for consideration - Site Only                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Site SE7 Cahiracon |    |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----|
| a) Land availability                                                                                                                | The assessment of land availability will consider if a new jetty and on shore gas plant facilities need to be constructed, and if there is there enough space at the potential site for the necessary infrastructure including vehicle monitoring, import controls, and vehicle manoeuvring areas on the onshore site. <b>Preference will be given to sites that are existing facilities and have sufficient space for the required technical project requirements. If no site with existing facilities is found, preference will be given to next most favourable site in relation to land availability.</b><br><br>For the purpose of the site selection criteria, it is assumed that the onshore facilities will be accommodated within a site of approximately 20ha. The 20ha site limitation has been identified by the Engineering Team as the minimum required area to provide the relevant onshore gas plant, AGI, provision of landscaping, drainage measures and provision of suitable space to allow for future-proofing/transition to renewables. | 2                  | 2  |
| b) Sufficient space to moor an FSRU and an LNGC side-by-side whilst allowing passing vessels and other port activities to continue. | In order to accommodate the LNGC berthing and subsequent LNG unloading operations, a minimum distance on the seaward side of the moored LNGC and FSRU to the port inbound/outbound navigational channel such that it still allows safe passage in the navigational channel for passing vessels without risk of damage to the LNGC and FSRU mooring arrangements will be required. <b>Preference will be given to sites that provide the safest ship to ship transfer configuration. This will be established by expert review and advice.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2                  | 2  |
| c) Adequate distance of Jetty from other commercial port users / impacts on existing port operations                                | Industry guidance recommends that the location of the jetty and ultimate moored FSRU should be well removed from other marine traffic and any port activity which may cause hazard. <b>Preference will be given to sites that are well removed from other commercial port users.</b> Separation distances will be informed by expert advice and industry guidance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2                  | 2  |
| d) Service and utility connections                                                                                                  | The availability of utilities required to service the new development at each site will be considered. Utilities that will be reviewed will include surface water discharge, potable water supply, electricity supply (MV), and telecommunications. <b>Preference will be given to a site with existing service and utility connections or failing this the site in closest proximity to same.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2                  | 2  |
| e) Safety                                                                                                                           | Project will fall under COMAH Regulations, as such the sites ability to meet the relevant COMAH Regulation requirements must be considered. <b>Preference will be given to a site that can clearly meet the required COMAH Regulations from initial expert review.</b> Where there are obvious issues, such as proximity to residential receptors, which could make it difficult to gain support from the HSA then these sites would be deemed less favourable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2                  | 2  |
| f) Topography                                                                                                                       | Identification of steep slopes, high ground to be avoided. Professional judgement from review of available material as well as site inspections will be required to establish the sites topography. <b>Preference will be given to a site that has a topography that will enable ease of project development.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2                  | 2  |
| g) Construction constraints                                                                                                         | Construction access to a site will require deliveries via major roads and potentially rail. A review of the available road and rail connections to the site will be required. <b>Preference will be given to a site that has better road and rail connections.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2                  | 2  |
| h) Proximity to existing gas network and current capacity to service the development                                                | The development will require connection to the national gas network. Ability to easily connect and avoid/reduce require pipeline upgrades will be considered beneficial. <b>Preference will be given to a site that is closest to the existing gas network and the network has capacity to service the development with minimal or no upgrades. Failing this, preference will be given where there is an established or permitted onshore pipeline route. Failing this, preference will be given to the site that can be provided with the least constrained pipeline route (high-level review).</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3                  | 1  |
| i) Avoidance of areas which are at risk from fluvial and tidal flooding.                                                            | <b>Preference will be given to sites where there is low risk from fluvial and/or tidal flooding as determined by a competent expert.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2                  | 2  |
| j) Appropriate ground conditions (geotechnical stability / lithology)                                                               | <b>Preference will be given to sites where ground conditions would be favourable to accommodating the technical project requirements.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2                  | 2  |
| k) Proximity to potential high-energy use clusters and future hydrogen production                                                   | The development will likely transition to hydrogen supply in the future. As such the proximity of the site to potential high-energy users would encourage and support hydrogen use in the future. <b>Preference will be given to a site that is in close proximity to high energy users.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2                  | 3  |
| l) Flexibility to receive a range of LNGCs                                                                                          | Consideration will be given to the range of LNGCs to be accommodated. <b>Preference will be given to a site which can accommodate the greatest range of LNGCs and hence provide the greatest flexibility.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2                  | 2  |
| m) Adequate Sheltering                                                                                                              | Adequate sheltering has been considered in Step 3 of the Site Selection process at a high level to ensure that each parcel brought forward into Step 4 is capable (with or without mitigation) of meeting SIGTTO guidance on suitable sheltering conditions. At Step 5 adequate sheltering will be considered in the context of any new and material information on sheltering that may have arisen. <b>Preference will be given to those sites which, without mitigation, are best aligned with SIGTTO recommended thresholds. If all sites are aligned with the recommended thresholds without mitigation, they will be scored the same.</b>                                                                                                                                                                                                                                                                                                                                                                                                                | 2                  | 2  |
| Technical criteria scoring - Site Only                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 27                 | 26 |

Table 7-24 Environmental Criteria – Site Only

| Environmental criteria for consideration - Site Only          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Site SE7 Cahiraon |    |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----|
| a) Biodiversity                                               | The biodiversity assessment will involve a desktop study of available records of protected species and habitats and a field study at each site, typically at field boundaries, and surrounding lands to survey habitats, plants, birds, mammals, bats and fish habitats. The assessment will consider the proximity to and potential for impact on environmental designated sites, designated bathing waters; recreational waters; designated shellfish waters, salmonid waters, and designated nutrient sensitive waters. Biodiversity policies by local authorities will also be considered. <b>Preference will be given to a site which can avoid a designated site. Failing this, preference will be given to a site, when developed, is not likely to have a significant impact on identified biodiversity.</b> | 2                 | 2  |
| b) Geology and Hydrogeology                                   | The assessment of geology and hydrogeology will consider the potential impact of development at the potential sites on the underlying geological and hydrogeological attributes (aquifer classification, vulnerability, karst features) and the proximity to sensitive groundwater receptors (NHAs, and major groundwater users), along with their importance, for each potential site. Soils, geology, and hydrogeology information will be obtained from spatial mapping published by Geological Survey of Ireland (GSI) and site investigation information where it was available. <b>Preference will be given to a site with more favourable underlying geological and hydrogeological attributes.</b>                                                                                                           | 2                 | 2  |
| c) Hydrology / Water quality                                  | The assessment for hydrology will compare the suitability of each site in terms of its hydrology and will involve collation of existing hydrological information of each site in order to identify, quantify and assess its potential hydrological impacts at the potential sites and surrounding lands. This assessment will consider potential flood risk (coastal, fluvial, pluvial, groundwater and artificial drainage systems), potential impacts caused by drainage discharge, and the potential to increase flooding downstream at each of the potential sites. <b>Preference will be given to a site that is unlikely/less likely to result in hydrological impacts at the potential sites and surrounding lands.</b>                                                                                       | 2                 | 2  |
| d) Odour                                                      | The assessment of the potential risk of odour impacts will be carried out using the methodology provided in Guidance on the Assessment of Odour for Planning (IAQM, 2018) combined with additional analysis of both the number and locations of receptors and a review of meteorological conditions. Field surveys will be carried out in accordance with Air Guidance Note 5 (AGS): Odour Impact Assessment Guidance for EPA Licensed Sites. <b>Preference is to be given to a site which is less likely to result in odour impacts.</b>                                                                                                                                                                                                                                                                            | 2                 | 2  |
| e) Noise and Vibration including underwater noise / vibration | The assessment for noise will consider the potential impact at each site from noise during operation upon noise sensitive receptors (residential dwellings, schools, healthcare facilities, retirement homes and churches) located nearby and will take account of existing noise levels. The assessment will take account of the number of receptors within fixed distance of the site boundary. <b>Preference is to be given to a site which is less likely to result in noise &amp; vibration impacts.</b>                                                                                                                                                                                                                                                                                                        | 2                 | 2  |
| f) Air Quality                                                | The assessment will consider the potential impact at each site from emissions caused by the construction and operation of the facility and traffic generated by the development upon sensitive receptors. <b>Preference is to be given to a site which is less likely to result in air quality impacts.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2                 | 2  |
| g) Land-use                                                   | The consideration of existing land uses will inform the selected site. For example, <b>preference will be given to a site that utilises land which wouldn't otherwise be sought for an alternative use. Commonage land will also be avoided where possible.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2                 | 2  |
| h) Marine (Human)                                             | <b>Preference will be given to sites for the LNG Jetty including side by side arrangement of LNGC and FSRU that avoid existing merchant shipping lanes, designated fishing areas and active licensed / proposed dredging areas and dump sites.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2                 | 2  |
| i) Climate                                                    | Preference will be given to sites that are less susceptible to other climate related impacts not already captured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2                 | 2  |
| Environmental criteria scoring - Site Only                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 18                | 18 |



# Strategic Gas Emergency Reserve

Strengthening Ireland's Energy Security



Table 7-25 Planning Criteria – Site Only

| Planning criteria for consideration - Site Only     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Site SE7 Cahiraon |    |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----|
| a) Adjoining Land Use                               | The assessment of adjacent land use will reference zoning maps contained in the relevant City/County Development Plan and online searches to determine adjoining land uses. Land uses in proximity to the candidate site will be assessed based on compatibility with the expected intensification and/or development at each potential site. <b>Preference will be given to sites with more favourable adjoining land use zones or uses.</b>                                                                                                                                                                | 1                 | 2  |
| b) Landowners                                       | <b>Preference will be given to the site that minimised impact on the number of landowners in relation to delivery of the project. A site with multiple landowners will be deemed less favourable</b>                                                                                                                                                                                                                                                                                                                                                                                                         | 2                 | 2  |
| c) Planning History                                 | In assessing the planning history of a candidate site, planning records will be reviewed through the website of the relevant Planning Authority and, where necessary, the website of An Bord Pleanála / An Coimisiún Pleanála. <b>Consideration will be given to granted planning applications and the implications on these, if any, of the expected intensification and/or development at each potential site and adjoining site. For example, if an adjoining site has an extant consent for development or intensification of an existing use it may be deemed less favourable to one that does not.</b> | 2                 | 3  |
| d) Archaeology, Cultural and Architectural Heritage | The assessment of sites will include desktop review of archaeology, cultural and architectural heritage data bases. Site walkovers may also be arranged depending on outcomes of desktop review. <b>Preference will be given to sites that are located away from shipwrecks and archaeological sites.</b>                                                                                                                                                                                                                                                                                                    | 2                 | 1  |
| e) Specific Development Plan Policies/Objectives    | Development Plan Policies will be reviewed and the potential for impact of expected intensification and/or development at each potential site on the realisation of specific policies will be considered. Such policies generally include but are not limited to: access and rights of way, amenity areas; landscape; cycle ways / pedestrian routes; and Specific Local Objectives (e.g. safety zones / amenity objectives / long term roads objectives / transport policies).                                                                                                                              | 2                 | 3  |
| f) Landscape and Visual Impacts                     | The assessment of landscape and visual impacts will involve a review of the relevant County Development Plan to identify designated Landscape Character Areas, the presence of any designated scenic routes, protected views and prospects, nearby landmarks or recorded monuments. Other landscape policies and objectives that might inform the nature or scale of expected intensification and/or development at each potential site. Visibility of proposed development from nearby receptors and potential for screening development.                                                                   | 1                 | 2  |
| g) Access and Traffic                               | The access and traffic assessment will involve an assessment of the road network near each site. The junctions and roads considered most likely to be impacted by traffic movements associated with both construction and operation will be assessed in terms of suitability and road safety. The assessment will consider visibility at access points; capacity of the road network based on traffic survey data; and the operation of nearby junctions.                                                                                                                                                    | 2                 | 3  |
| h) Local Receptors                                  | The impact of the development on local receptors, incorporating the technical, environmental and planning considerations above, will be considered, including public amenity areas, and tourist sites. <b>Preference will be given to the site that would have demonstrably lesser impact on local receptors not considered previously.</b>                                                                                                                                                                                                                                                                  | 2                 | 2  |
| Planning criteria scoring - Site Only               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 14                | 18 |

#### 7.9.4.4 *Technical [Pipe Route]*

The assessment of both SE7 [REDACTED] against the defined technical criteria resulted in both associated pipe routes being deemed neutral. It is considered that this is reflective of the ability of the selected pipe routes to achieve all the technical requirements without one route being deemed more or less favourable from another from a technical perspective.

#### 7.9.4.5 *Environmental [Pipe Route]*

In relation to the assessment of environmental criteria there were three key differentiators between the two pipeline routes. Under the criteria 'geology and hydrogeology, Route SE7 was deemed to be 'more favourable' as there is evidence of consistent shallow weathered rock, with lower potential for hydrogeological interaction and contamination risk. Route SE15 was deemed 'neutral' as it was considered that variable vulnerability exists along the pipe route, the route crosses areas of seasonal flooding and minor aquifers as well as being in proximity to water supply sources.

Regarding 'hydrology / water quality', Route SE7 was deemed 'more favourable' as the route does not cross any surface water bodies, has no hydrological connectivity to WFD / Natura 2000 sites.

[REDACTED]  
[REDACTED]  
[REDACTED]

In review of potential 'noise and vibration' considerations, SE7 was deemed to be 'more favourable' as the overall length of the pipeline route and interaction with a very limited number of sensitive receptors as well as a low construction phase impact. [REDACTED] was deemed to be 'neutral' owing to the longer pipeline route having potential for some moderate construction phase impact but noting that the pipeline route is separated from most sensitive receptors.

Overall, when considering the environmental criteria of the pipeline route, site corridor SE7 was deemed to score 15 whereas corridor [REDACTED] deemed to score 12, confirming that corridor SE7 is considered a preferred pipeline route from an environmental perspective.

#### 7.9.4.6 *Planning [Pipe Route]*

In relation to the assessment of planning criteria, whilst both pipeline routes were considered 'neutral' over a number of criteria indicating similar suitability, there were four key differentiators between the two pipeline routes.

[REDACTED]  
[REDACTED], [REDACTED]  
[REDACTED]

[REDACTED]

[REDACTED]

In relation to 'landowners' criteria, Route SE7 was deemed 'more favourable' as there are a limited number of land parcels and landowners to negotiate with in relation to the pipeline corridor.

[REDACTED]

Under the criteria 'archaeology, cultural and architectural heritage' Route SE7 was deemed to score 'neutral'. No NIAH or SMR features are located within 100m of the route corridor and while potential for finds remains, there is considered to be a low archaeological risk. Route [REDACTED] was deemed 'less favourable' as there are multiple SMR features within 100m of the route corridor, and it was considered through review that there would be a higher likelihood of archaeological constraints and mitigations.

With regards the criteria for 'access and traffic', Route SE7 was considered to score 'more favourable' as the pipeline route would require on one road crossing (R473) and minimal complexity is envisaged, [REDACTED]

[REDACTED]



Table 7-26 Technical Criteria – Pipeline Route

| Technical criteria for consideration - Pipeline Route                                                                                                                                                                                                                                                               | Corridor SE7-02 |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| a) Provide a transmission pipeline route from the onshore reception facility associated with the LNG Jetty to the Irish gas transmission network. An AGI will be required at the reception facility end of the pipeline. An AGI will also be required at the point of connection with the gas transmission network. | 2               | 2         |
| b) Installed pipeline capacity of up to 21 mm <sup>3</sup> /d (approximately 226 GWh/day) for supply of natural gas in the N-1 scenario to the Irish gas transmission network.                                                                                                                                      | 2               | 2         |
| c) Pipeline pressure of approx. 85bar (tbc on review of expert engineering advice)                                                                                                                                                                                                                                  | 2               | 2         |
| d) Have approximate 24" (NB) Pipeline diameter.                                                                                                                                                                                                                                                                     | 2               | 2         |
| e) Be provided with 30m pipeline corridor. A wider working width may be required at water crossing, road and service crossings to provide access, storage of excavated materials. Space for equipment and off-road temporary parking space.                                                                         | 2               | 2         |
| f) Be provided with 100m wide pipeline "deviation limits" as defined in Gas Act 1976 (as amended).                                                                                                                                                                                                                  | 2               | 2         |
| g) Buried to min 1.2m depth of cover.                                                                                                                                                                                                                                                                               | 2               | 2         |
| h) Satisfy I.S. 328 in respect of building proximity distances.                                                                                                                                                                                                                                                     | 2               | 2         |
| i) Satisfy relevant transmission standards in respect of high-pressure hydrogen pipelines as outlined in the Technical Project Parameters.                                                                                                                                                                          | 2               | 2         |
| <b>Technical criteria scoring - Pipeline Route</b>                                                                                                                                                                                                                                                                  | <b>18</b>       | <b>18</b> |

Table 7-27 Environmental Criteria – Pipeline Route

| Environmental criteria for consideration - Pipeline Route  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Corridor SE7-02 |    |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|
| a) Biodiversity including interaction with European Sites. | The biodiversity assessment will involve a desktop study of available records of protected species and habitats and a field study along each pipe route, typically at field boundaries, and surrounding lands to survey habitats, plants, birds, mammals, bat and fish habitats. The assessment will consider the proximity to and potential for impact on environmental designated sites, designated bathing waters; recreational waters; designated shellfish waters, salmonid waters, and designated nutrient sensitive waters. Biodiversity policies by local authorities will also be considered. <b>Preference will be given to a pipe route which can avoid a designated site. Failing this, preference will be given to a pipe route, which when developed, is not likely to have a significant impact on identified biodiversity.</b> | 2               | 2  |
| b) Geology and Hydrogeology                                | The assessment of geology and hydrogeology will consider the potential impact of development at the potential pipe routes on the underlying geological and hydrogeological attributes (aquifer classification, vulnerability, karst features) and the proximity to sensitive groundwater receptors (NHAs, and major groundwater users), along with their importance, for each potential pipe route. Soils, geology, and hydrogeology information will be obtained from spatial mapping published by Geological Survey of Ireland (GSI) and site investigation information where it was available. <b>Preference will be given to a pipe route with more favourable underlying geological and hydrogeological attributes.</b>                                                                                                                   | 3               | 2  |
| c) Hydrology / Water quality                               | The assessment for hydrology will compare the suitability of each pipe route in terms of its hydrology and will involve collation of existing hydrological information of each route in order to <b>identify, quantify and assess its potential hydrological impacts at the potential routes and surrounding lands.</b> This assessment will consider potential flood risk (coastal, fluvial, pluvial, groundwater and artificial drainage systems), potential impacts caused by drainage discharge, and the potential to increase flooding downstream at each of the potential routes. <b>Preference will be given to a route that is unlikely/less likely to result in hydrological impacts at the potential routes and surrounding lands.</b>                                                                                               | 3               | 2  |
| d) Noise and Vibration                                     | Potential impacts along the pipeline route are mostly associated with construction noise on sensitive receptors (residential dwellings, schools, healthcare facilities, retirement homes and churches) located nearby. The assessment takes account of the number of receptors within fixed distances, up to 300m from the route. <b>Preference is to be given to a site which is less likely to result in noise &amp; vibration impacts.</b>                                                                                                                                                                                                                                                                                                                                                                                                  | 3               | 2  |
| e) Land-use                                                | The consideration of existing land uses will be used to inform the selected pipeline route. <b>For example, preference will be given to a site that utilises land which wouldn't otherwise be sought for an alternative use.</b> Commonage land will also be avoided where possible.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2               | 2  |
| f) Climate                                                 | Preference will be given to pipeline routes that are less susceptible to other climate related impacts not already captured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2               | 2  |
| Environmental criteria scoring - Pipeline Route            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 15              | 12 |

Table 7-28 Planning Criteria – Pipeline Route

| Planning criteria for consideration - Pipeline Route |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Corridor SE7-02 |    |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|
| a) Planning History / extant permissions:            | In assessing the planning history of a candidate site, planning records will be reviewed through the website of the relevant Planning Authority and, where necessary, the website of An Bord Pleanála. Consideration will be given to granted planning applications and the implications on these, if any, of the expected intensification and/or development at each potential site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2               | 3  |
| b) Land Use                                          | Land Use may impact on delivery and consenting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2               | 2  |
| c) Landowners                                        | The assessment will seek to minimise the quantum of land that may need to be impacted in the interest of the common good e.g. to minimise overall administrative burden (including procurement costs, additional licencing requirements etc.), potential for inconvenience etc. <b>Preference will be given to pipe routes that:</b><br>- minimise to the extent practicable the quantum of land required,<br>- minimise to the extent practicable the number of landowners that the proposal directly impacts (the greater the number of landowners the greater the administrative requirements including CPO requirements); and<br>- minimise to the extent practicable the level of impact on landowners (including amount of land take, location of land take etc.).<br>It is assumed that CPO powers will exist at this point in the site and route selection process, although any decisions made on this basis will be re-evaluated if it is confirmed that CPO powers will not be available. | 3               | 1  |
| d) Archaeology, Cultural and Architectural Heritage: | The assessment of routes will include desktop review of archaeology, cultural and architectural heritage data bases. Route walkovers may also be arranged depending on outcomes of desktop review. <b>Preference will be given to routes that are located away from shipwrecks and archaeological sites.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2               | 1  |
| e) Specific Development Plan Policies/Objectives:    | Development Plan Policies will be reviewed and the potential impact of expected intensification and/or development at each potential site on the realisation of specific policies will be considered. Such policies generally include but are not limited to: access and rights of way, amenity areas, landscape, cycle ways/pedestrian routes, and Specific Local Objectives (e.g. safety zones/amenity objectives/long term roads objectives/transport policies).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2               | 2  |
| f) Access and Traffic:                               | The access and traffic assessment will involve an assessment of the road network near each site. The junctions and roads considered most likely to be impacted by traffic movements associated with both construction and operation will be assessed in terms of suitability and road safety. The assessment will consider visibility at access points, capacity of the road network based on traffic survey data, and the operation of nearby junctions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3               | 2  |
| g) Local Receptors                                   | The impact of the development on local receptors, incorporating the technical, environmental and planning considerations above, will be considered, including public amenity areas, and tourist sites.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2               | 2  |
| h) Landscape & Visual Impact:                        | The assessment of landscape and visual impacts will involve a review of the relevant County Development Plan to identify designated Landscape Character Areas, the presence of any designated scenic routes, protected views and prospects, nearby landmarks or recorded monuments. Other landscape policies and objectives that might inform the nature or scale of expected intensification and/or development at each potential site. Visibility of proposed development from nearby receptors and potential for screening development.                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2               | 2  |
| Planning criteria scoring - Pipeline Route           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 18              | 15 |



### 7.9.5 Summary of Step 5 Detailed Assessment – Excluding Financial Criteria

As noted previously the technical, environmental and planning criteria associated with both the site and the pipeline route were assessed independently of the financial criteria. The results of the site only MCA scoring (financial criteria) are set out in Table 7-29, the pipeline route only MCA scoring (financial criteria) in Table 7-30 and the combined site and pipeline route MCA scoring (financial criteria) in Table 7-31.

Table 7-29 Summary of Site Only MCA Scoring [Excl. Financial]

| Site Only MCA Scoring<br>[Excl. Financial] | Site SE7 Cahiracon |           |
|--------------------------------------------|--------------------|-----------|
| Technical criteria scoring                 | 27                 | 26        |
| Environmental criteria scoring             | 18                 | 18        |
| Planning criteria scoring                  | 14                 | 18        |
| <b>Total [Excluding Financial]</b>         | <b>59</b>          | <b>62</b> |

Table 7-30 Summary of Pipeline Route Only MCA Scoring [Excl. Financial]

| Pipeline Route Only MCA Scoring<br>[Excl. Financial] | Site SE7 Cahiracon |           |
|------------------------------------------------------|--------------------|-----------|
| Technical criteria scoring                           | 18                 | 18        |
| Environmental criteria scoring                       | 15                 | 12        |
| Planning criteria scoring                            | 18                 | 15        |
| <b>Total [Excluding Financial]</b>                   | <b>51</b>          | <b>45</b> |

Table 7-31 Summary of Site and Pipeline Route MCA Scoring [Excl. Financial]

| Combined Site and Pipeline Route<br>[Excl. Financial] | Site SE7 Cahiracon |            |
|-------------------------------------------------------|--------------------|------------|
| Technical criteria scoring                            | 45                 | 44         |
| Environmental criteria scoring                        | 33                 | 30         |
| Planning criteria scoring                             | 32                 | 33         |
| <b>Total [Excluding Financial]</b>                    | <b>110</b>         | <b>107</b> |

#### 7.9.5.1 High-Level Summary of Findings

From the combined site and pipeline route assessment, SE7 emerges as the more favourable option overall based on the following factors:

- Proximity to existing gas network, simpler construction, fewer road crossings
- Lower hydrological risk (no crossing of waterbodies) and hydrogeological interactions
- Lower archaeological sensitivity for both site and pipeline
- Fewer landowners for pipeline route reducing complexity

[REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]

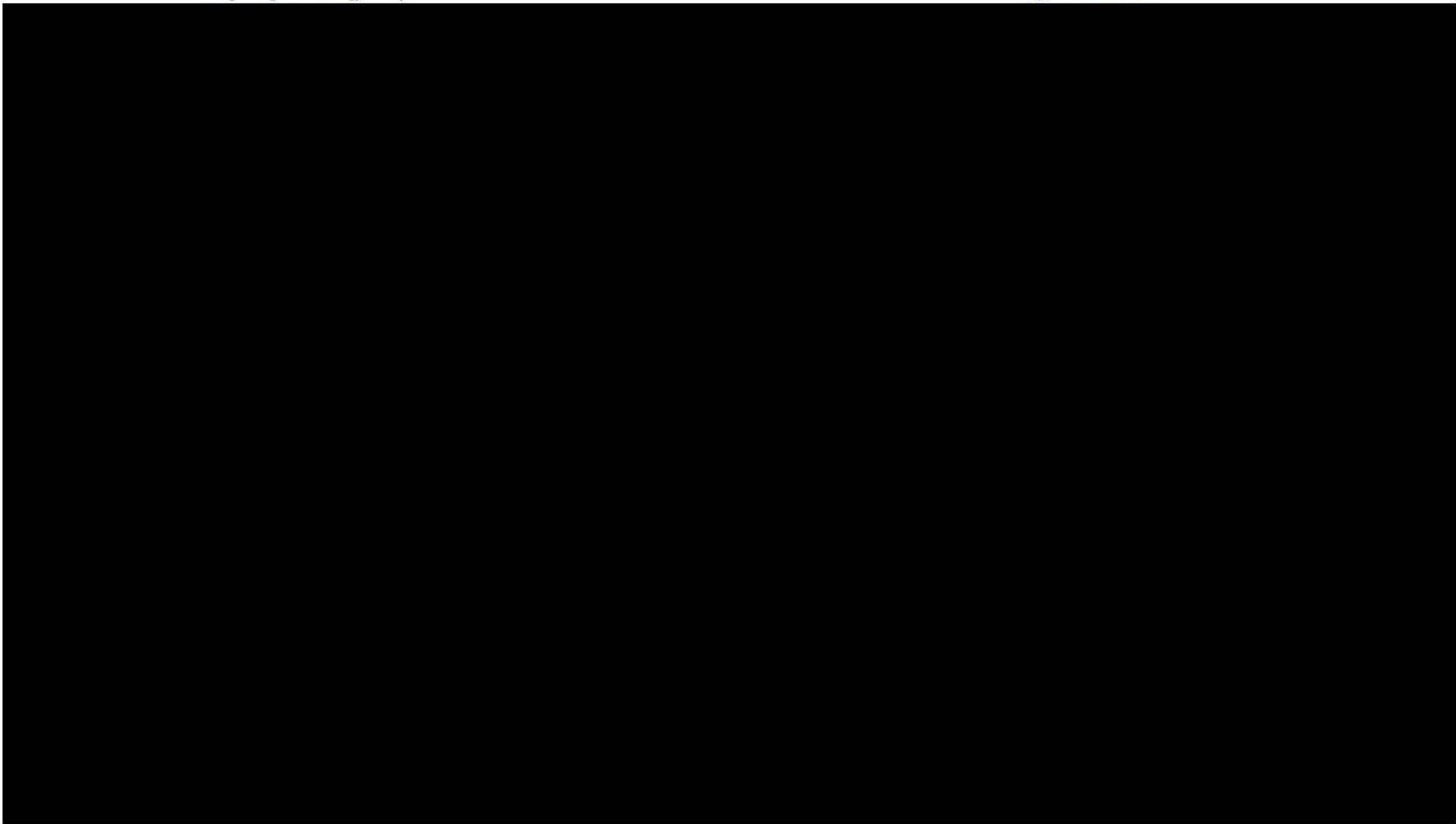
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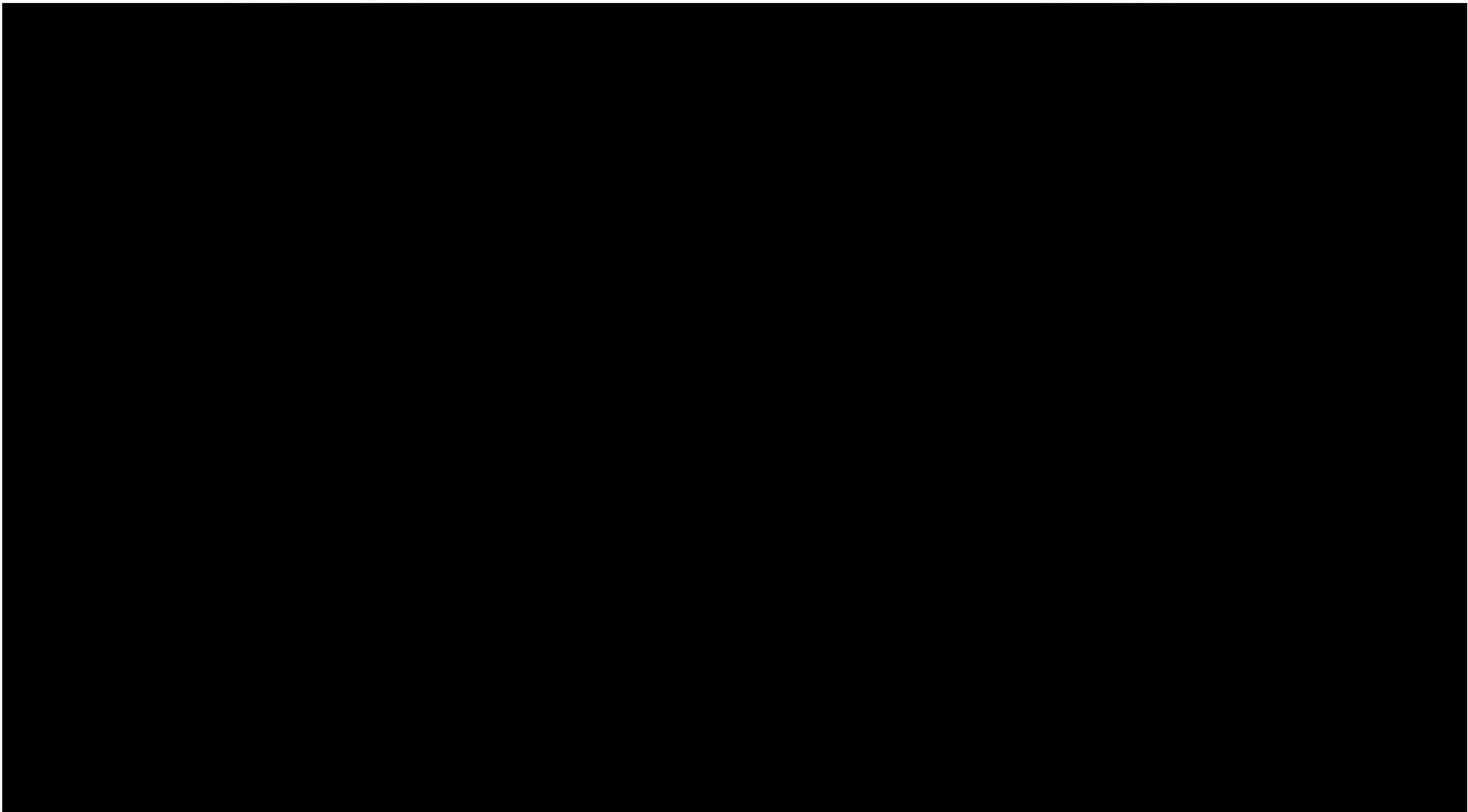
■ [REDACTED]

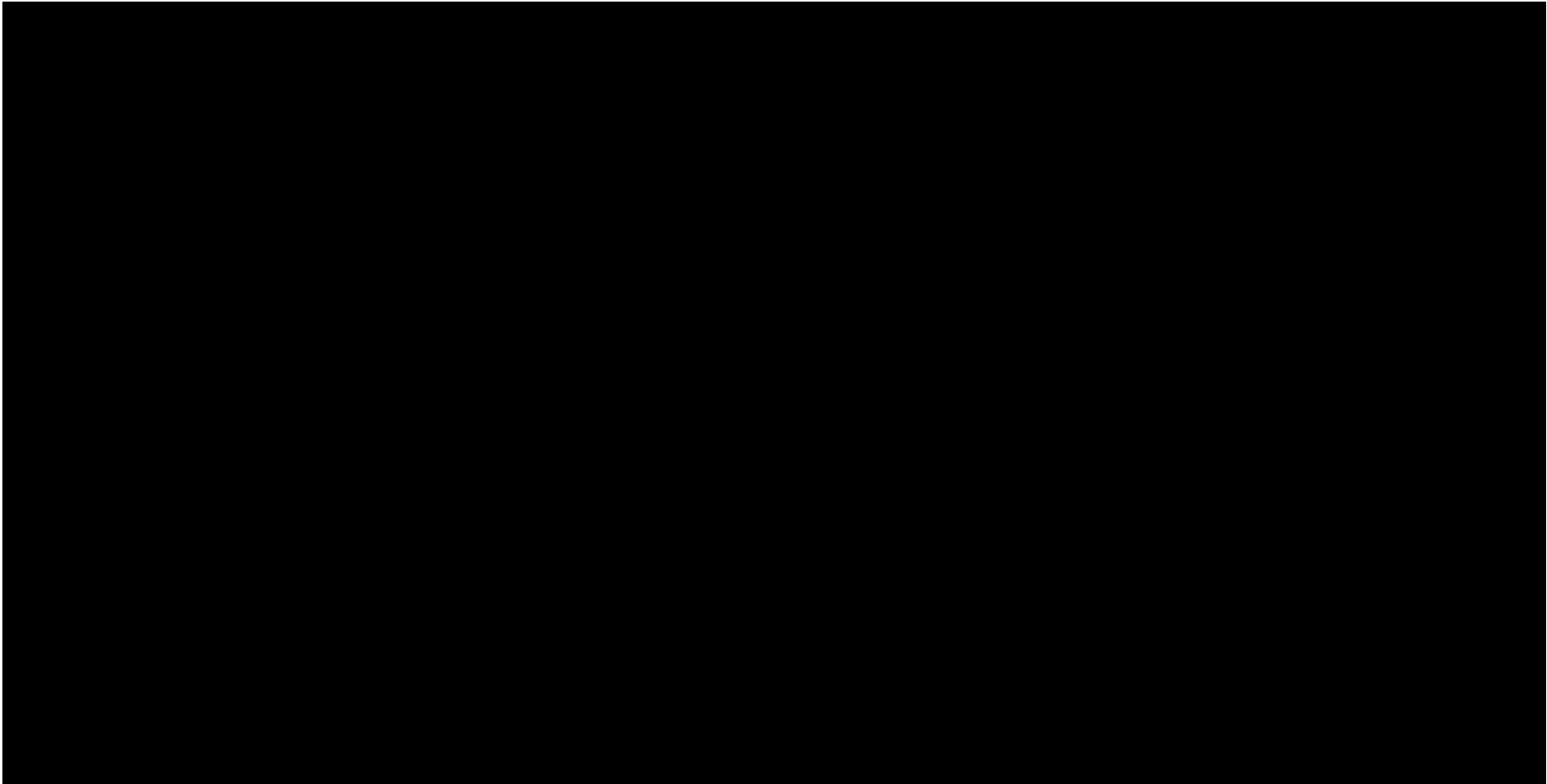
[REDACTED]











## 8 Conclusions and Recommendations

When the assessment for technical, environmental, planning and financial are combined and the weighting applied the resultant total weighted score for both sites is as set out in Table 8-1:

Table 8-1 Step 5 Site and Pipeline Route Assessment Matrix

| Category               | Weighting     | Site and Route Option |                    |                  |                    |
|------------------------|---------------|-----------------------|--------------------|------------------|--------------------|
|                        |               | SE 7                  |                    |                  |                    |
|                        |               | Unweighted Score      | Weighted Score (%) | Unweighted Score | Weighted Score (%) |
| Technical              | 19.7%         | 45.00                 | 19.70%             | 44.00            | 19.26%             |
| Environmental Criteria | 28.0%         | 33.00                 | 28.00%             | 30.00            | 25.45%             |
| Planning Criteria      | 9.3%          | 32.00                 | 9.02%              | 33.00            | 9.30%              |
| Financial Criteria     | 43.0%         | 0.85                  | 43.0%              | 0.80             | 40.47%             |
| <b>Total</b>           | <b>100.0%</b> | <b>110.85</b>         | <b>99.72%</b>      | <b>107.80</b>    | <b>94.49%</b>      |

Based on the Site and Route Selection methodology the emerging preferred site and route option is:

- **Site SE7 Cahiracon**

The final decision was primarily influenced by the outputs of the CBA. Due to the rigorous nature of the shortlisting process, only projects which satisfied the technical, environmental and planning criteria advanced to the final detailed assessment stage. While there were some marginal benefits associated with the selected site across Technical, Environmental and Planning criteria, the projected first gas date for each of the sites, coupled with the projected costs, had the most significant influence on determining the selected site.



## 9 Next Steps

Following the identification of the emerging preferred site (SE7 Cahiracon), it is suggested that the project is advanced to the next phase of development. The following actions are required to ensure timely advancement:

- Commence engagement and negotiations with affected landowners at the selected site and along the proposed pipeline route for the purpose of securing agreements on acquisitions, wayleaves and rights of way to support continued survey and site investigation work, planning and consenting and ultimately construction activities
- Continue and expand ecological and environmental surveys for the selected site (both terrestrial and marine environments)
- Progress with site investigations in both the terrestrial and marine environments, subject to obtaining all necessary licences and consents
- Discontinue no-regret surveys at other locations to avoid unnecessary expenditure.
- Launch public information campaign in accordance with stakeholder and communications management plans

## Appendices

## **Appendix 1 – Book of Drawings**



# **STRATEGIC GAS EMERGENCY RESERVE SITE AND ROUTE SELECTION DRAWINGS**

**NOVEMBER 2025**



## STRATEGIC GAS EMERGENCY RESERVE

### SITE AND ROUTE SELECTION DRAWINGS

| STUDY AREA                 |                                          |
|----------------------------|------------------------------------------|
| DRAWING NUMBER             | TITLE                                    |
| 20970-NOD-ZZ-01-DR-X-01003 | STUDY AREA                               |
| SITE SELECTION STEP 3      |                                          |
| DRAWING NUMBER             | TITLE                                    |
| 20970-NOD-ZZ-01-DR-X-01010 | LOCATION OVERVIEW                        |
| 20970-NOD-ZZ-01-DR-X-01011 | CONSTRAINTS MAP - GALWAY                 |
| 20970-NOD-ZZ-01-DR-X-01012 | CONSTRAINTS MAP - SHANNON ESTUARY        |
| 20970-NOD-ZZ-01-DR-X-01013 | CONSTRAINTS MAP - BANTRY BAY             |
| 20970-NOD-ZZ-01-DR-X-01014 | CONSTRAINTS MAP - CORK                   |
| 20970-NOD-ZZ-01-DR-X-01015 | CONSTRAINTS MAP - WATERFORD              |
| 20970-NOD-ZZ-01-DR-X-01016 | CONSTRAINTS MAP - ROSSLARE               |
| 20970-NOD-ZZ-01-DR-X-01017 | CONSTRAINTS MAP - ARKLOW                 |
| 20970-NOD-ZZ-01-DR-X-01018 | CONSTRAINTS MAP - WICKLOW                |
| 20970-NOD-ZZ-01-DR-X-01019 | CONSTRAINTS MAP - DUBLIN & DUN LAOGHAIRE |
| 20970-NOD-ZZ-01-DR-X-01020 | CONSTRAINTS MAP - DROGHEDA               |
| 20970-NOD-ZZ-01-DR-X-01021 | CONSTRAINTS MAP - DUNDALK                |
| 20970-NOD-ZZ-01-DR-X-01022 | CONSTRAINTS MAP - GREENORE               |
| 20970-NOD-ZZ-01-DR-X-01023 | CONSTRAINTS MAP - KILLYBOGS              |
| SITE SELECTION STEP 4      |                                          |

| PIPE ROUTE SELECTION STEP 2 |                          |
|-----------------------------|--------------------------|
| DRAWING NUMBER              | TITLE                    |
| 20970-NOD-ZZ-01-DR-X-01070  | SE7 STUDY AREA           |
| PIPE ROUTE SELECTION STEP 4 |                          |
| DRAWING NUMBER              | TITLE                    |
| 20970-NOD-ZZ-01-DR-X-01080  | SE7 PIPE ROUTE OPTIONS   |
| 20970-NOD-ZZ-01-DR-X-01081  | SE7 OPTIONS SHORTLISTING |

| STEP 5 DETAILED ASSESSMENT |                         |
|----------------------------|-------------------------|
| DRAWING NUMBER             | TITLE                   |
| 20970-NOD-ZZ-01-DR-X-01090 | SE7 DETAILED ASSESSMENT |





NOTES

LEGEND

STUDY AREA

KEYPLAN

|             |            |                |      |      |      |
|-------------|------------|----------------|------|------|------|
| CD1         | 19.12.2025 | STAGE APPROVED | S.K. | G.R. | G.R. |
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CLIENT

PROJECT

STRATEGIC GAS EMERGENCY RESERVE

TITLE

STUDY AREA

|             |            |            |            |
|-------------|------------|------------|------------|
| SCALE @ A3  | DRAWN      | CHECKED    | APPROVED   |
| 1:1,650,000 | S. Kelly   | G. Reilly  | G. Reilly  |
|             | DATE       | DATE       | DATE       |
|             | 19.12.2025 | 19.12.2025 | 19.12.2025 |

|                     |                            |
|---------------------|----------------------------|
| SUSTAINABILITY CODE | SUSTAINABILITY DESCRIPTION |
| A1                  | STAGE APPROVED             |

|                            |          |
|----------------------------|----------|
| DRAWING No.                | REVISION |
| 20970-NOD-ZZ-01-DR-X-01003 | C01      |





NOTES

LEGEND

PORT JURISDICTIONS

KEYPLAN

|     |            |             |      |      |      |
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PROJECT

STRATEGIC GAS EMERGENCY RESERVE

TITLE

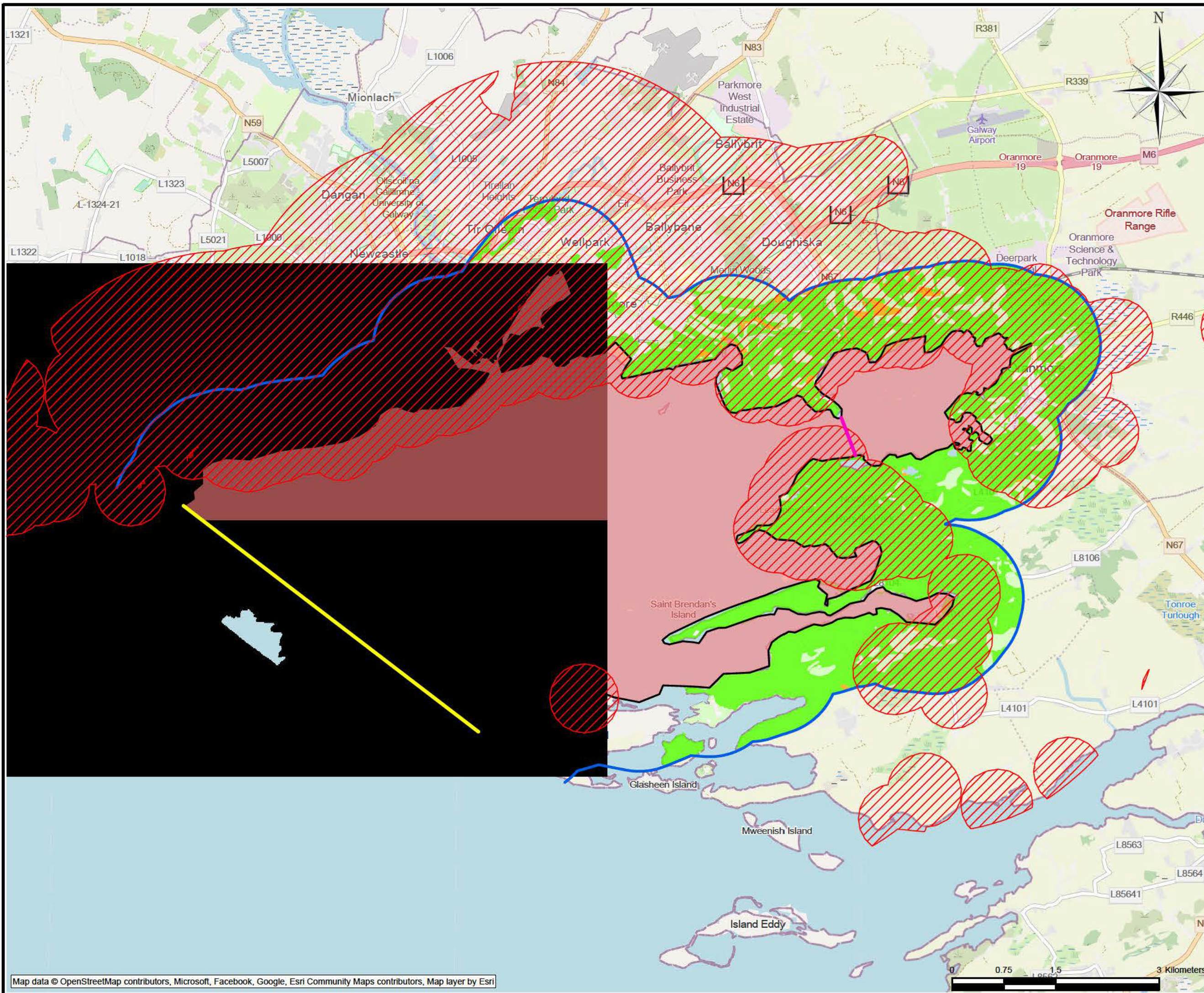
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|             | DATE       | DATE       | DATE       |
|             | 19.12.2025 | 19.12.2025 | 19.12.2025 |

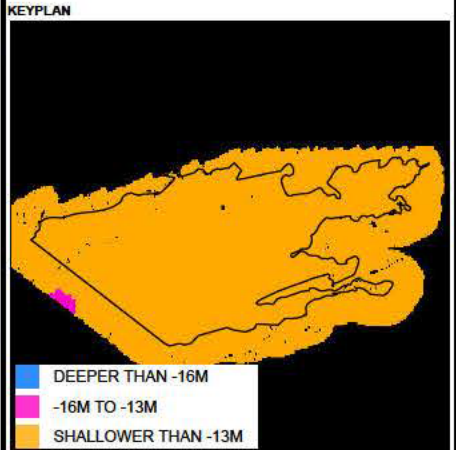
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| DRAWING No.                | REVISION |
| 20970-NOD-ZZ-01-DR-X-01010 | C01      |





- PORTS AND HARBOURS**  
GALWAY
- PORTS & HARBOURS 1KM BUFFER**
- PRIMARY CONSTRAINTS**  
HARBOUR ENTRANCE 5,380m  
HARBOUR CHANNEL 586m  
SENSITIVE RECEPTORS  
< 13M BELOW LEVEL OF CHART DATUM
- SECONDARY CONSTRAINTS**  
600M TURNING CIRCLE  
900M TURNING CIRCLE  
SAFETY EXCLUSION ZONE  
LANDSLIDE LOCATIONS  
SLOPE >20%  
**LANDSLIDE SUSCEPTIBILITY**  
HIGH  
MODERATELY HIGH  
MODERATELY LOW  
MODERATELY LOW (INFERRED)  
LOW  
LOW (INFERRED)



|             |            |             |            |      |      |
|-------------|------------|-------------|------------|------|------|
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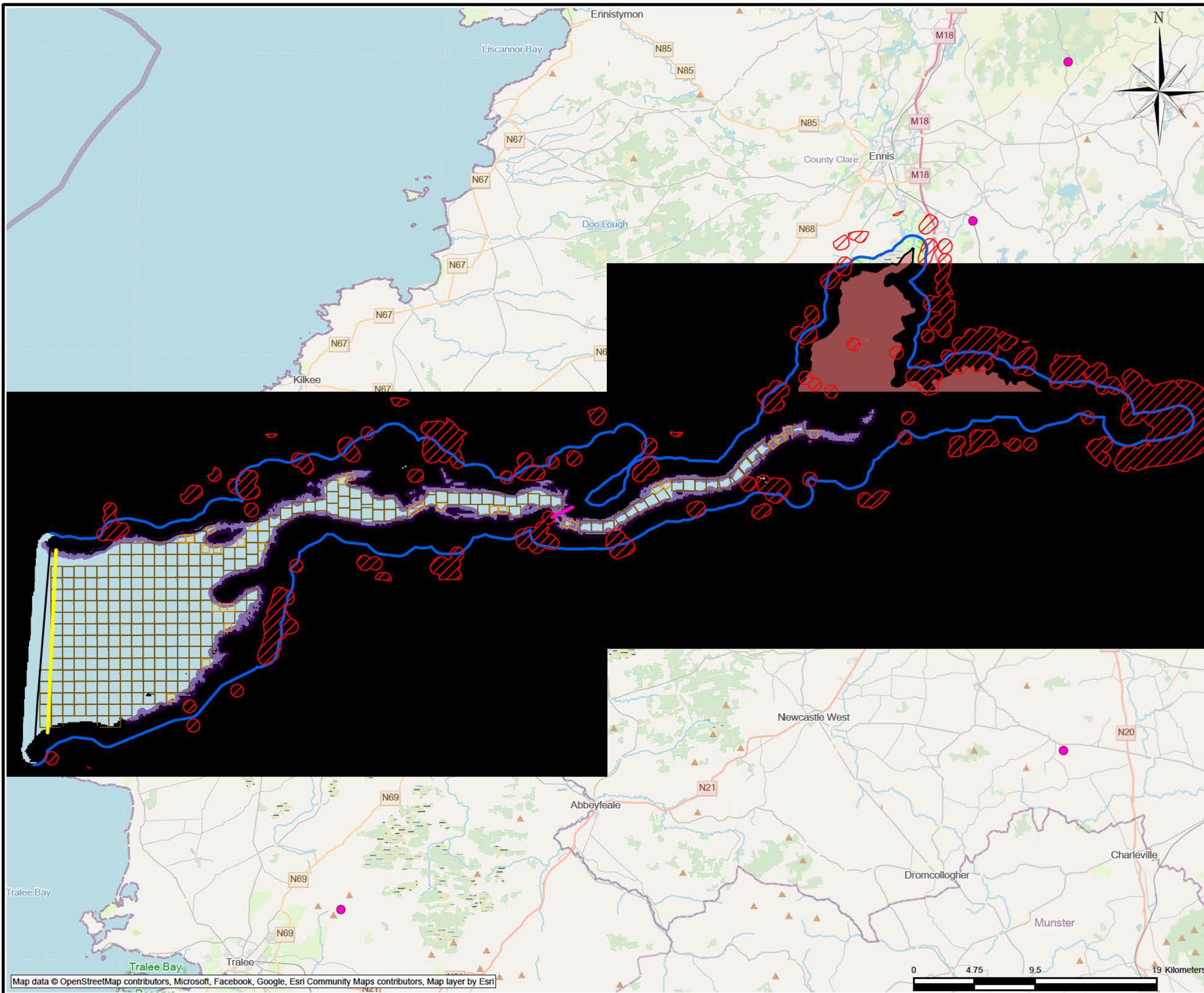
STRATEGIC GAS  
EMERGENCY RESERVE

TITLE

SITE SELECTION STEP 3  
CONSTRAINTS MAP - GALWAY

|                     |                            |            |            |
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| 1:50,000            | S. Kelly                   | G. Reilly  | G. Reilly  |
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| REVISION            | C01                        |            |            |





**PORTS AND HARBOURS**

SHANNON ESTUARY

PORTS & HARBOURS 1KM BUFFER

**PRIMARY CONSTRAINTS**

HARBOUR ENTRANCE 14,269m

HARBOUR CHANNEL 1,739m

SENSITIVE RECEPTORS

< 13M BELOW LEVEL OF CHART DATUM

**SECONDARY CONSTRAINTS**

600M TURNING CIRCLE

900M TURNING CIRCLE

SAFETY EXCLUSION ZONE

LANDSLIDE LOCATIONS

SLOPE >20%

**LANDSLIDE SUSCEPTIBILITY**

HIGH

MODERATELY HIGH

MODERATELY LOW

MODERATELY LOW (INFERRED)

LOW

LOW (INFERRED)

**KEYPLAN**

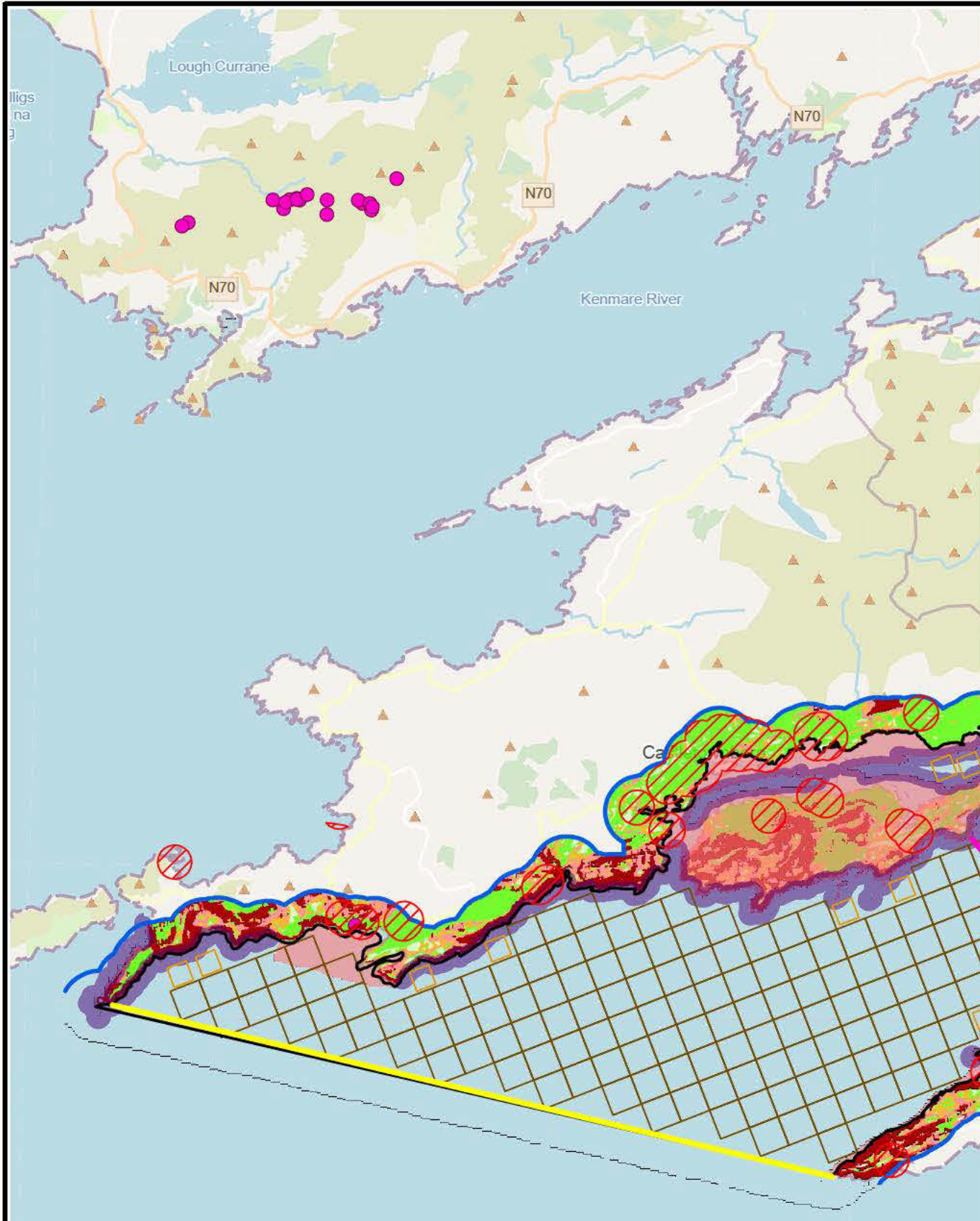
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-16M TO -13M

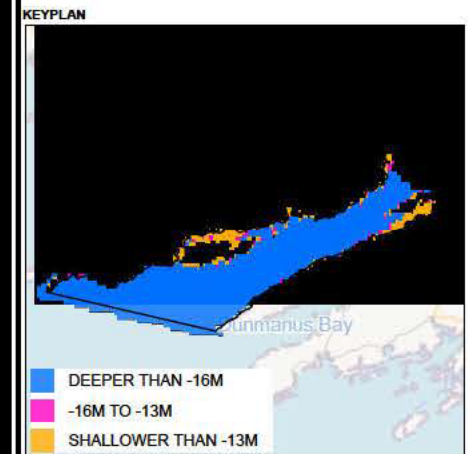
SHALLOWER THAN -13M

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| CLIENT                                                                                                                                                                                         |                         |                                                                                                                                                                                                                               |            |      |          |
|                                                                                                           |                         |                                                                                                                                                                                                                               |            |      |          |
| PROJECT                                                                                                                                                                                        |                         |                                                                                                                                                                                                                               |            |      |          |
| STRATEGIC GAS EMERGENCY RESERVE                                                                                                                                                                |                         |                                                                                                                                                                                                                               |            |      |          |
| TITLE                                                                                                                                                                                          |                         |                                                                                                                                                                                                                               |            |      |          |
| SITE SELECTION STEP 3<br>CONSTRAINTS MAP - SHANNON ESTUARY                                                                                                                                     |                         |                                                                                                                                                                                                                               |            |      |          |
| SCALE @A3                                                                                                                                                                                      | DRAWN                   | CHECKED                                                                                                                                                                                                                       | APPROVED   |      |          |
| 1:270,000                                                                                                                                                                                      | S. Kelly                | G. Reilly                                                                                                                                                                                                                     | G. Reilly  |      |          |
|                                                                                                                                                                                                | DATE                    | DATE                                                                                                                                                                                                                          | DATE       |      |          |
|                                                                                                                                                                                                | 19.12.2025              | 19.12.2025                                                                                                                                                                                                                    | 19.12.2025 |      |          |
| SUITABILITY CODE                                                                                                                                                                               | SUITABILITY DESCRIPTION |                                                                                                                                                                                                                               |            |      |          |
| A1                                                                                                                                                                                             | STAGE APPROVED          |                                                                                                                                                                                                                               |            |      |          |
| DRAWING No.                                                                                                                                                                                    |                         |                                                                                                                                                                                                                               |            |      | REVISION |
| 20970-NOD-ZZ-01-DR-X-01012                                                                                                                                                                     |                         |                                                                                                                                                                                                                               |            |      | C01      |





|                                  |  |
|----------------------------------|--|
| <b>PORTS AND HARBOURS</b>        |  |
| BANTRY BAY                       |  |
| PORTS & HARBOURS 1KM BUFFER      |  |
| <b>PRIMARY CONSTRAINTS</b>       |  |
| HARBOUR ENTRANCE 21,719m         |  |
| HARBOUR CHANNEL 5,302m           |  |
| SENSITIVE RECEPTORS              |  |
| < 13M BELOW LEVEL OF CHART DATUM |  |
| <b>SECONDARY CONSTRAINTS</b>     |  |
| 600M TURNING CIRCLE              |  |
| 900M TURNING CIRCLE              |  |
| SAFETY EXCLUSION ZONE            |  |
| LANDSLIDE LOCATIONS              |  |
| SLOPE >20%                       |  |
| <b>LANDSLIDE SUSCEPTIBILITY</b>  |  |
| HIGH                             |  |
| MODERATELY HIGH                  |  |
| MODERATELY LOW                   |  |
| MODERATELY LOW (INFERRED)        |  |
| LOW                              |  |
| LOW (INFERRED)                   |  |



|             |            |             |            |      |      |
|-------------|------------|-------------|------------|------|------|
| CD1         | 19.12.2025 | FIRST ISSUE | S.K.       | G.R. | G.R. |
| PROJECT No. | 20970      | STAGE       | CONCEPTUAL |      |      |

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CLIENT

**Gas Networks Ireland**

PROJECT

STRATEGIC GAS  
EMERGENCY RESERVE

TITLE

SITE SELECTION STEP 3  
CONSTRAINTS MAP - BANTRY BAY

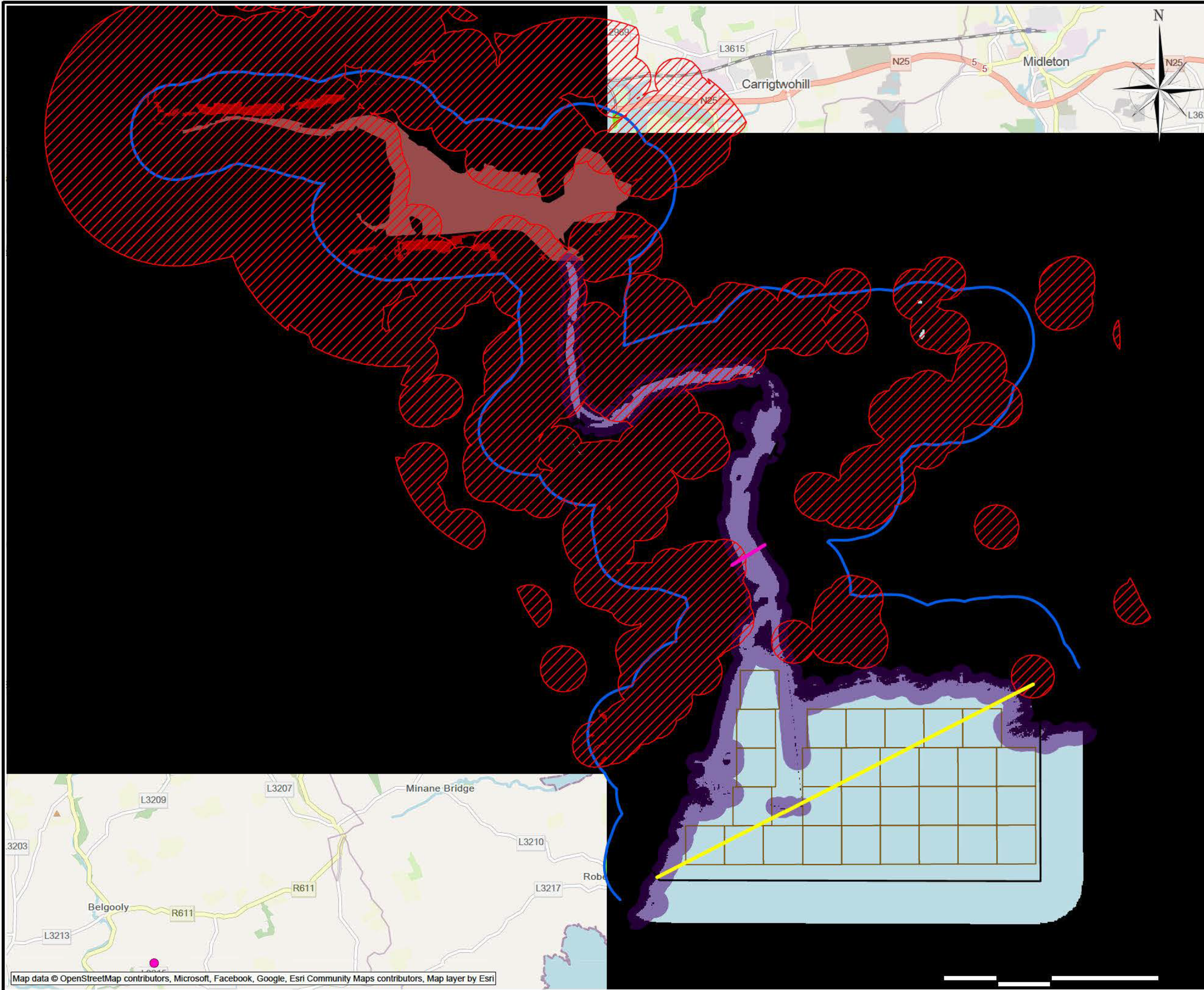
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|------------|------------|------------|------------|
| SCALE @ A3 | DRAWN      | CHECKED    | APPROVED   |
| 1:160,000  | S. Kelly   | G. Reilly  | G. Reilly  |
|            | DATE       | DATE       | DATE       |
|            | 19.12.2025 | 19.12.2025 | 19.12.2025 |

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| SUITABILITY CODE | SUITABILITY DESCRIPTION |
| A1               | STAGE APPROVED          |

|                            |          |
|----------------------------|----------|
| DRAWING No.                | REVISION |
| 20970-NOD-ZZ-01-DR-X-01013 | C01      |







PORTS AND HARBOURS  
CORK

PORTS & HARBOURS 1KM BUFFER

PRIMARY CONSTRAINTS

HARBOUR ENTRANCE 9,781m

HARBOUR CHANNEL 889m

SENSITIVE RECEPTORS

< 13M BELOW LEVEL OF CHART DATUM

SECONDARY CONSTRAINTS

600M TURNING CIRCLE

900M TURNING CIRCLE

SAFETY EXCLUSION ZONE

LANDSLIDE LOCATIONS

SLOPE >20%

LANDSLIDE SUSCEPTIBILITY

HIGH

MODERATELY HIGH

MODERATELY LOW

MODERATELY LOW (INFERRED)

LOW

LOW (INFERRED)

KEYPLAN

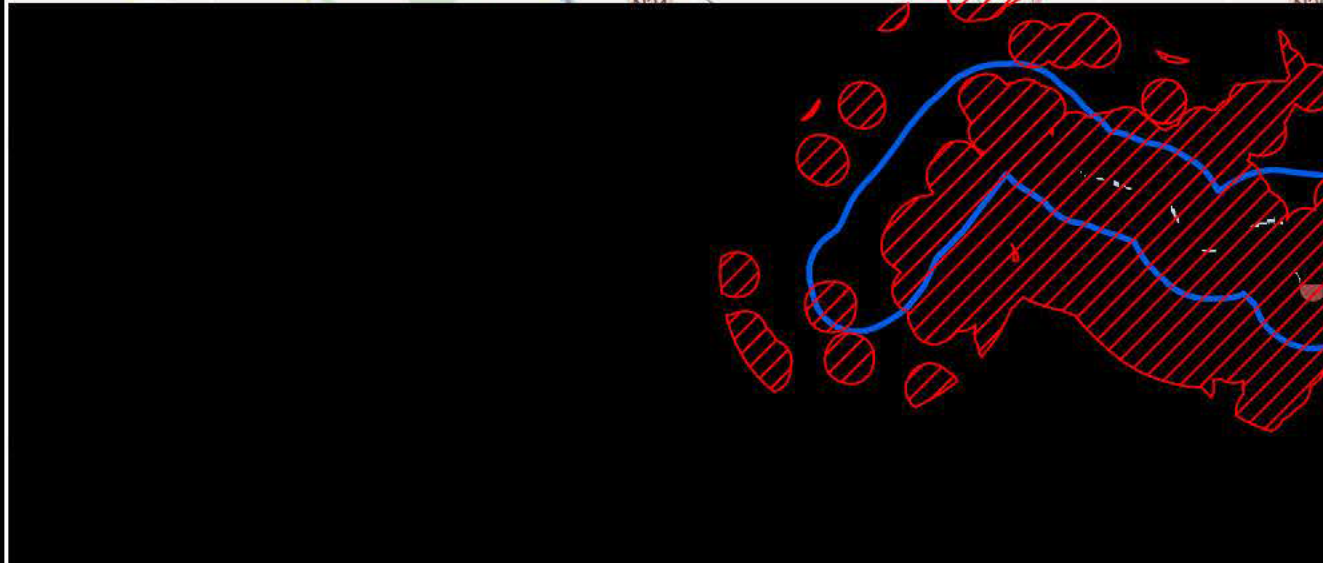
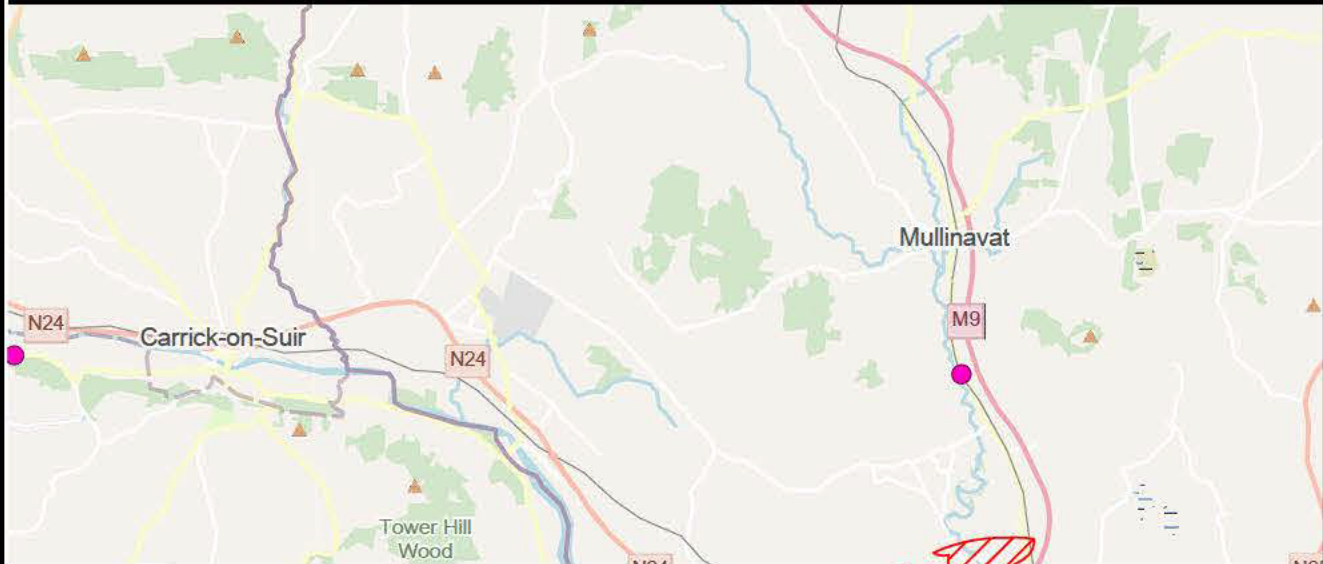
DEEPER THAN -16M

-16M TO -13M

SHALLOWER THAN -13M

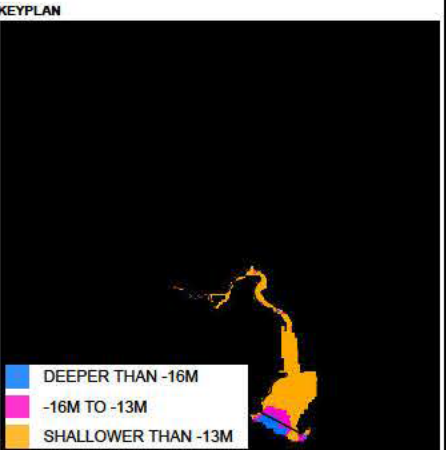
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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|----------|
| CD1                                                                                                                                                                                            | 19.12.2025 | FIRST ISSUE                                                                                                                                                                                                                      | S.K.       | G.R.       | G.R.     |
| PROJECT No.                                                                                                                                                                                    |            | STAGE                                                                                                                                                                                                                            |            |            |          |
| 20970                                                                                                                                                                                          |            | CONCEPTUAL                                                                                                                                                                                                                       |            |            |          |
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| CLIENT                                                                                                                                                                                         |            |                                                                                                                                                                                                                                  |            |            |          |
|                                                                                                           |            |                                                                                                                                                                                                                                  |            |            |          |
| PROJECT                                                                                                                                                                                        |            |                                                                                                                                                                                                                                  |            |            |          |
| STRATEGIC GAS<br>EMERGENCY RESERVE                                                                                                                                                             |            |                                                                                                                                                                                                                                  |            |            |          |
| TITLE                                                                                                                                                                                          |            |                                                                                                                                                                                                                                  |            |            |          |
| SITE SELECTION STEP 3<br>CONSTRAINTS MAP - CORK                                                                                                                                                |            |                                                                                                                                                                                                                                  |            |            |          |
| SCALE @A3                                                                                                                                                                                      |            | DRAWN                                                                                                                                                                                                                            | CHECKED    | APPROVED   |          |
| 1:50,000                                                                                                                                                                                       |            | S. Kelly                                                                                                                                                                                                                         | G. Kelly   | G. Kelly   |          |
| DATE                                                                                                                                                                                           |            | DATE                                                                                                                                                                                                                             | DATE       | DATE       |          |
| 19.12.2025                                                                                                                                                                                     |            | 19.12.2025                                                                                                                                                                                                                       | 19.12.2025 | 19.12.2025 |          |
| SUITABILITY CODE                                                                                                                                                                               |            | SUITABILITY DESCRIPTION                                                                                                                                                                                                          |            |            |          |
| A1                                                                                                                                                                                             |            | STAGE APPROVED                                                                                                                                                                                                                   |            |            |          |
| DRAWING No.                                                                                                                                                                                    |            |                                                                                                                                                                                                                                  |            |            | REVISION |
| 20970-NOD-ZZ-01-DR-X-01014                                                                                                                                                                     |            |                                                                                                                                                                                                                                  |            |            | C01      |





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- PORTS AND HARBOURS**
- WATERFORD
- PORTS & HARBOURS 1KM BUFFER
- PRIMARY CONSTRAINTS**
- HARBOUR ENTRANCE 4,864m
- HARBOUR CHANNEL 550m
- SENSITIVE RECEPTORS
- < 13M BELOW LEVEL OF CHART DATUM
- SECONDARY CONSTRAINTS**
- 600M TURNING CIRCLE
- 900M TURNING CIRCLE
- SAFETY EXCLUSION ZONE
- LANDSLIDE LOCATIONS
- SLOPE >20%
- LANDSLIDE SUSCEPTIBILITY**
- HIGH
- MODERATELY HIGH
- MODERATELY LOW
- MODERATELY LOW (INFERRED)
- LOW
- LOW (INFERRED)



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| CD1 | 19.12.2025 | FIRST ISSUE | S.K. | G.R. | G.R. |
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| PROJECT No. | STAGE      |
| 20970       | CONCEPTUAL |

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**CLIENT**

**Gas Networks Ireland**

**PROJECT**

**STRATEGIC GAS EMERGENCY RESERVE**

**TITLE**

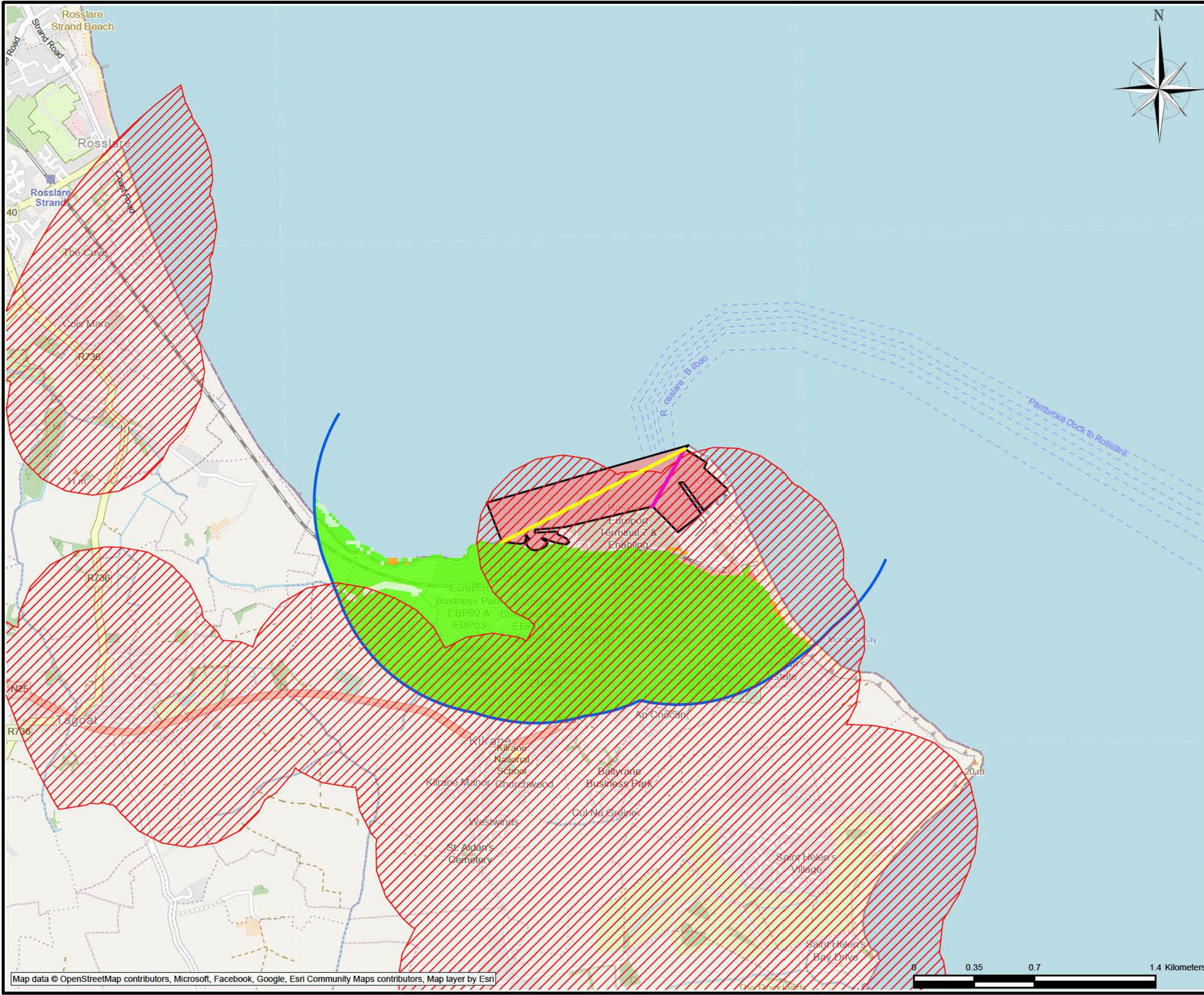
**SITE SELECTION STEP 3  
CONSTRAINTS MAP - WATERFORD**

|           |            |            |            |
|-----------|------------|------------|------------|
| SCALE @A3 | DRAWN      | CHECKED    | APPROVED   |
| 1:170,000 | S. Kelly   | G. Reilly  | G. Reilly  |
|           | DATE       | DATE       | DATE       |
|           | 19.12.2025 | 19.12.2025 | 19.12.2025 |

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| SUITABILITY CODE | SUITABILITY DESCRIPTION |
| A1               | STAGE APPROVED          |

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|----------------------------|----------|
| DRAWING No.                | REVISION |
| 20970-NOD-ZZ-01-DR-X-01015 | C01      |





**PORTS AND HARBOURS**  
ROSSLARE  
PORTS & HARBOURS 1KM BUFFER  
**PRIMARY CONSTRAINTS**  
HARBOUR ENTRANCE 1,189m  
HARBOUR CHANNEL 382m  
SENSITIVE RECEPTORS  
< 13M BELOW LEVEL OF CHART DATUM  
**SECONDARY CONSTRAINTS**  
600M TURNING CIRCLE  
900M TURNING CIRCLE  
SAFETY EXCLUSION ZONE  
LANDSLIDE LOCATIONS  
SLOPE >20%  
**LANDSLIDE SUSCEPTIBILITY**  
HIGH  
MODERATELY HIGH  
MODERATELY LOW  
MODERATELY LOW (INFERRED)  
LOW  
LOW (INFERRED)  
**KEYPLAN**

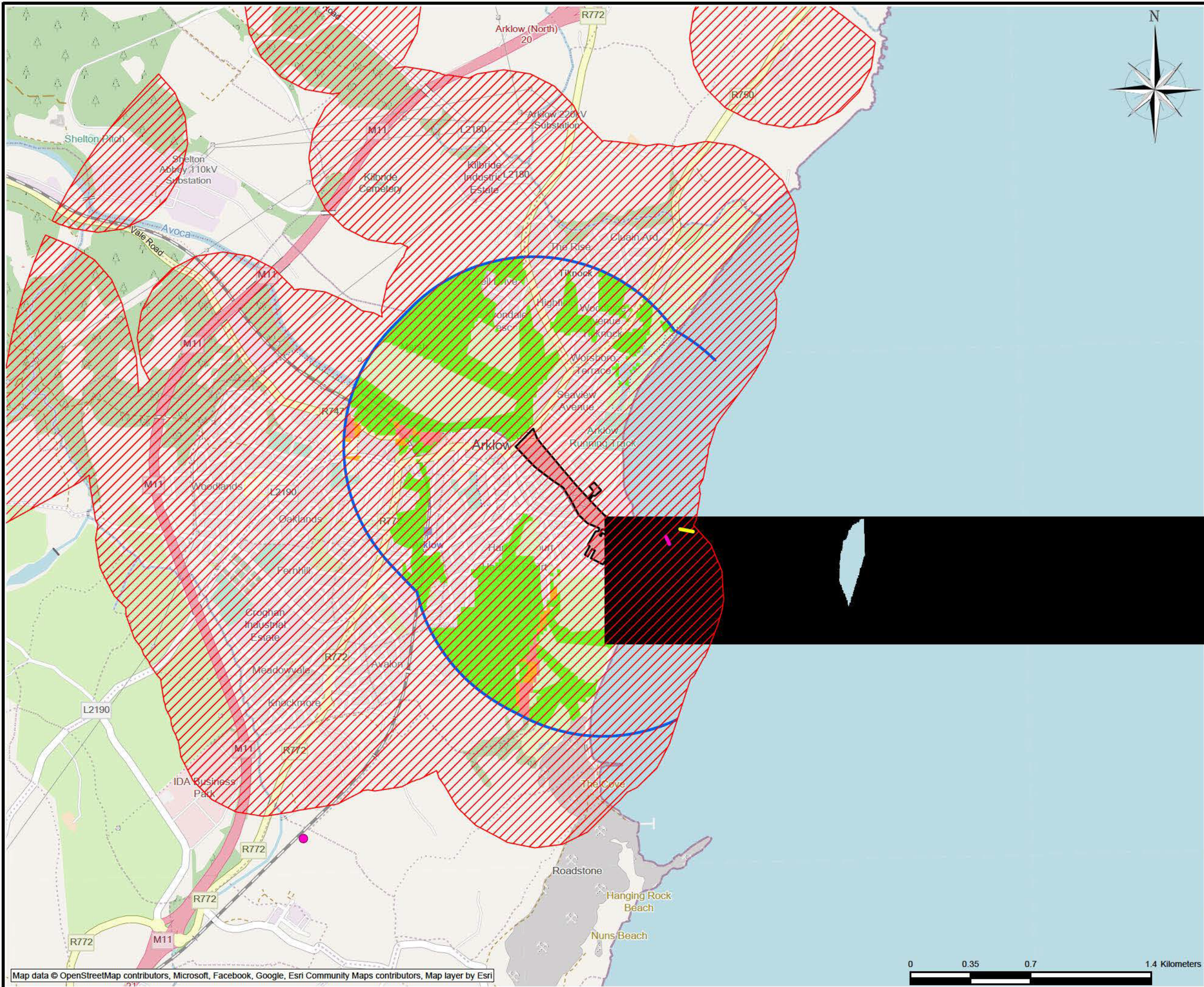
DEEPER THAN -16M

-16M TO -13M

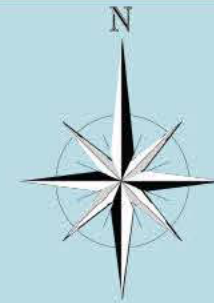
SHALLOWER THAN -13M

|                                                                                                                                                                                                                      |                    |                                                                                                                                                                                                                                  |                       |      |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------|-----------------|
| CD1                                                                                                                                                                                                                  | 19.12.2025         | FIRST ISSUE                                                                                                                                                                                                                      | S.K.                  | G.R. | G.R.            |
| PROJECT No.                                                                                                                                                                                                          | 20970              | STAGE                                                                                                                                                                                                                            | CONCEPTUAL            |      |                 |
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| CLIENT<br> Gas Networks Ireland                                                                                                 |                    |                                                                                                                                                                                                                                  |                       |      |                 |
| PROJECT<br>STRATEGIC GAS EMERGENCY RESERVE                                                                                                                                                                           |                    |                                                                                                                                                                                                                                  |                       |      |                 |
| TITLE<br>SITE SELECTION STEP 3<br>CONSTRAINTS MAP - ROSSLARE                                                                                                                                                         |                    |                                                                                                                                                                                                                                  |                       |      |                 |
| SCALE @A3<br>1:20,000                                                                                                                                                                                                | DRAWN<br>S. Kelly  | CHECKED<br>G. Reilly                                                                                                                                                                                                             | APPROVED<br>G. Reilly |      |                 |
|                                                                                                                                                                                                                      | DATE<br>19.12.2025 | DATE<br>19.12.2025                                                                                                                                                                                                               | DATE<br>19.12.2025    |      |                 |
| SUITABILITY CODE<br>A1                                                                                                                                                                                               | STAGE APPROVED     |                                                                                                                                                                                                                                  |                       |      |                 |
| DRAWING No.<br>20970-NOD-ZZ-01-DR-X-01016                                                                                                                                                                            |                    |                                                                                                                                                                                                                                  |                       |      | REVISION<br>C01 |

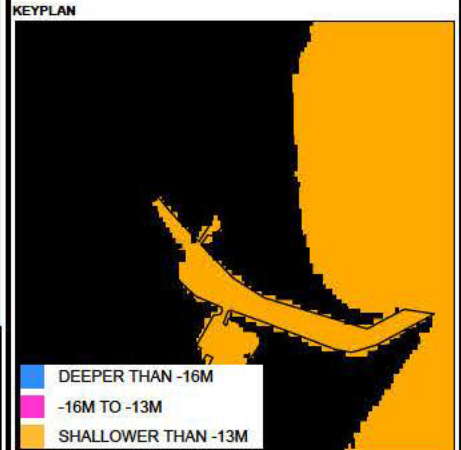




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- PORTS AND HARBOURS**  
ARKLOW
- PORTS & HARBOURS 1KM BUFFER**
- PRIMARY CONSTRAINTS**  
HARBOUR ENTRANCE 76m  
HARBOUR CHANNEL 48m  
SENSITIVE RECEPTORS  
< 13M BELOW LEVEL OF CHART DATUM
- SECONDARY CONSTRAINTS**  
600M TURNING CIRCLE  
900M TURNING CIRCLE  
SAFETY EXCLUSION ZONE  
LANDSLIDE LOCATIONS  
SLOPE >20%  
**LANDSLIDE SUSCEPTIBILITY**  
HIGH  
MODERATELY HIGH  
MODERATELY LOW  
MODERATELY LOW (INFERRED)  
LOW  
LOW (INFERRED)



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| CD1 | 19.12.2025 | FIRST ISSUE | S.K. | G.R. | G.R. |
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| PROJECT No. | STAGE      |
| 20970       | CONCEPTUAL |

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CLIENT



PROJECT

STRATEGIC GAS  
EMERGENCY RESERVE

TITLE

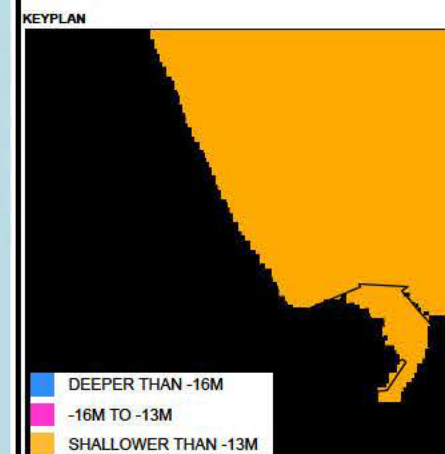
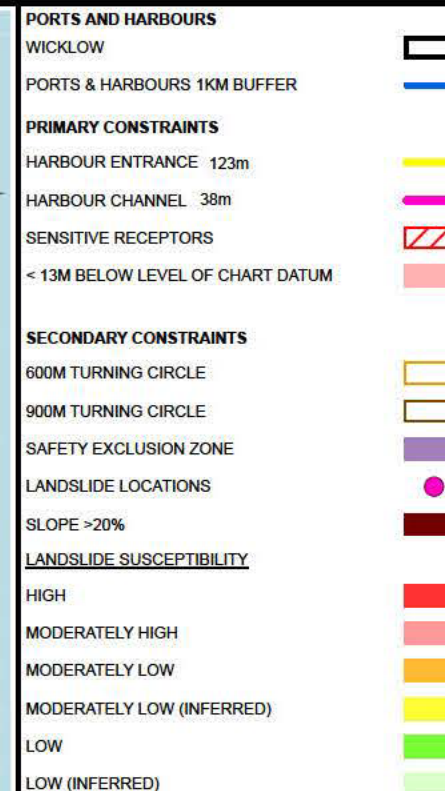
SITE SELECTION STEP 3  
CONSTRAINTS MAP - ARKLOW

|           |            |            |            |
|-----------|------------|------------|------------|
| SCALE @A3 | DRAWN      | CHECKED    | APPROVED   |
| 1:20,000  | S. Kelly   | G. Reilly  | G. Reilly  |
|           | DATE       | DATE       | DATE       |
|           | 19.12.2025 | 19.12.2025 | 19.12.2025 |

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| SUITABILITY CODE | SUITABILITY DESCRIPTION |
| A1               | STAGE APPROVED          |

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| DRAWING No.                | REVISION |
| 20970-NOD-ZZ-01-DR-X-01017 | C01      |





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| C01 | 19.12.2025 | FIRST ISSUE. | 8X | Q.R. |
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| PROJECT No. | STAGE      |
| 20970       | CONCEPTUAL |

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CLIENT  
Gas Networks Ireland

PROJECT

STRATEGIC GAS  
EMERGENCY RESERVE

**TITLE**

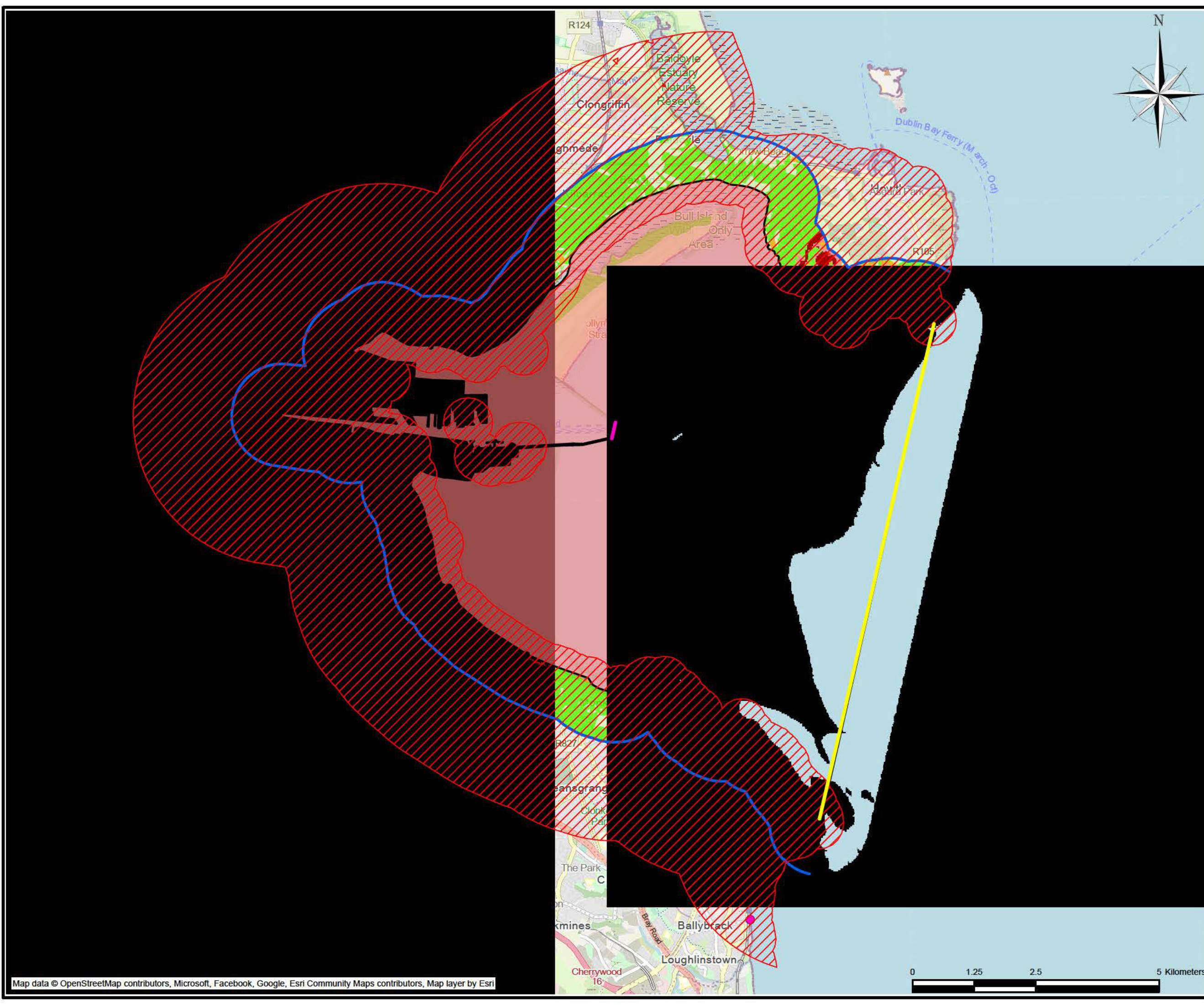
**SITE SELECTION STEP 3  
CONSTRAINTS MAP - WICKLOW**

|                                                                                                |                    |                      |                       |
|------------------------------------------------------------------------------------------------|--------------------|----------------------|-----------------------|
| SCALE  A3 | DRAWN<br>S. Kelly  | CHECKED<br>G. Reilly | APPROVED<br>G. Reilly |
| 1:25,000                                                                                       | DATE<br>19 12 2025 | DATE<br>19 12 2025   | DATE<br>19 12 2025    |

|                  |                         |
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| SUITABILITY CODE | SUITABILITY DESCRIPTION |
| A1               | STAGE APPROVED          |

|                            |          |
|----------------------------|----------|
| DRAWING No.                | REVISION |
| 20970-NOD-ZZ-01-DR-X-01018 | C0       |





**PORTS AND HARBOURS**  
DUBLIN & DUN LAOGHAIRE

**PORTS & HARBOURS 1KM BUFFER**

**PRIMARY CONSTRAINTS**  
HARBOUR ENTRANCE 10,303m  
HARBOUR CHANNEL 334m  
SENSITIVE RECEPTORS  
< 13M BELOW LEVEL OF CHART DATUM

**SECONDARY CONSTRAINTS**  
600M TURNING CIRCLE  
900M TURNING CIRCLE  
SAFETY EXCLUSION ZONE  
LANDSLIDE LOCATIONS  
SLOPE >20%  
**LANDSLIDE SUSCEPTIBILITY**  
HIGH  
MODERATELY HIGH  
MODERATELY LOW  
MODERATELY LOW (INFERRED)  
LOW  
LOW (INFERRED)

**KEYPLAN**

DEEPER THAN -16M  
-16M TO -13M  
SHALLOWER THAN -13M

|     |            |             |      |      |      |
|-----|------------|-------------|------|------|------|
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PROJECT No. 20970 STAGE CONCEPTUAL

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CLIENT

PROJECT  
STRATEGIC GAS EMERGENCY RESERVE

TITLE  
SITE SELECTION STEP 3  
CONSTRAINTS MAP - DUBLIN & DUN LAOGHAIRE

|                       |                    |                     |                      |
|-----------------------|--------------------|---------------------|----------------------|
| SCALE @A3<br>1:70,000 | DRAWN<br>S. Kelly  | CHECKED<br>G. Kelly | APPROVED<br>G. Kelly |
|                       | DATE<br>19.12.2025 | DATE<br>19.12.2025  | DATE<br>19.12.2025   |

SUITABILITY CODE A1 STAGE APPROVED

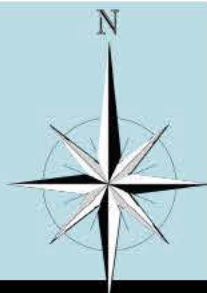
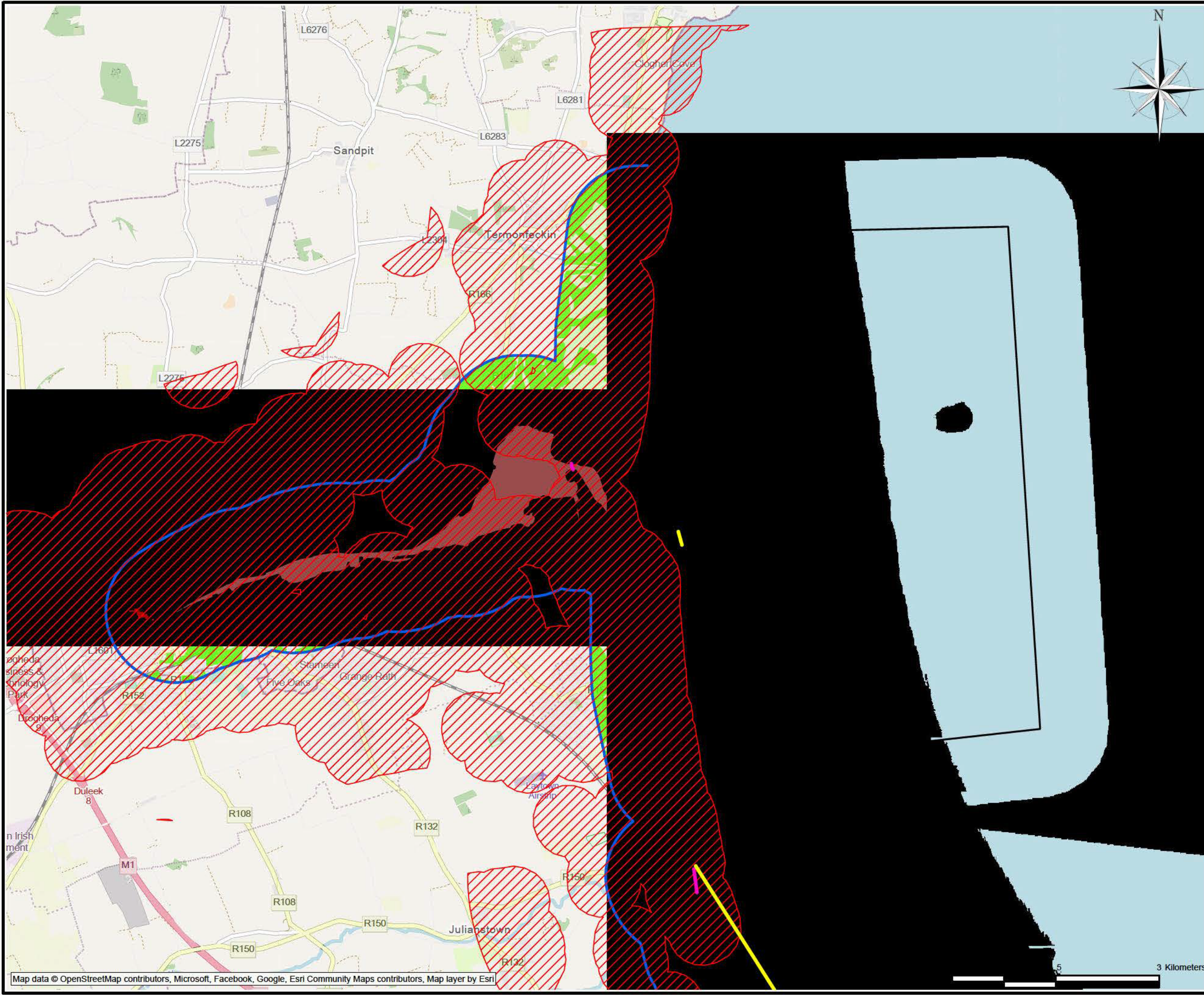
DRAWING No. 20970-NOD-ZZ-01-DR-X-01019

REVISION C01

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0 1.25 2.5 5 Kilometers





**PORTS AND HARBOURS**  
DROGHEDA  
PORTS & HARBOURS 1KM BUFFER  
**PRIMARY CONSTRAINTS**  
HARBOUR ENTRANCE 198m  
HARBOUR CHANNEL 91m  
SENSITIVE RECEPTORS  
< 13M BELOW LEVEL OF CHART DATUM  
**SECONDARY CONSTRAINTS**  
600M TURNING CIRCLE  
900M TURNING CIRCLE  
SAFETY EXCLUSION ZONE  
LANDSLIDE LOCATIONS  
SLOPE >20%  
**LANDSLIDE SUSCEPTIBILITY**  
HIGH  
MODERATELY HIGH  
MODERATELY LOW  
MODERATELY LOW (INFERRED)  
LOW  
LOW (INFERRED)  
**KEYPLAN**

DEEPER THAN -16M

-16M TO -13M

SHALLOWER THAN -13M

CD1

19.12.2025

FIRST ISSUE

S.K.

G.R.

G.R.

PROJECT No.

20970

STAGE

CONCEPTUAL

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CLIENT

Gas Networks Ireland

PROJECT

STRATEGIC GAS EMERGENCY RESERVE

TITLE

SITE SELECTION STEP 3  
CONSTRAINTS MAP - DROGHEDA

SCALE @A3

1:50,000

DRAWN

S. Kelly

CHECKED

G. Reilly

APPROVED

G. Reilly

DATE

19.12.2025

DATE

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SUITABILITY CODE

A1

STAGE APPROVED

DRAWING No.

20970-NOD-ZZ-01-DR-X-01020

REVISION

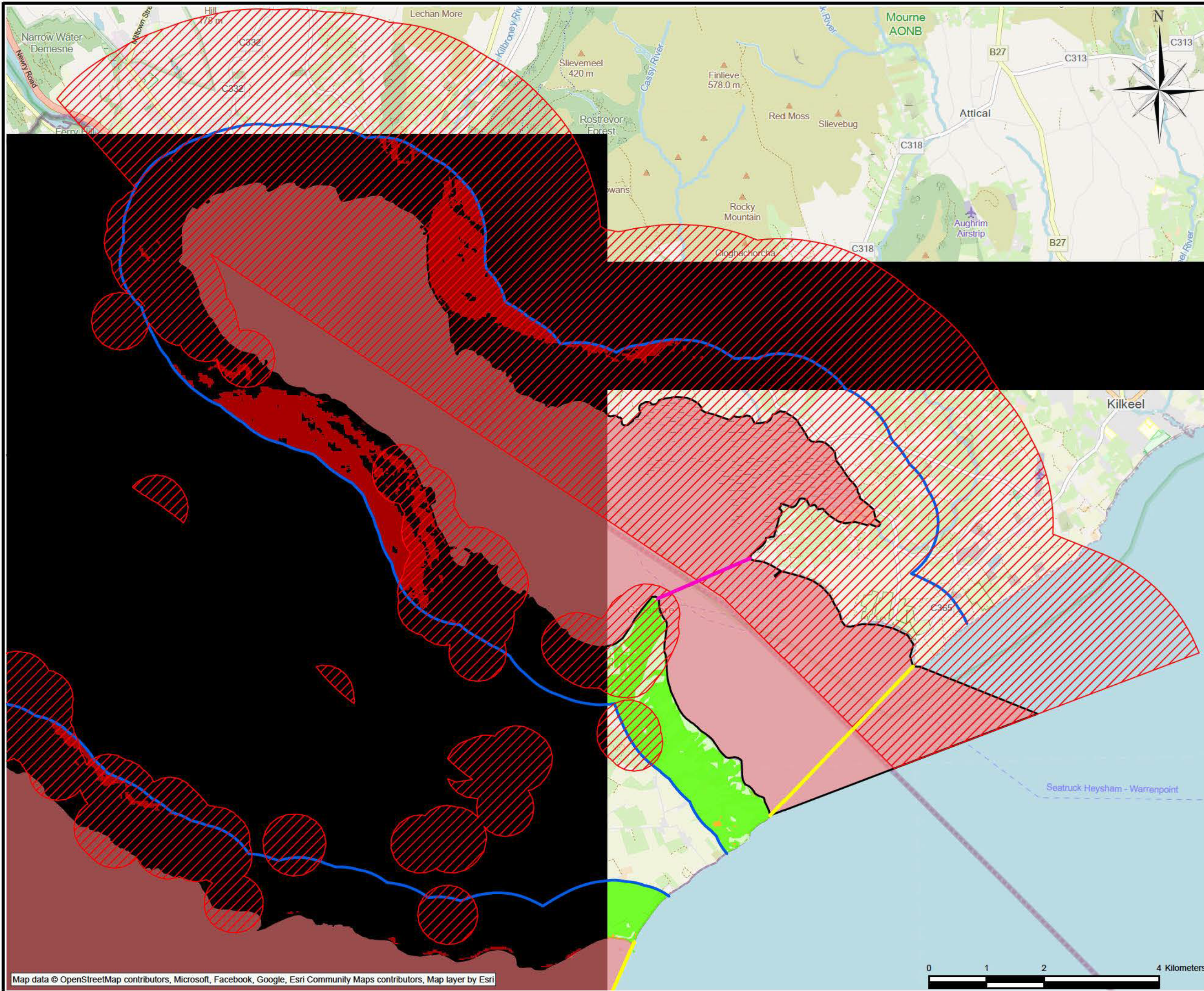
C01

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**PORTS AND HARBOURS**  
GREENORE

**PORTS & HARBOURS 1KM BUFFER**

**PRIMARY CONSTRAINTS**  
HARBOUR ENTRANCE 3,584m  
HARBOUR CHANNEL 1,745m  
SENSITIVE RECEPTORS  
< 13M BELOW LEVEL OF CHART DATUM

**SECONDARY CONSTRAINTS**  
600M TURNING CIRCLE  
900M TURNING CIRCLE  
SAFETY EXCLUSION ZONE  
LANDSLIDE LOCATIONS  
SLOPE >20%  
LANDSLIDE SUSCEPTIBILITY  
HIGH  
MODERATELY HIGH  
MODERATELY LOW  
MODERATELY LOW (INFERRED)  
LOW  
LOW (INFERRED)

**KEYPLAN**

DEEPER THAN -16M  
-16M TO -13M  
SHALLOWER THAN -13M

|     |            |             |      |      |      |
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| CD1 | 19.12.2025 | FIRST ISSUE | S.K. | G.R. | G.R. |
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PROJECT No. 20970 STAGE CONCEPTUAL

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W [www.nodwyer.com](http://www.nodwyer.com)

CLIENT  
 Gas Networks Ireland

PROJECT  
STRATEGIC GAS EMERGENCY RESERVE

TITLE  
SITE SELECTION STEP 3  
CONSTRAINTS MAP - GREENORE

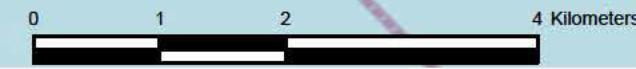
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SUITABILITY CODE  
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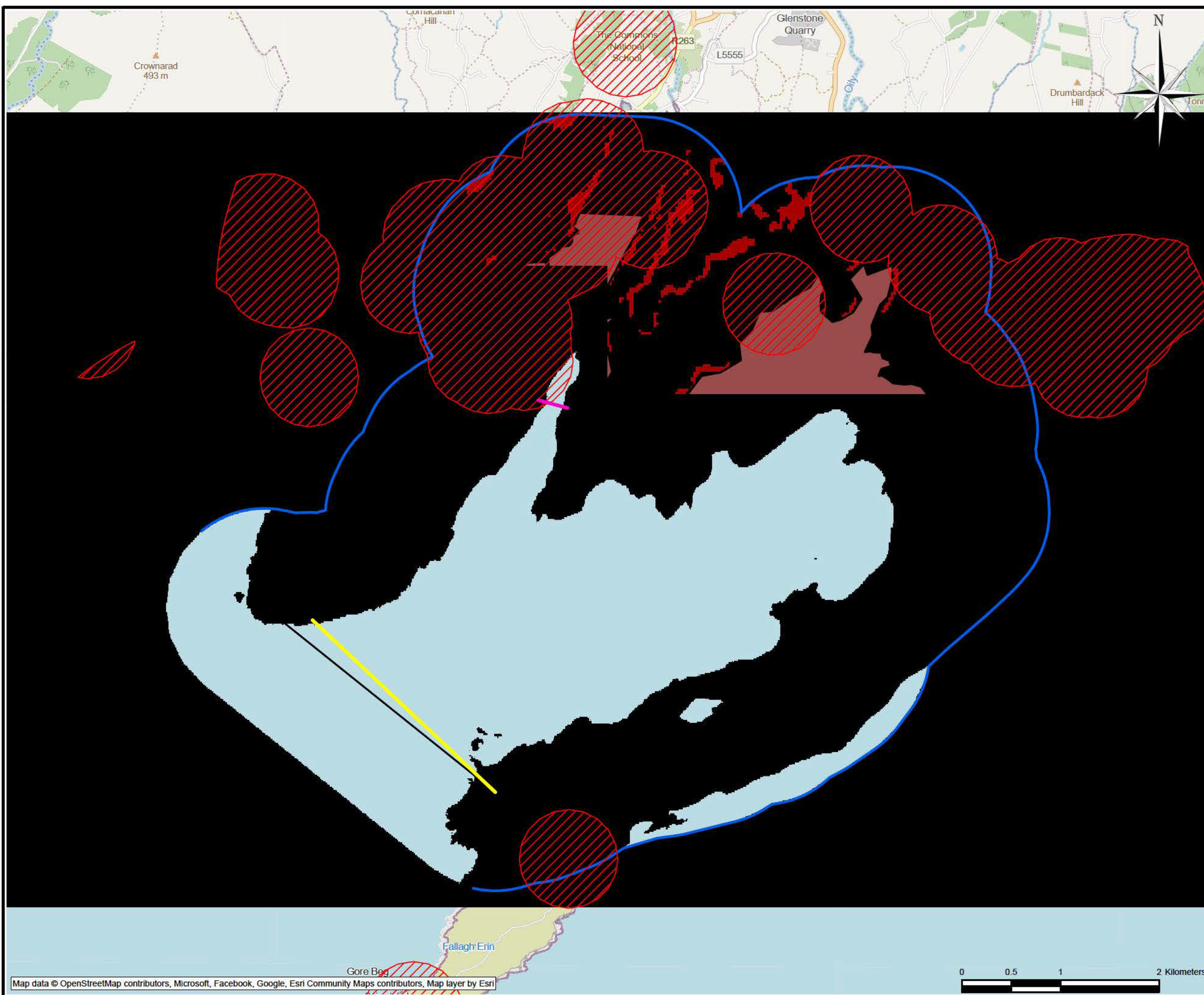
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REVISION  
C01





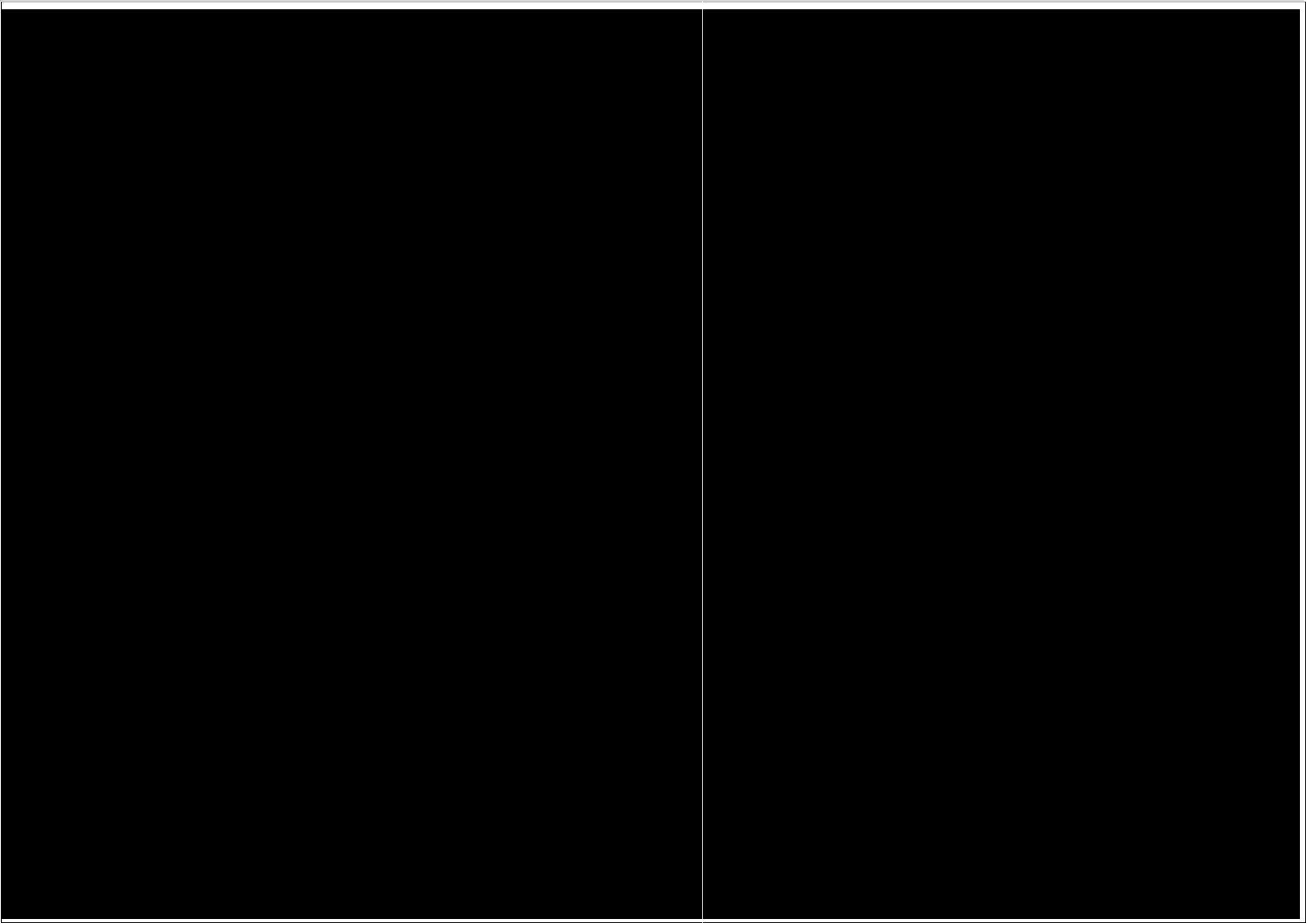


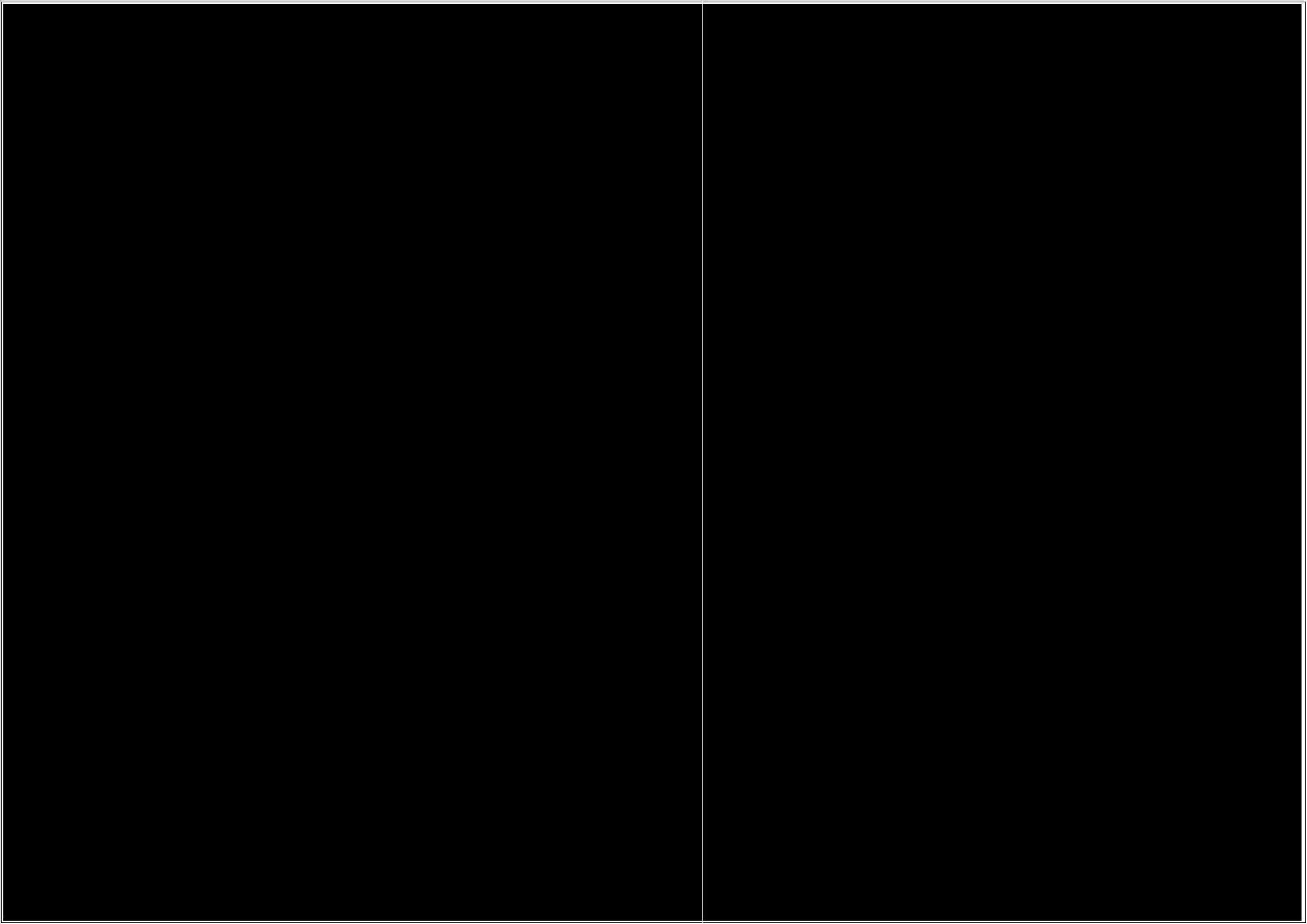
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KILLYBEGS  
PORTS & HARBOURS 1KM BUFFER  
**PRIMARY CONSTRAINTS**  
HARBOUR ENTRANCE 2,545m  
HARBOUR CHANNEL 305m  
SENSITIVE RECEPTORS  
< 13M BELOW LEVEL OF CHART DATUM  
**SECONDARY CONSTRAINTS**  
600M TURNING CIRCLE  
900M TURNING CIRCLE  
SAFETY EXCLUSION ZONE  
LANDSLIDE LOCATIONS  
SLOPE >20%  
**LANDSLIDE SUSCEPTIBILITY**  
HIGH  
MODERATELY HIGH  
MODERATELY LOW  
MODERATELY LOW (INFERRED)  
LOW  
LOW (INFERRED)  
**KEYPLAN**

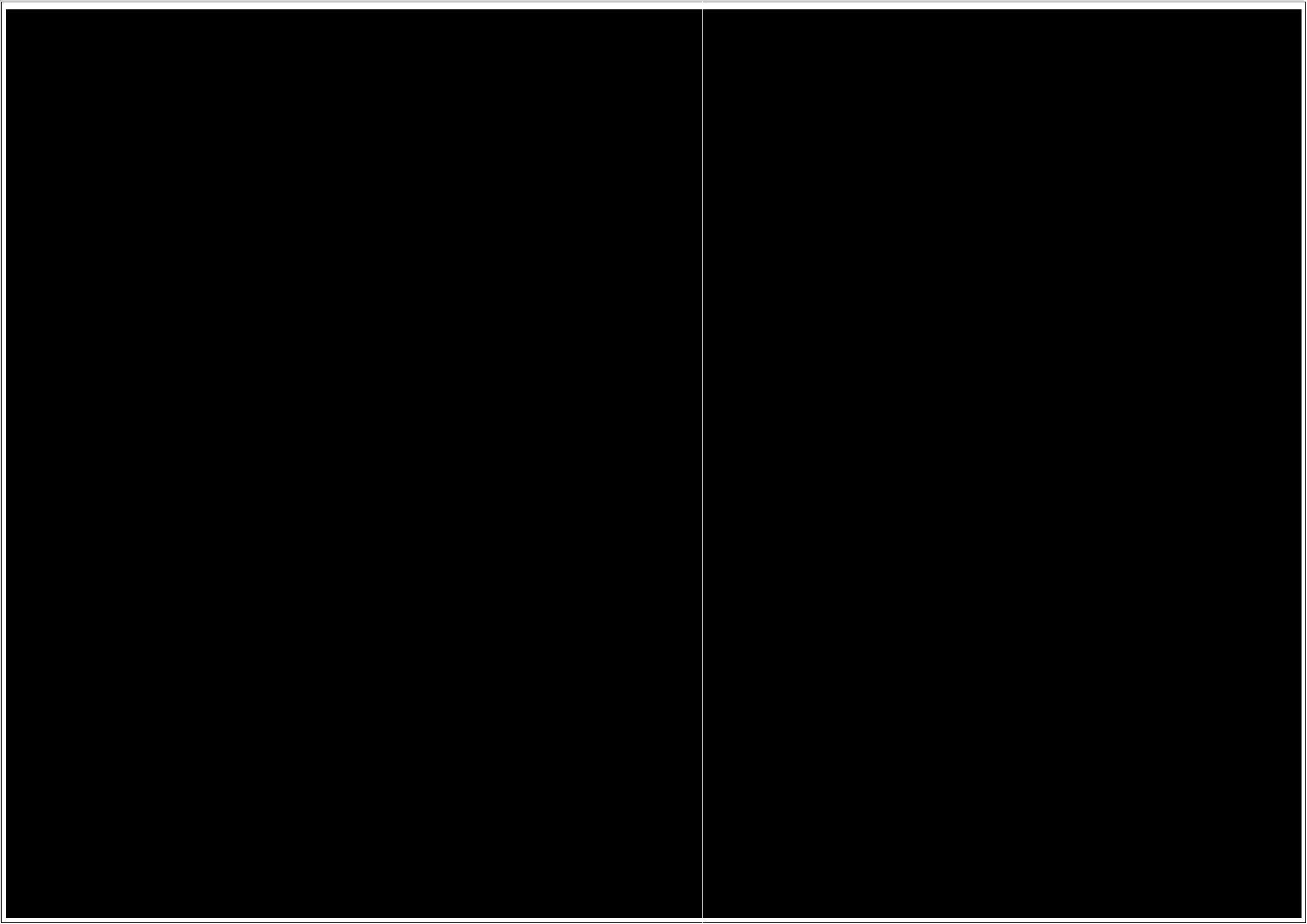
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| PROJECT<br>STRATEGIC GAS EMERGENCY RESERVE                                                                                                                                                                                                                                                                                                                                                            |            |                    |      |                      |                 |
| TITLE<br>SITE SELECTION STEP 3<br>CONSTRAINTS MAP - KILLYBEGS                                                                                                                                                                                                                                                                                                                                         |            |                    |      |                      |                 |
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| DRAWING No.<br>20970-NOD-ZZ-01-DR-X-01023                                                                                                                                                                                                                                                                                                                                                             |            |                    |      |                      | REVISION<br>C01 |



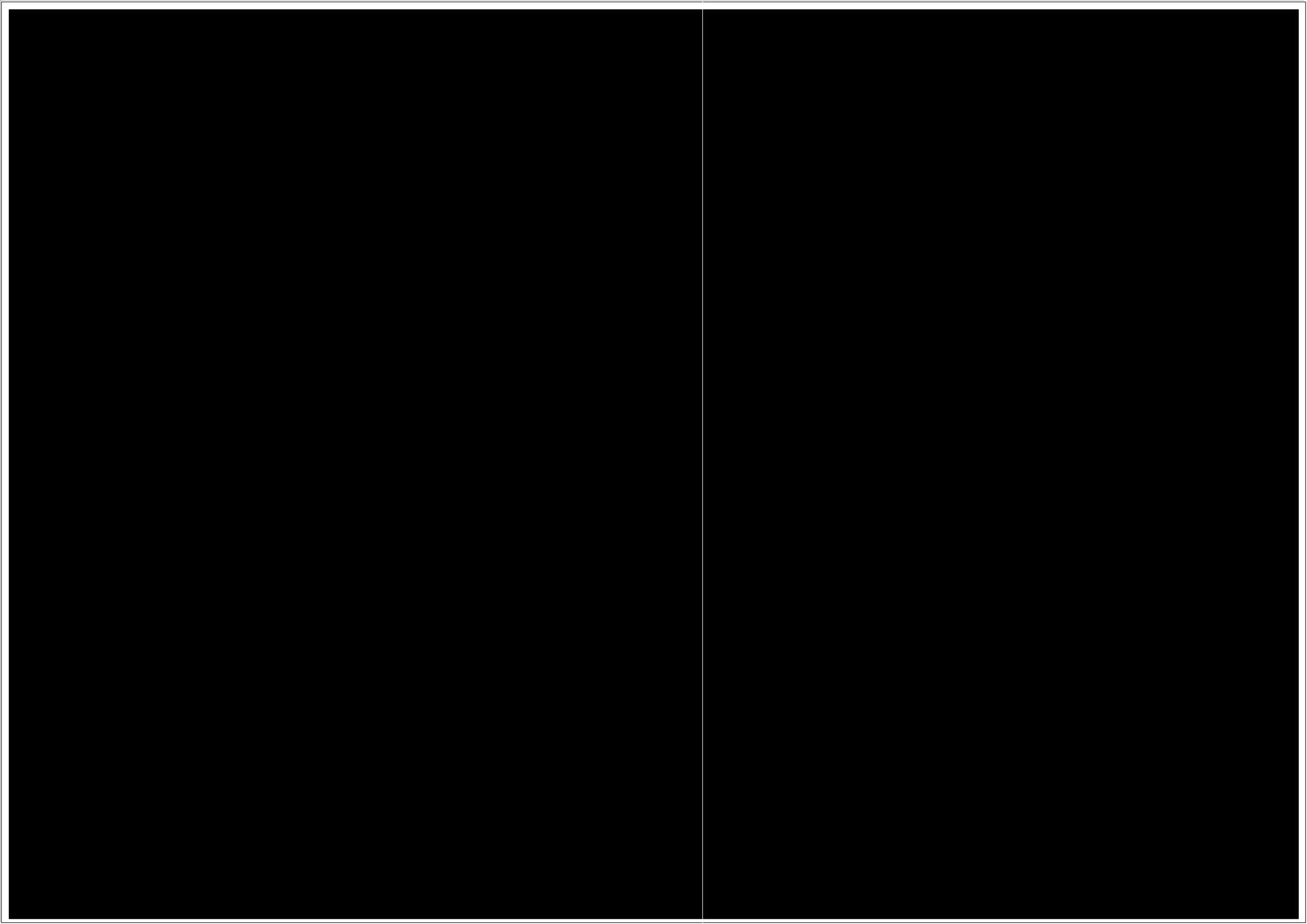


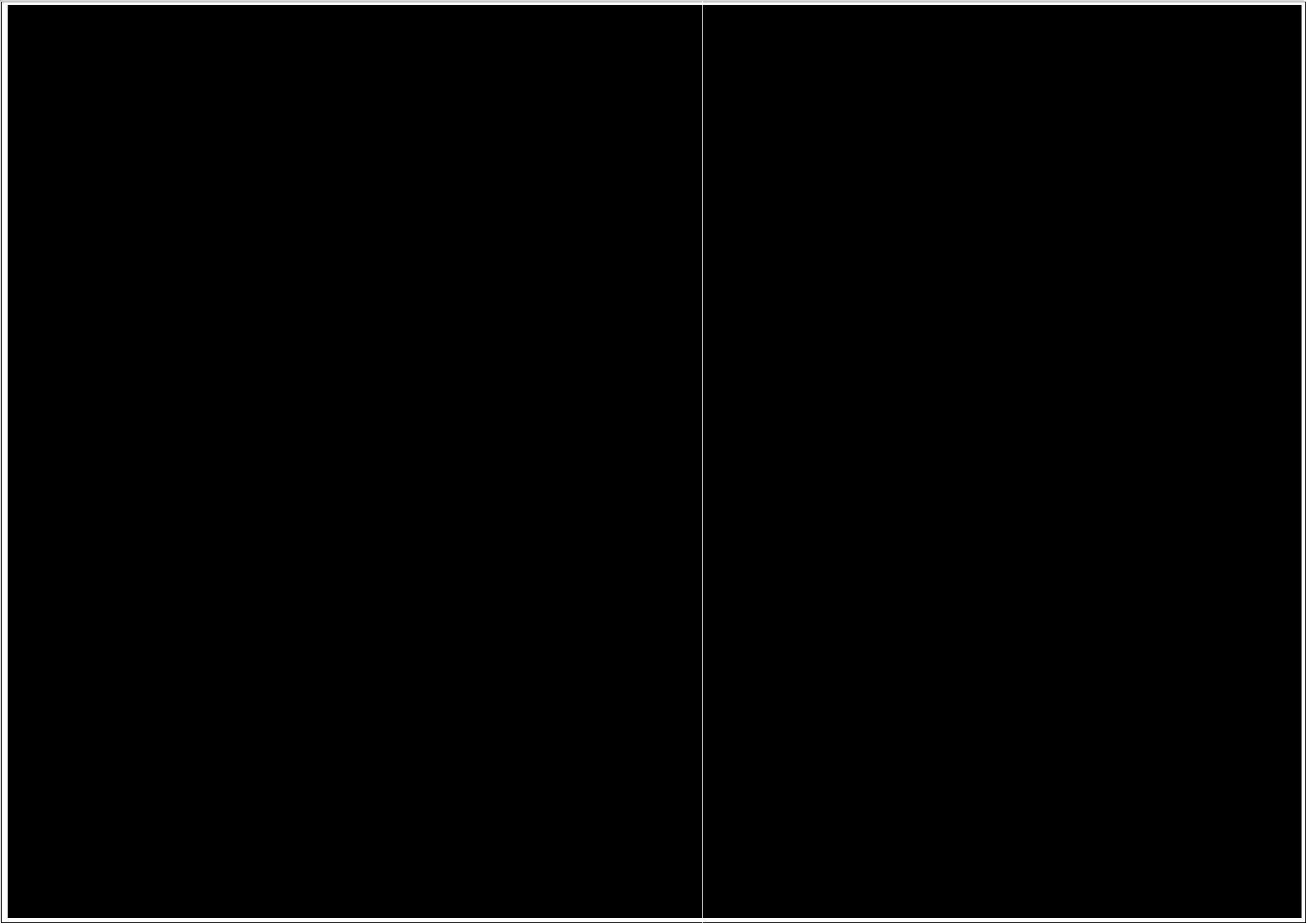


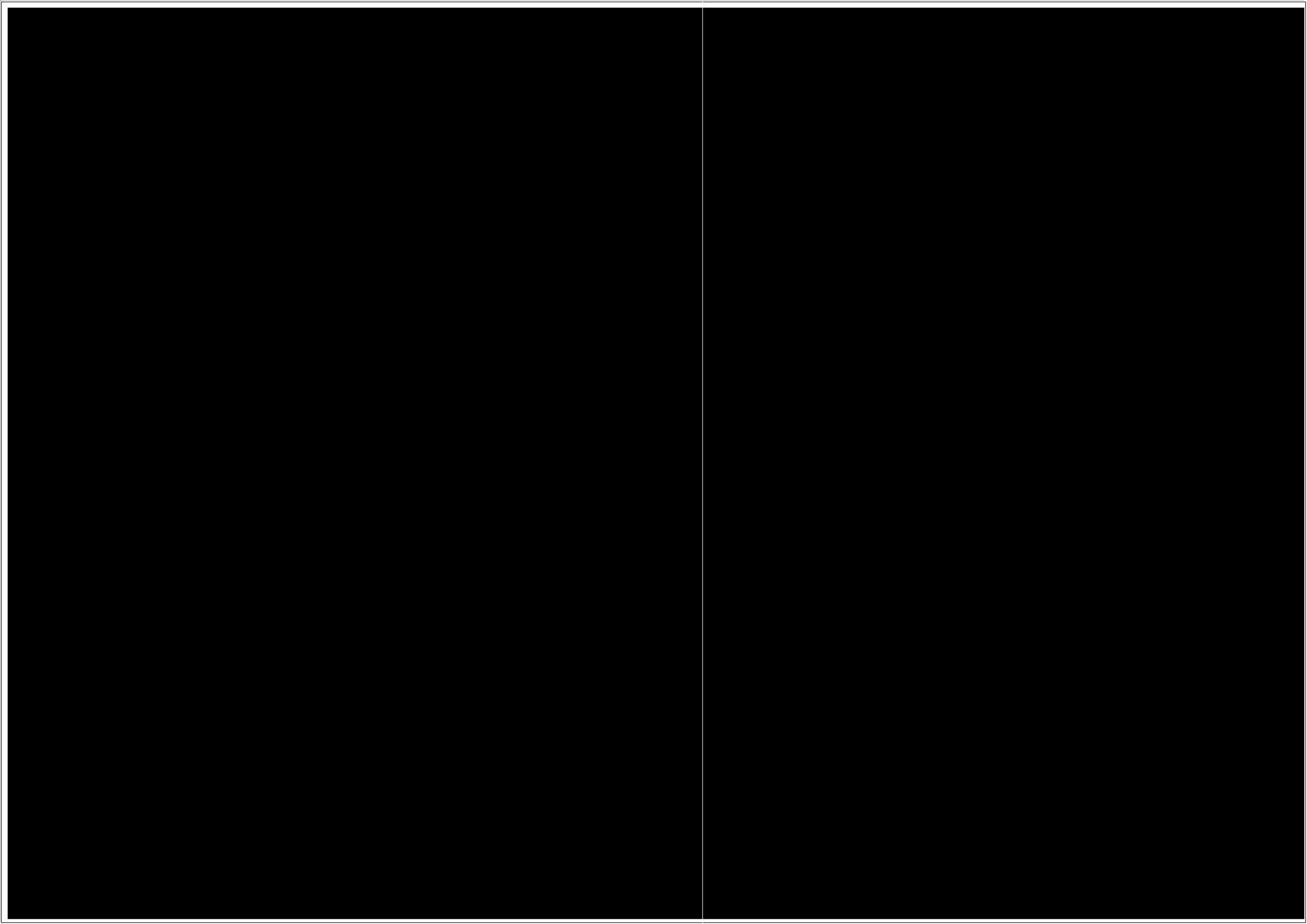




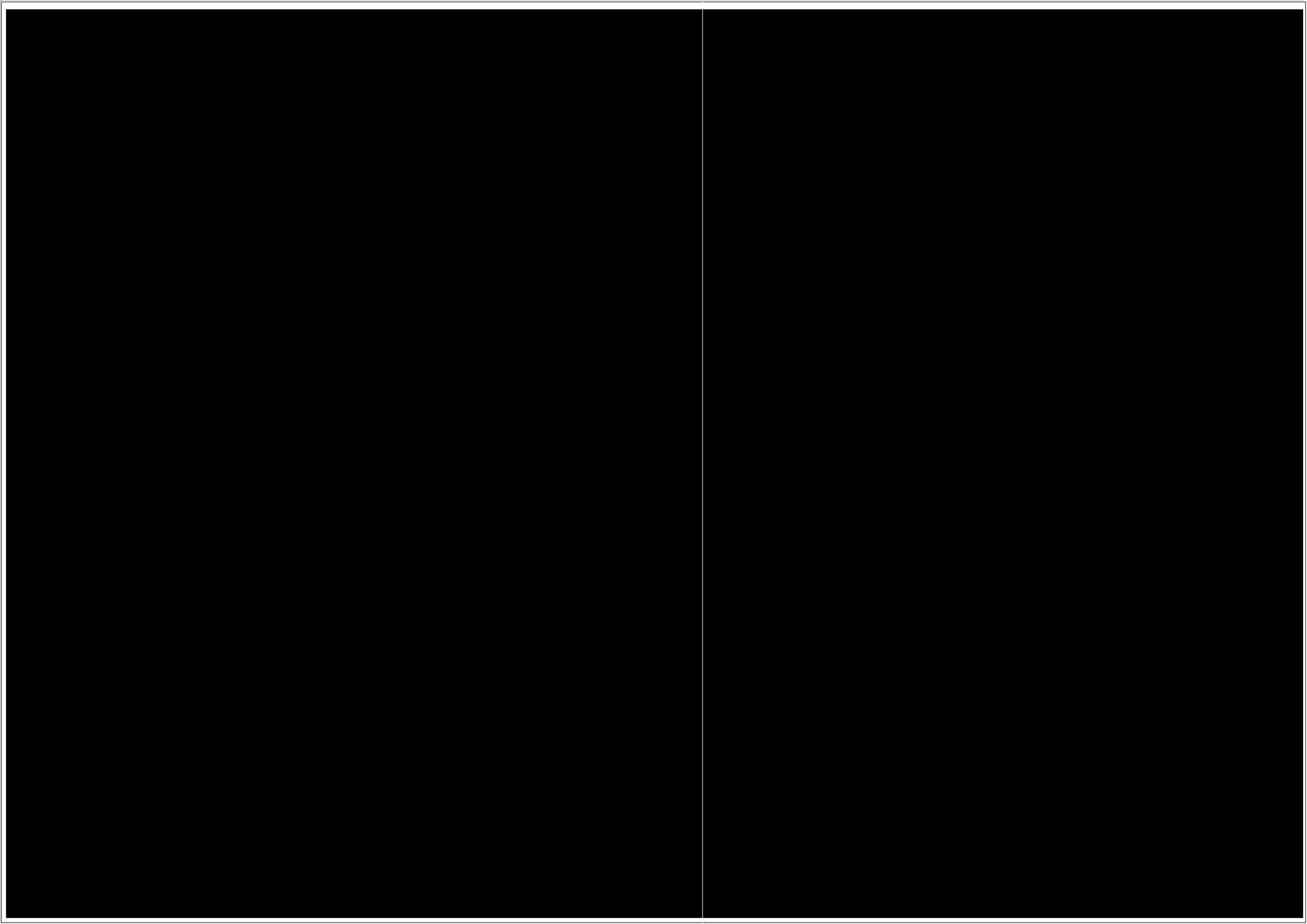


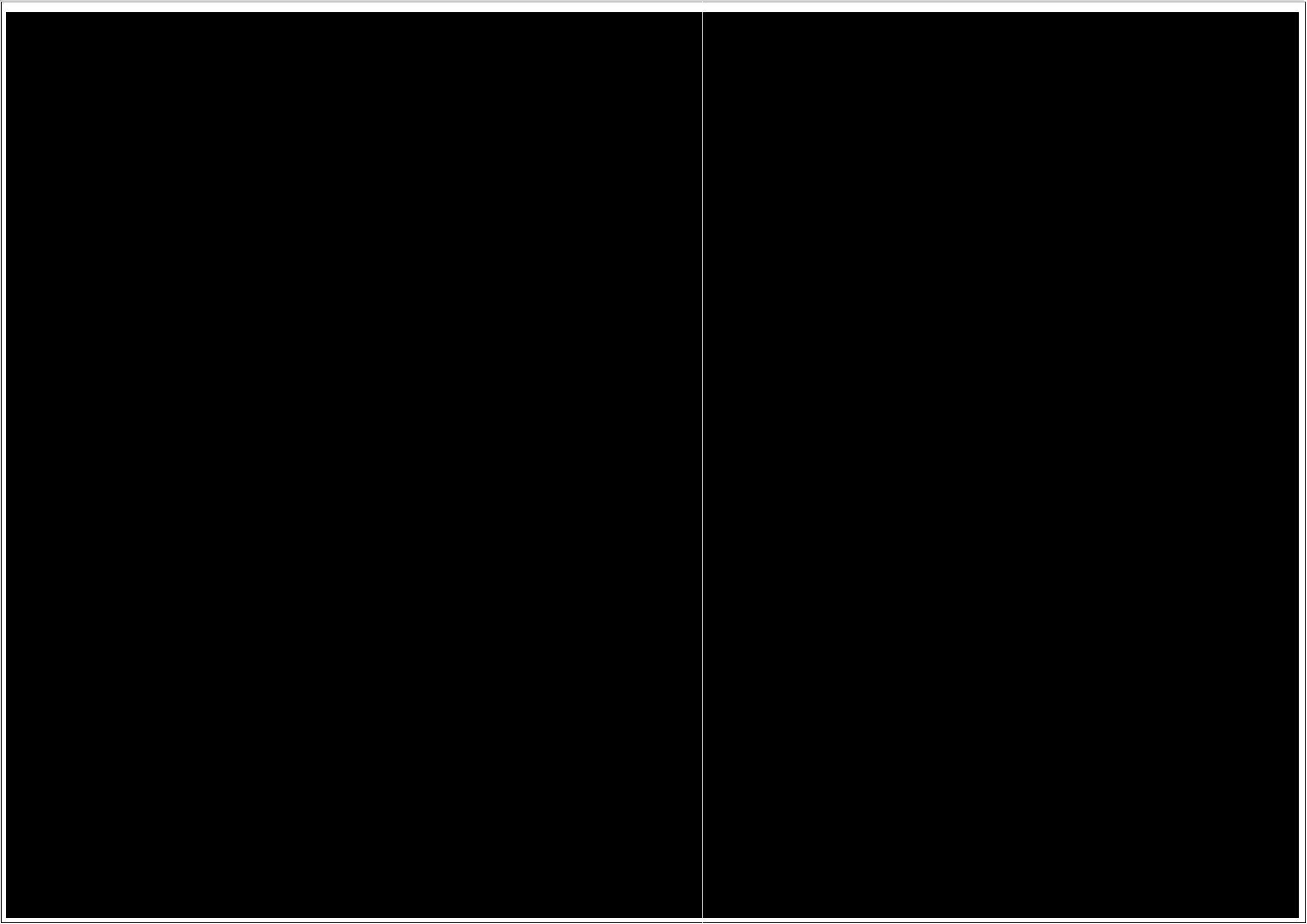


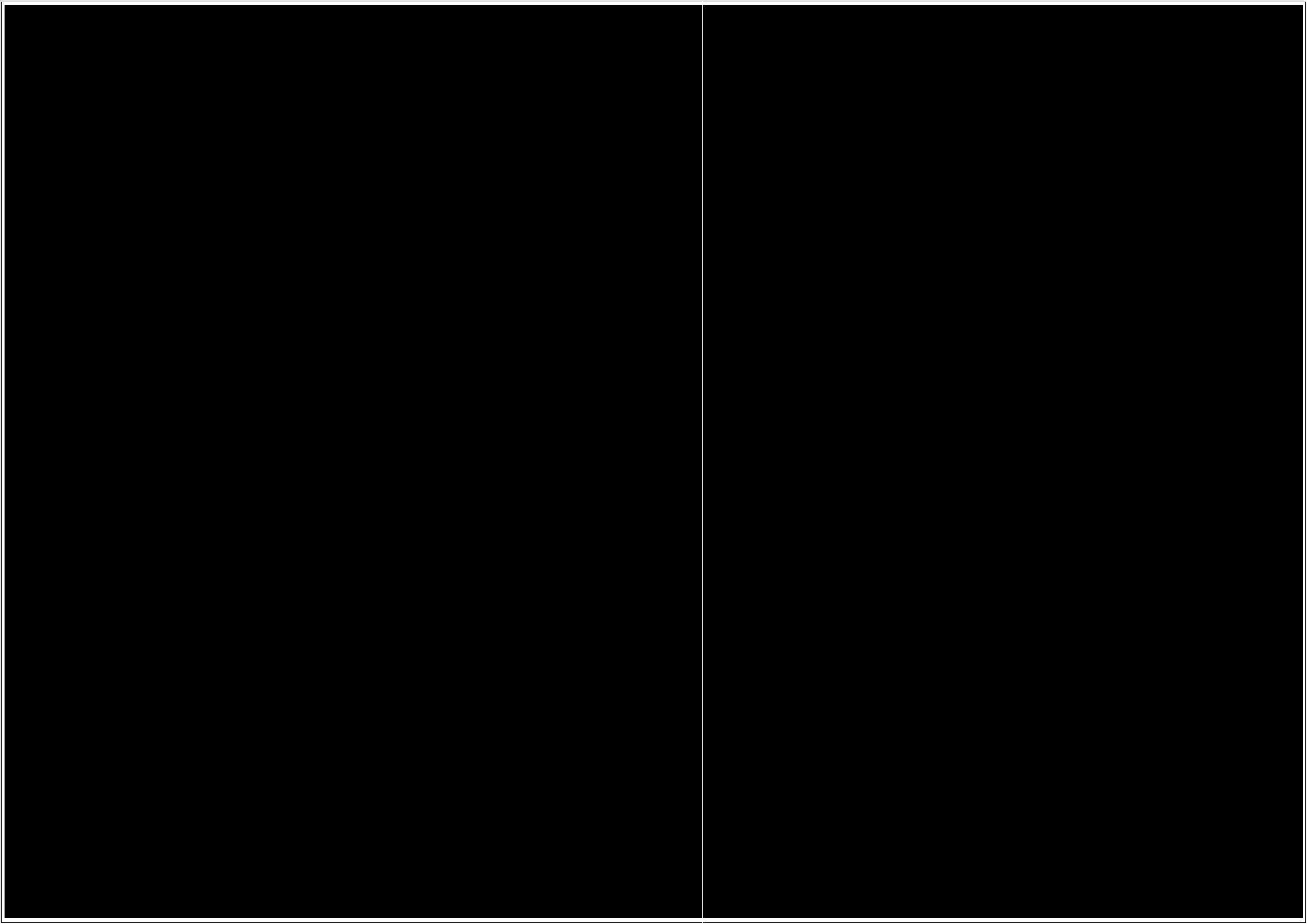




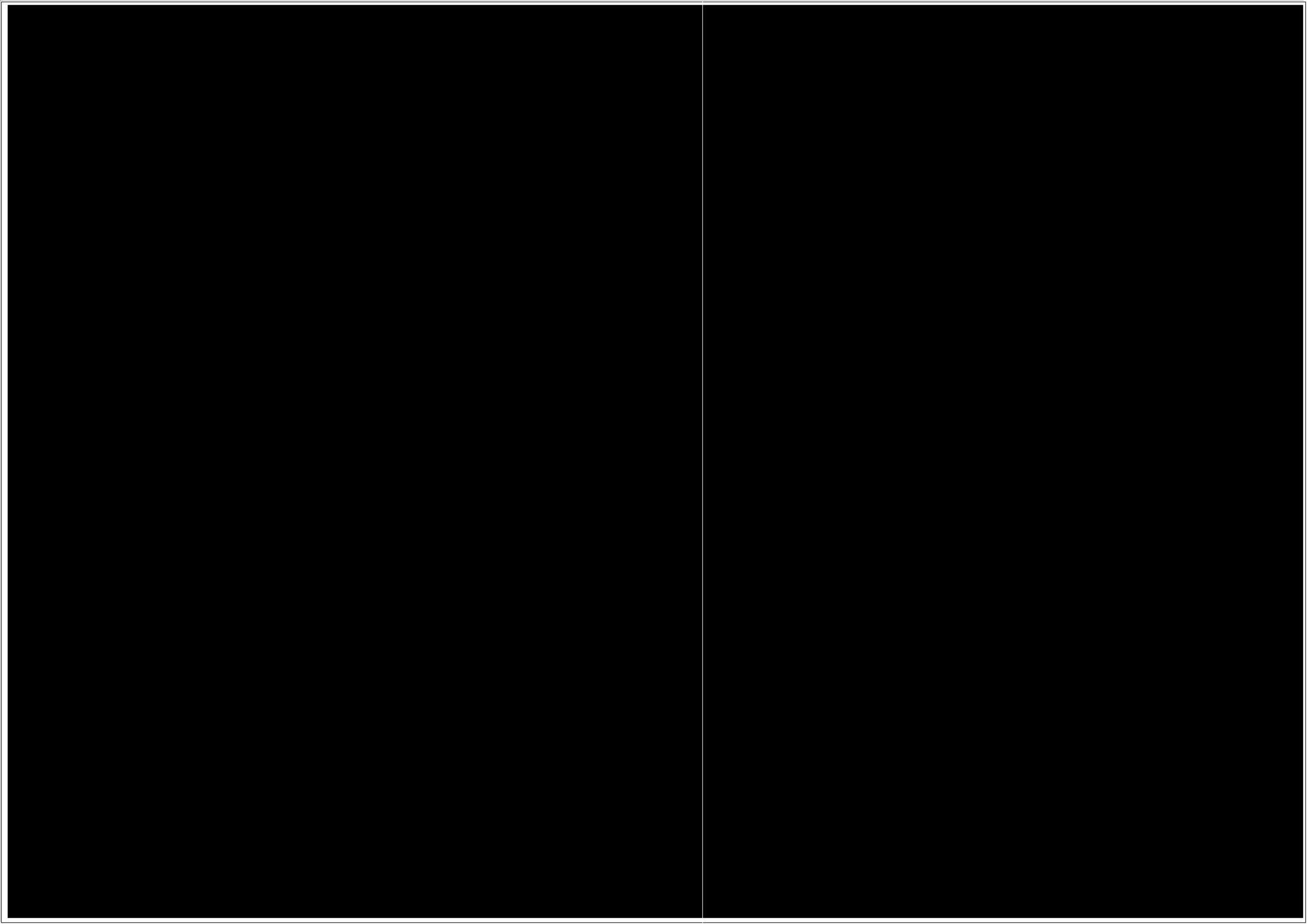


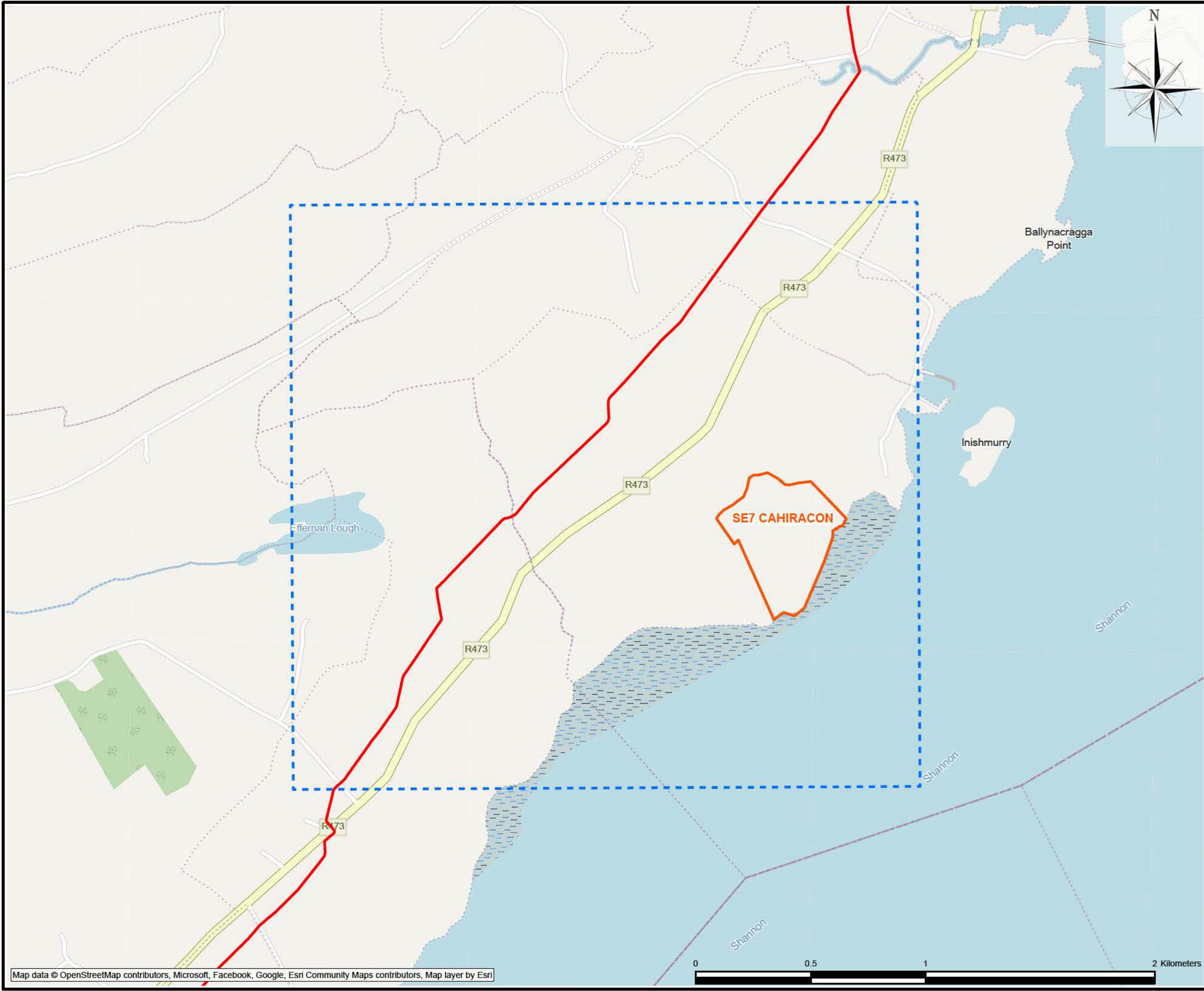












LEGEND

POTENTIAL SITES

STUDY AREA

UTILITIES

GAS HP MAINS

KEYPLAN

|     |            |             |      |      |      |
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CLIENT

PROJECT

STRATEGIC GAS EMERGENCY RESERVE

TITLE

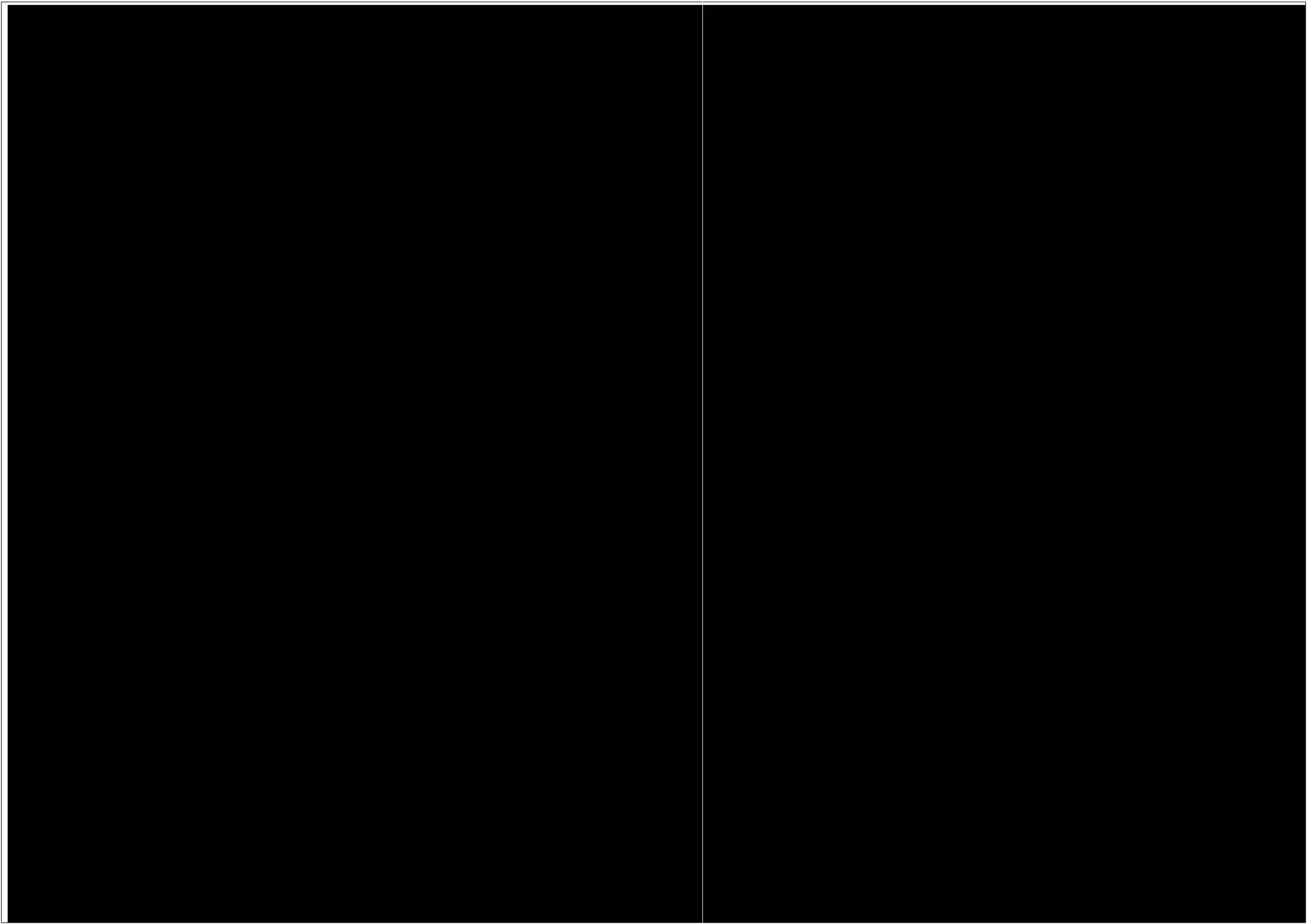
PIPELINE ROUTE SELECTION STEP 2  
SE7 STUDY AREA

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|           | 19.12.2025 | 19.12.2025 | 19.12.2025 |

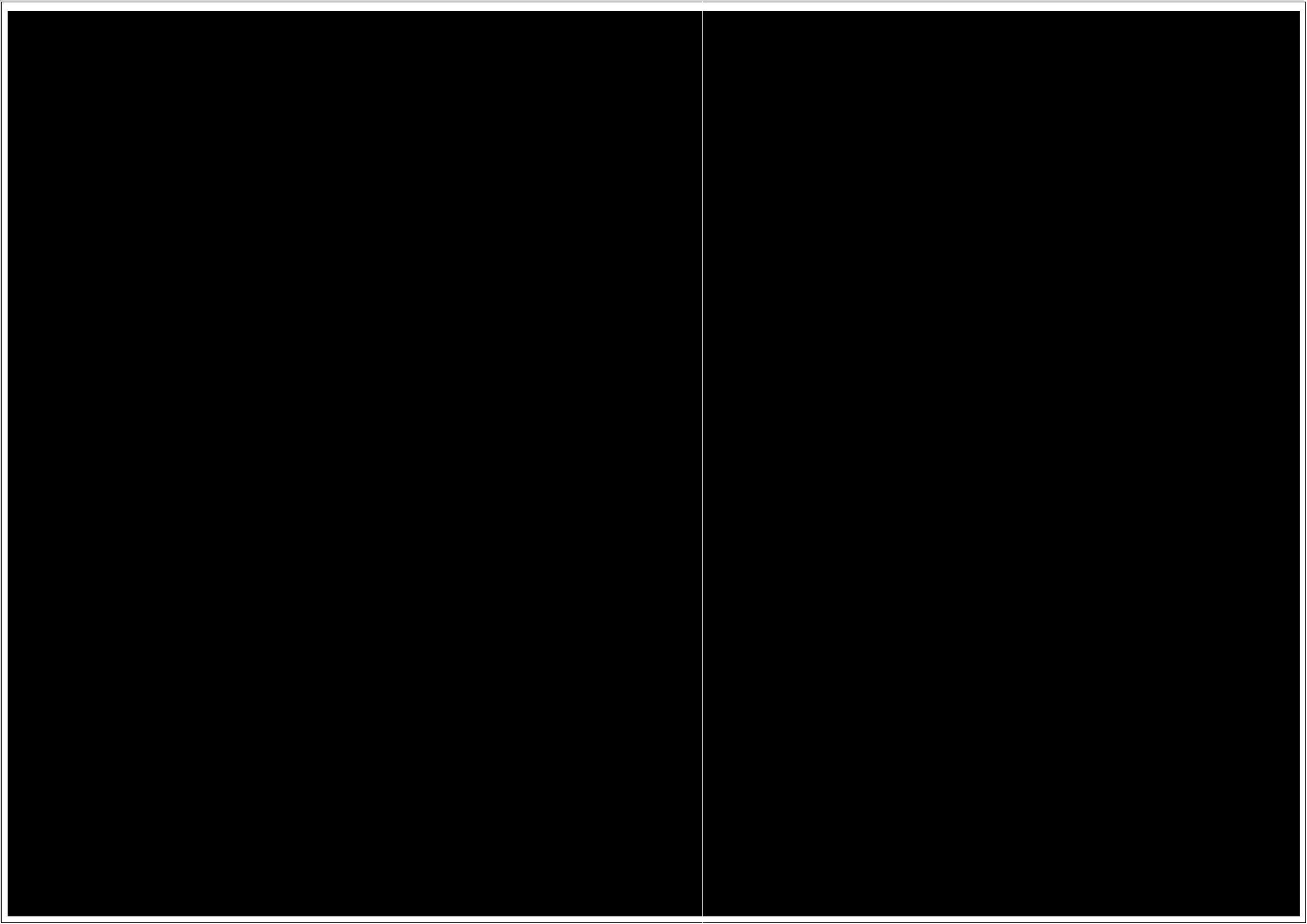
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| DRAWING No.                | REVISION |
| 20970-NOD-ZZ-01-DR-X-01070 | C01      |

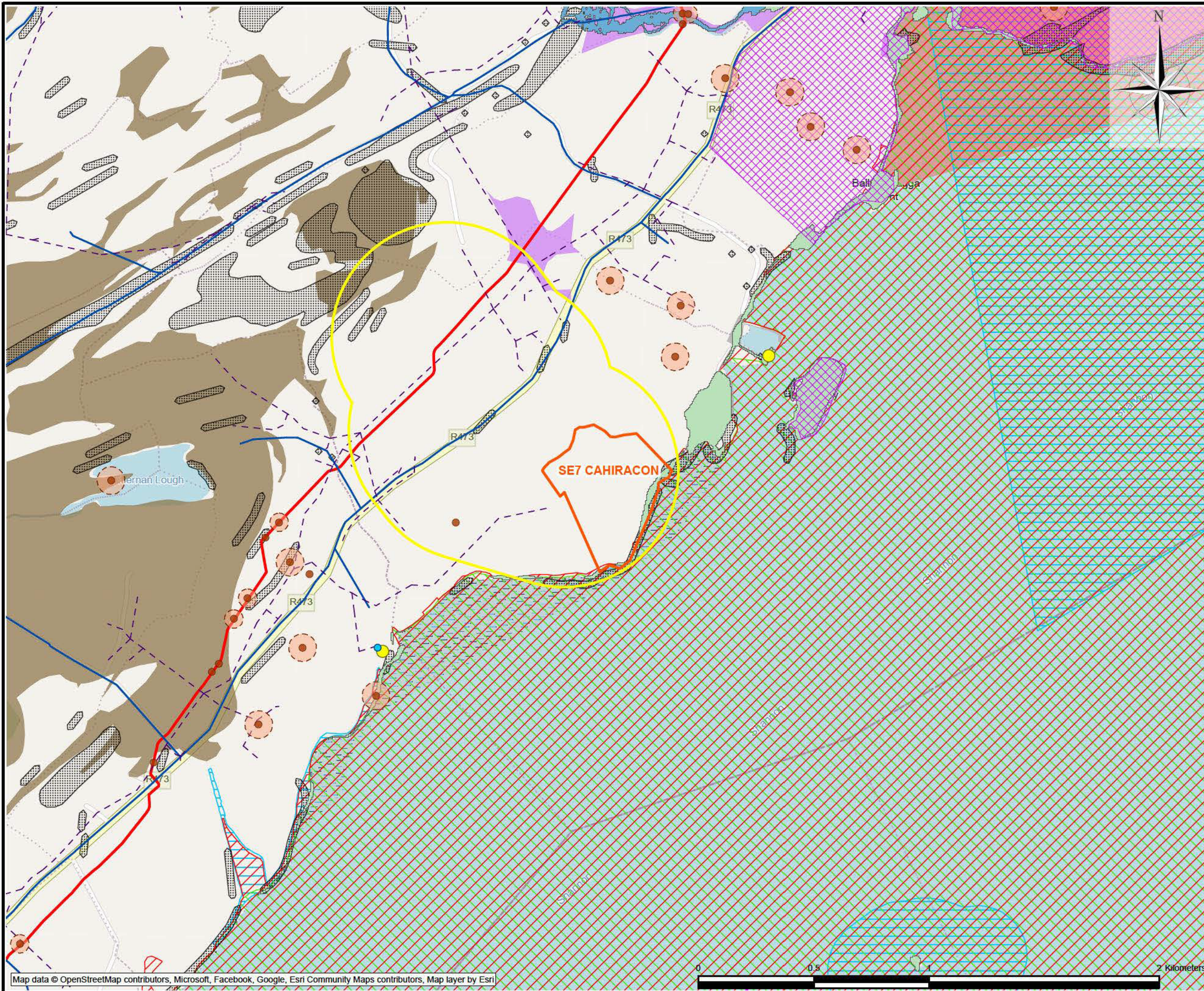
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- LEGEND**
- POTENTIAL SITES
  - 1KM PIPELINE CORRIDOR
  - PROTECTED AREAS
  - RECORD OF PROTECTED STRUCTURES
  - SITES AND MONUMENTS RECORDS
  - SMR ZONES
  - NATIONAL INVENTORY OF ARCHITECTURAL HERITAGE
  - ARCHITECTURAL CONSERVATION AREAS
  - UTILITIES
  - OVERHEAD POWER LINE
  - UNDERGROUND POWER LINE
  - ESB MV-LV LINES
  - POTABLE WATER MAIN
  - GAS HP MAINS
  - FLOODING
  - FLUVIAL FLOODING
  - COASTAL FLOODING
  - DESIGNATED AREAS
  - PROPOSED NATURAL HERITAGE AREAS
  - SPECIAL PROTECTION AREAS
  - SPECIAL AREA OF CONSERVATION
  - SENSITIVE LANDSCAPES
  - SENSITIVE LANDSCAPE AREAS
  - SOILS AND GEOLOGY
  - KARST LANDFORMS
  - BEDROCK OUTCROPS
  - ALLUVIAL / FLUVIOGLACIAL
  - KARST FEATURES
  - PEAT
  - SHALLOW ROCK
  - URBAN
  - ISLAND
  - DESIGNATED WATERS
  - RECREATIONAL WATERS
  - NUTRIENT SENSITIVE WATERS
  - SHELLFISH WATERS



|             |            |             |            |      |      |
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| PROJECT No. | 20970      | STAGE       | CONCEPTUAL |      |      |

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**PROJECT**

STRATEGIC GAS  
EMERGENCY RESERVE

**TITLE**

PIPELINE ROUTE SELECTION STEP 4  
SE7 OPTIONS SHORTLISTING

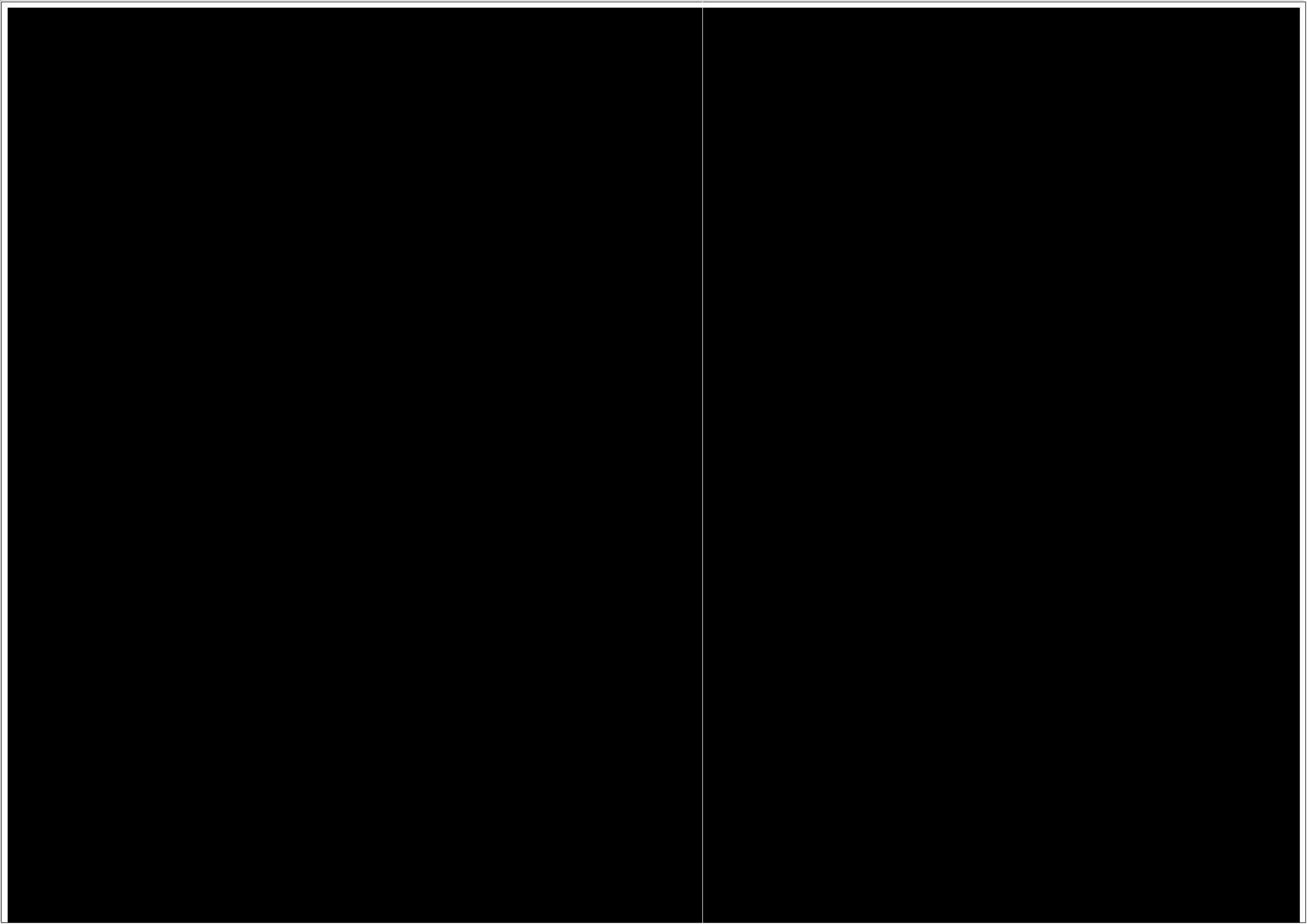
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|            | DATE       | DATE       | DATE       |
|            | 19.12.2025 | 19.12.2025 | 19.12.2025 |

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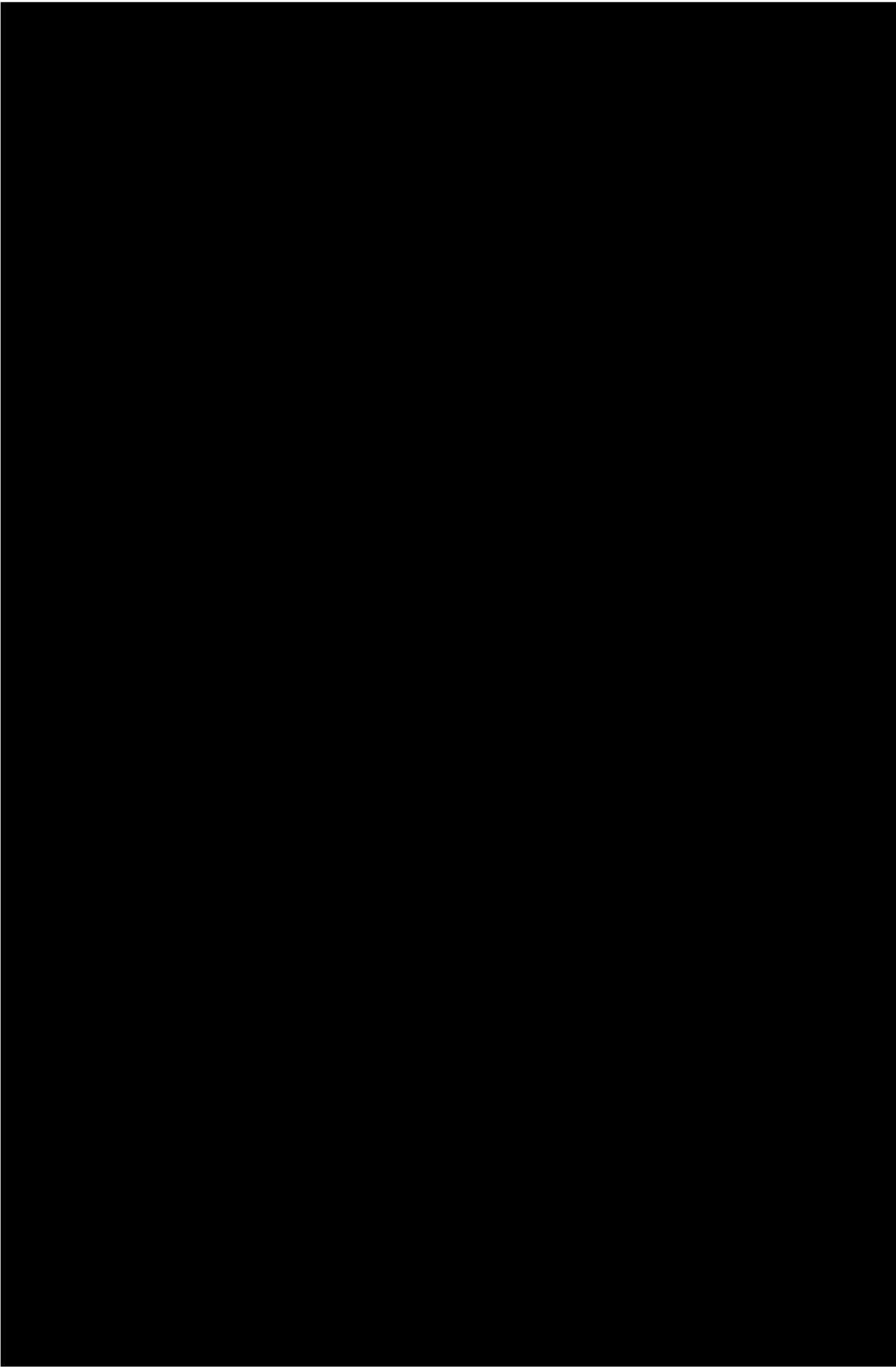
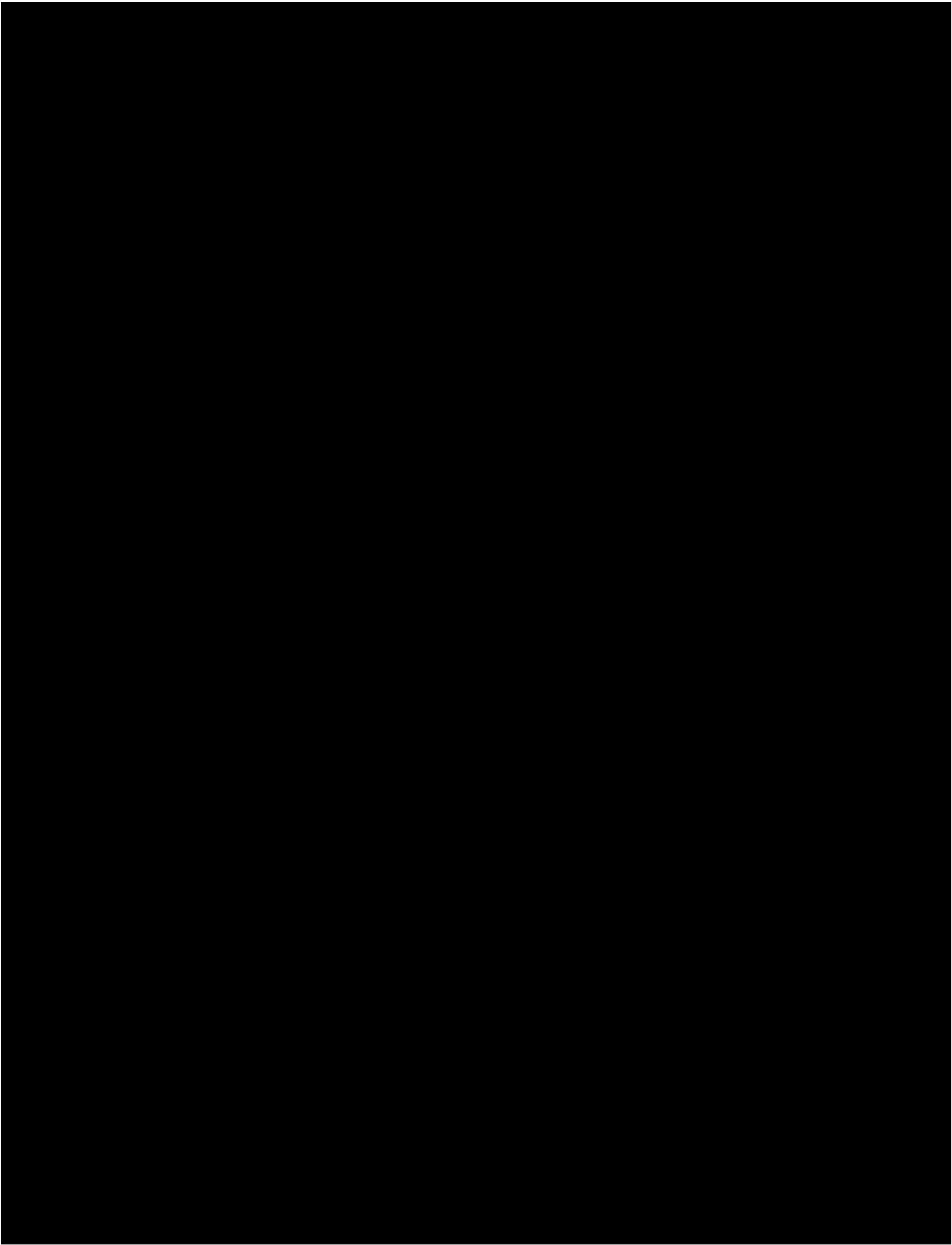
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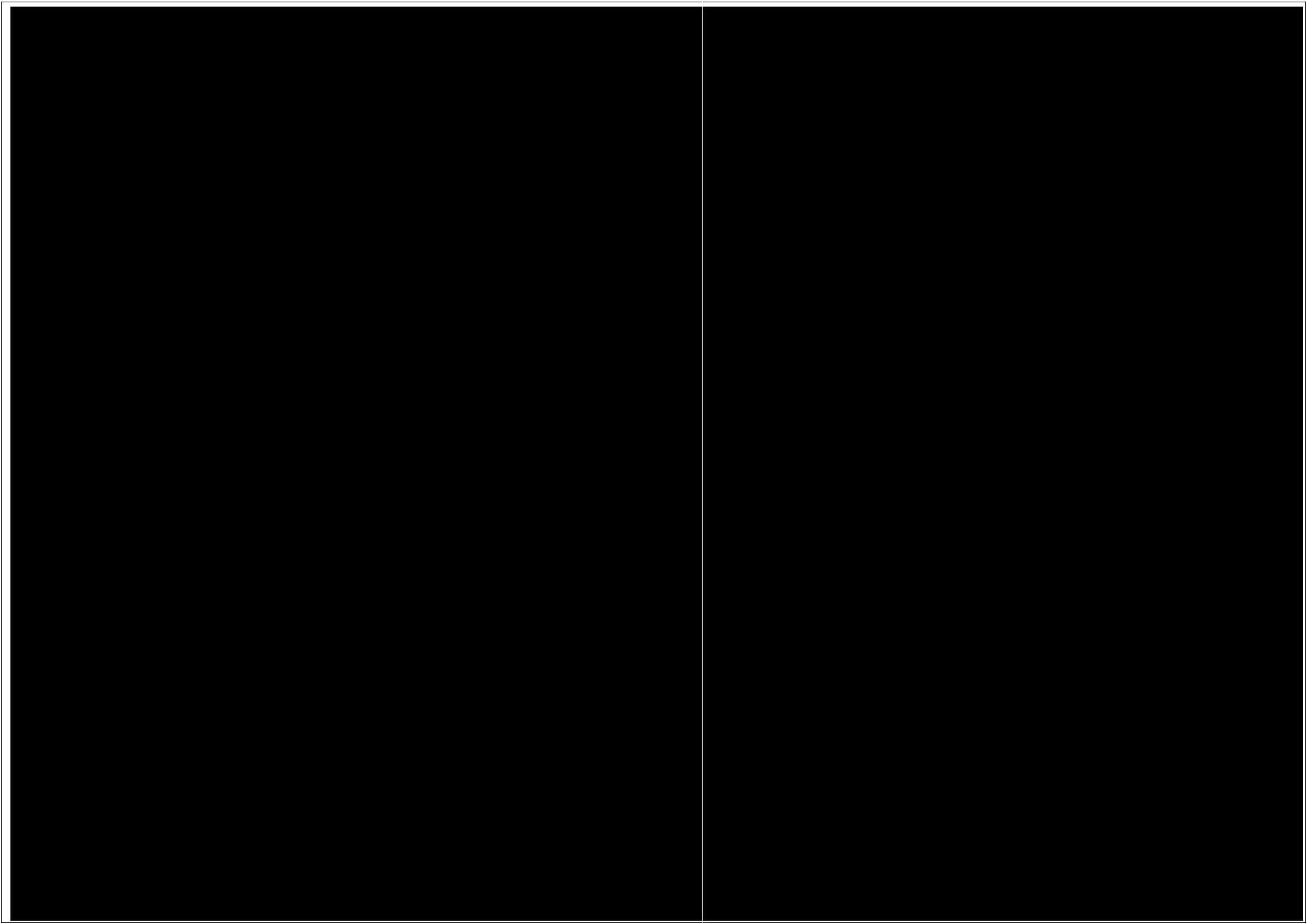


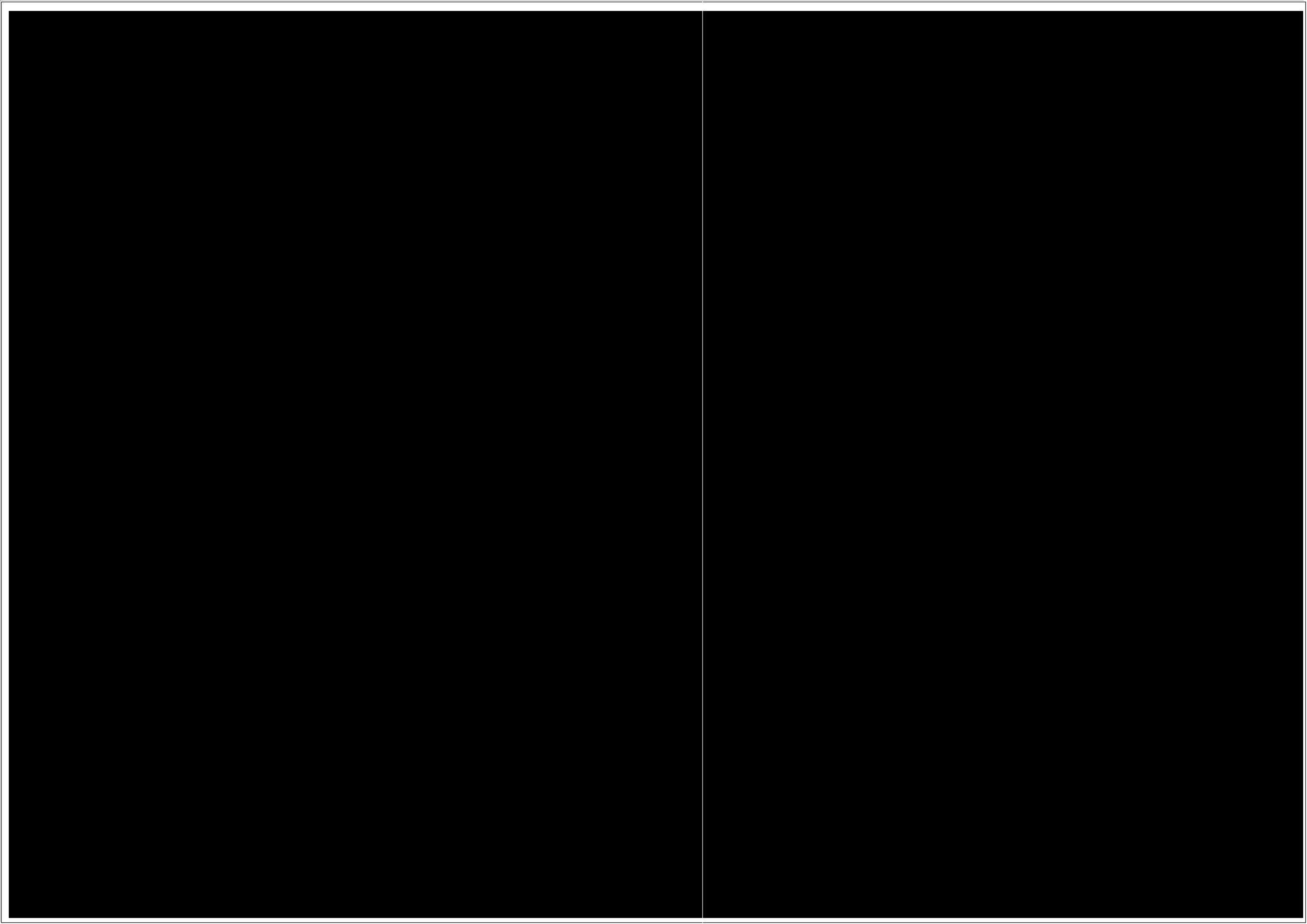




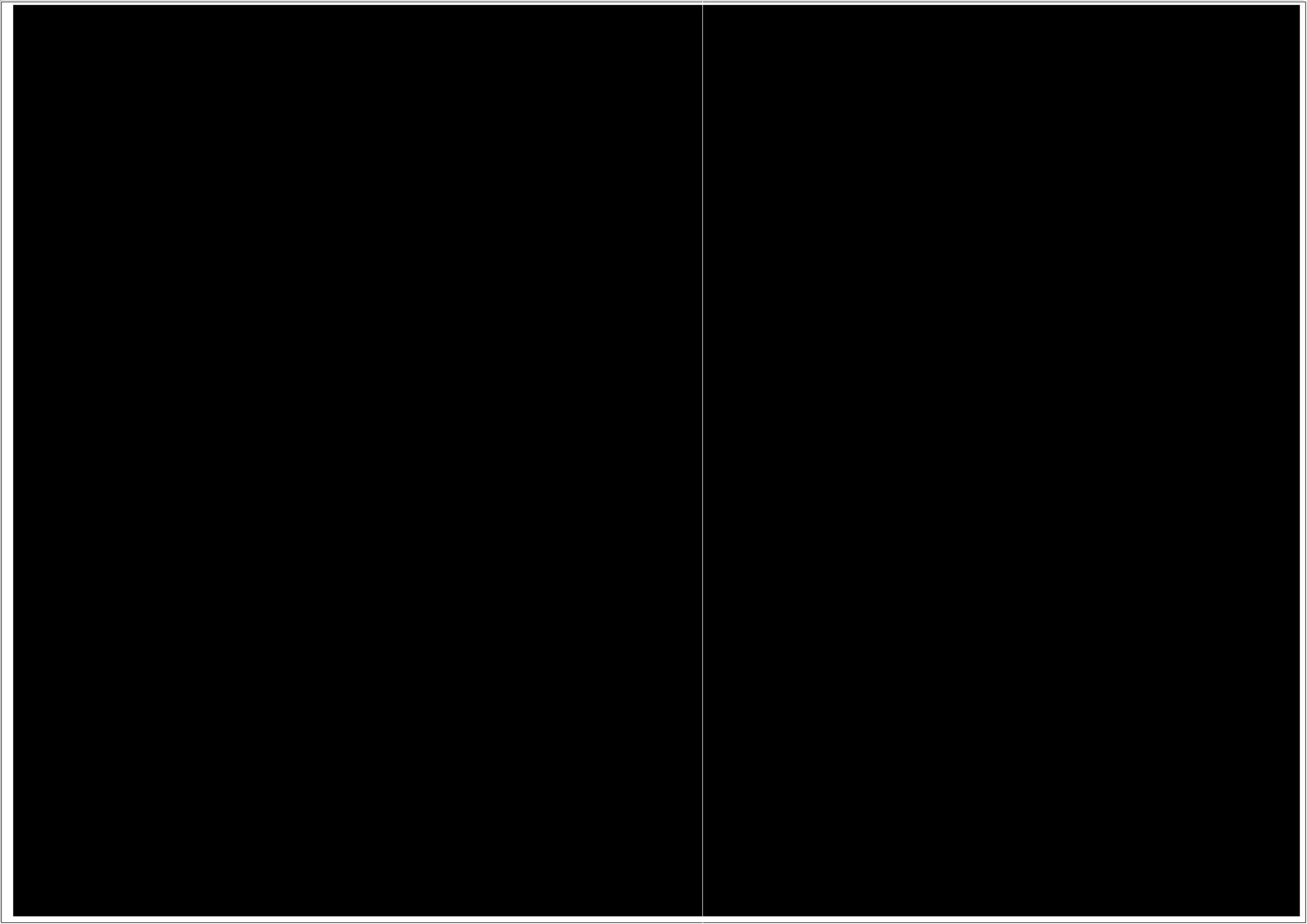


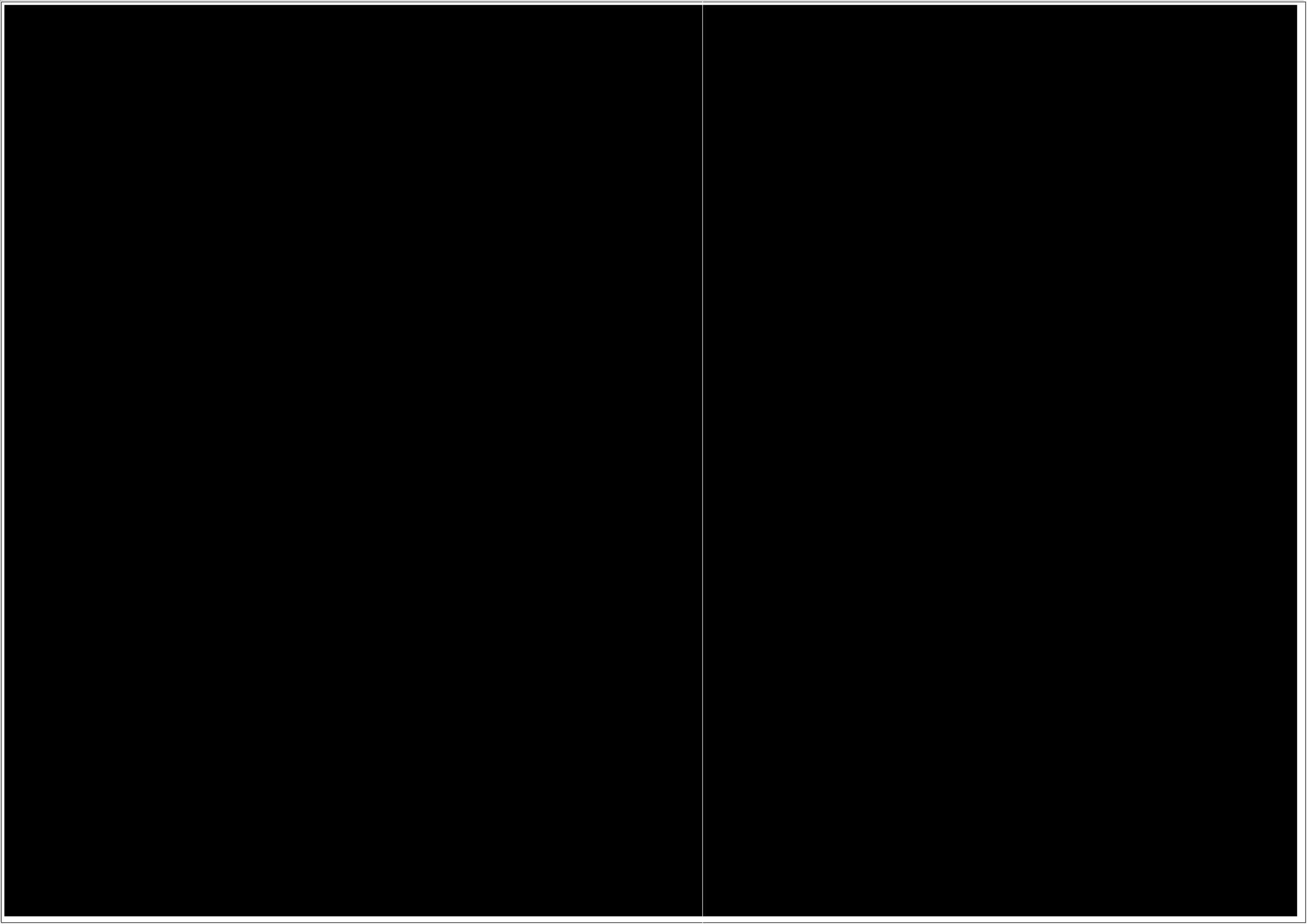


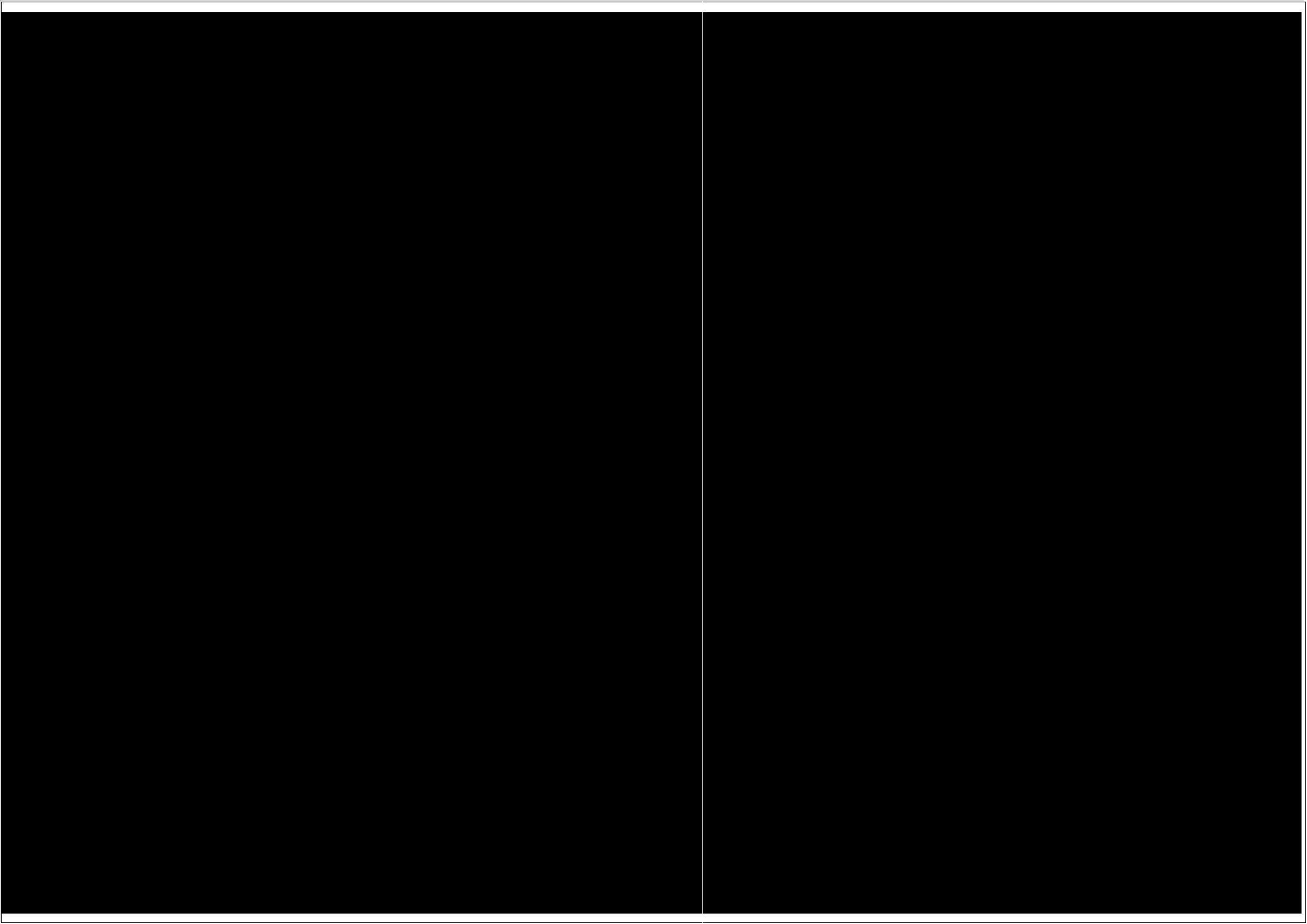




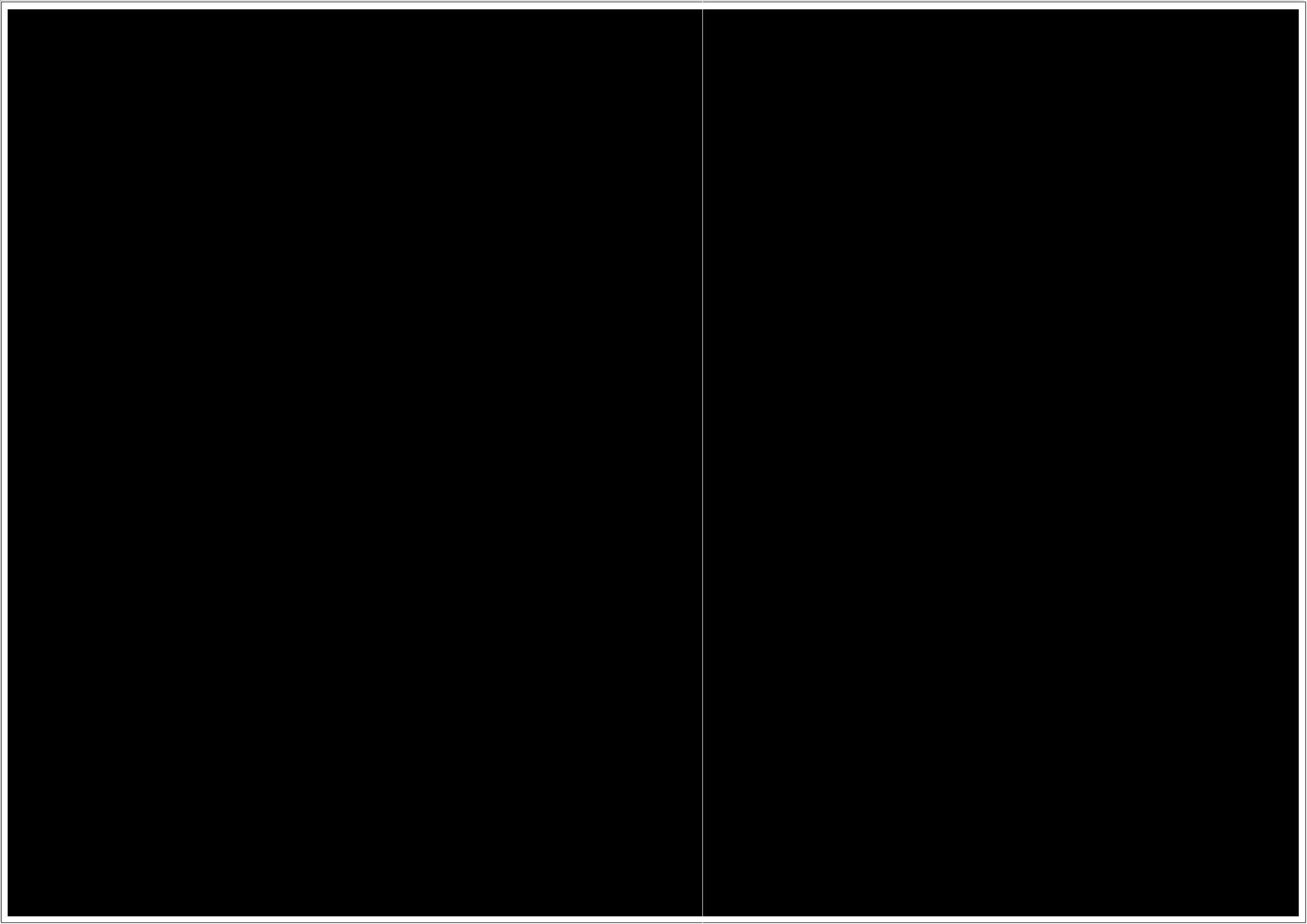




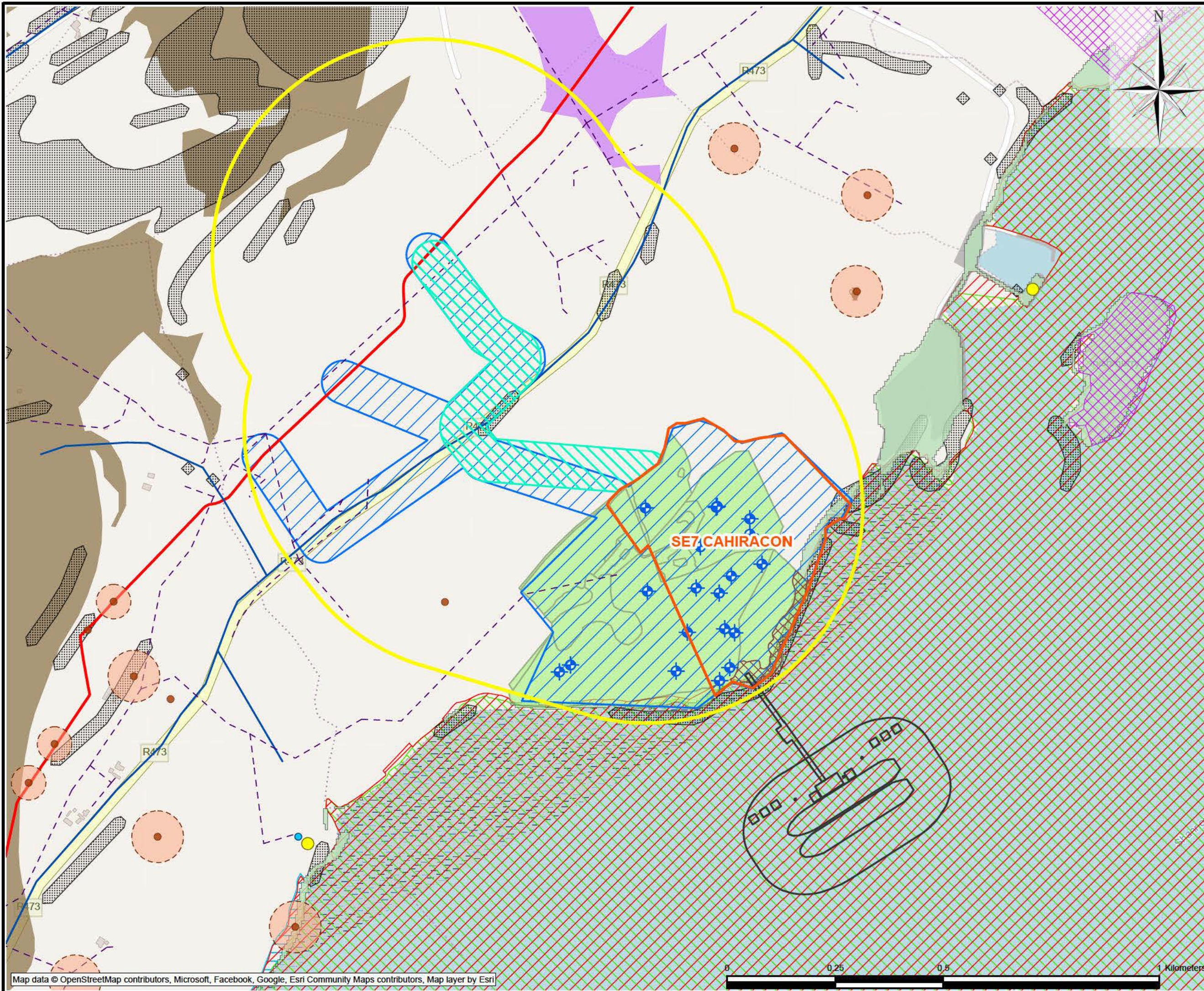










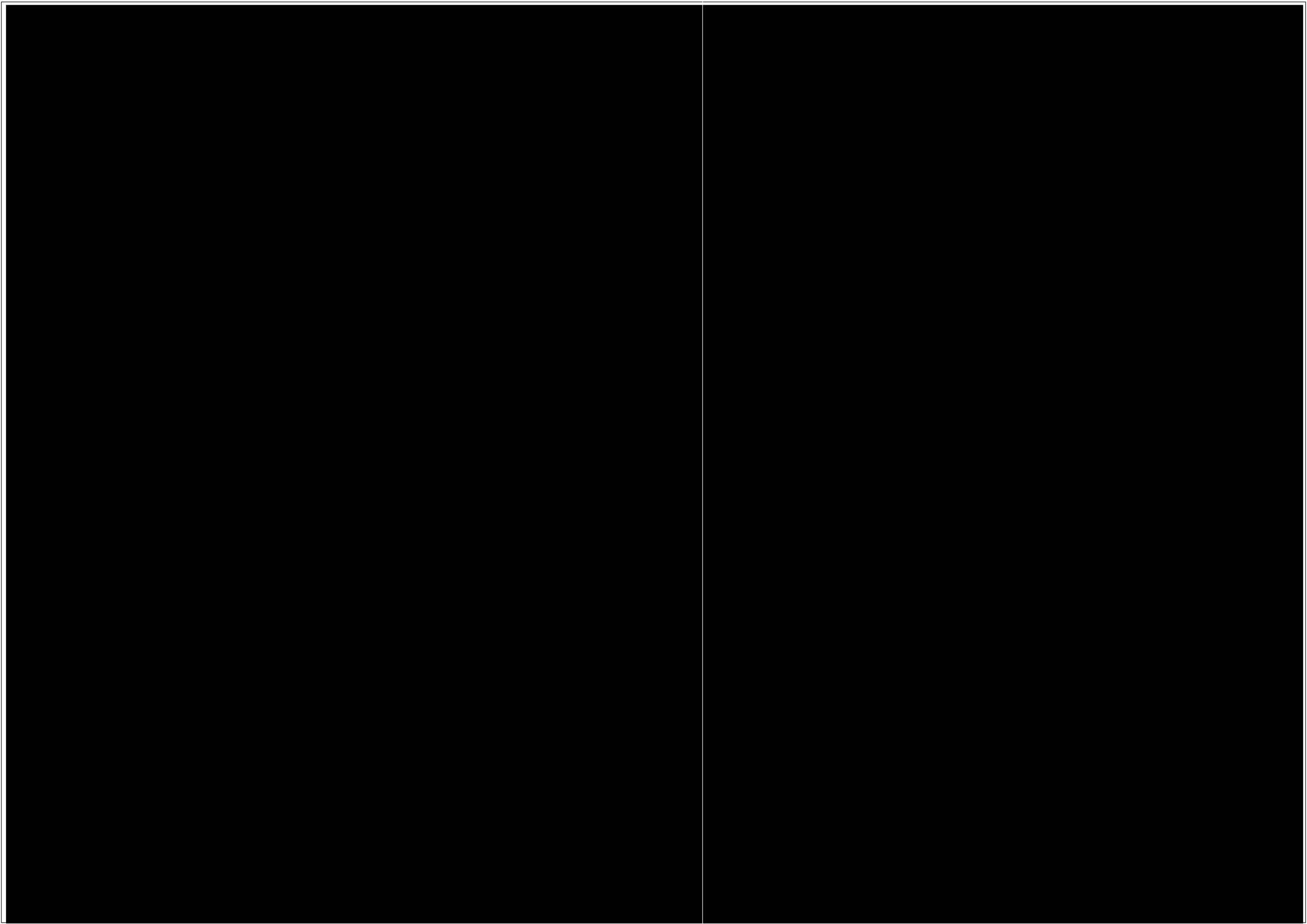


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- POTENTIAL SITES
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  - 1KM PIPELINE CORRIDOR
  - CONCEPT DEFINITION
  - PROTECTED AREAS
  - RECORD OF PROTECTED STRUCTURES
  - SITES AND MONUMENTS RECORDS
  - SMR ZONES
  - NATIONAL INVENTORY OF ARCHITECTURAL HERITAGE
  - ARCHITECTURAL CONSERVATION AREAS
  - UTILITIES
  - OVERHEAD POWER LINE
  - UNDERGROUND POWER LINE
  - ESB MV-LV LINES
  - POTABLE WATER MAIN
  - GAS HP MAINS
  - GEOTECHNICAL
  - SITE INVESTIGATIONS
  - GEOTECHNICAL SURVEY AREA
  - BIODIVERSITY
  - ANNEX HABITATS
  - FOSSITT HABITATS
  - FLOODING
  - FLUVIAL FLOODING
  - COASTAL FLOODING
  - DESIGNATED AREAS
  - PROPOSED NATURAL HERITAGE AREAS
  - SPECIAL PROTECTION AREAS
  - SPECIAL AREA OF CONSERVATION
  - SENSITIVE LANDSCAPES
  - SENSITIVE LANDSCAPE AREAS
  - SOILS AND GEOLOGY
  - KARST LANDFORMS
  - BEDROCK OUTCROPS
  - ALLUVIAL / FLUVIOGLACIAL
  - KARST FEATURES
  - PEAT
  - SHALLOW ROCK
  - URBAN
  - ISLAND

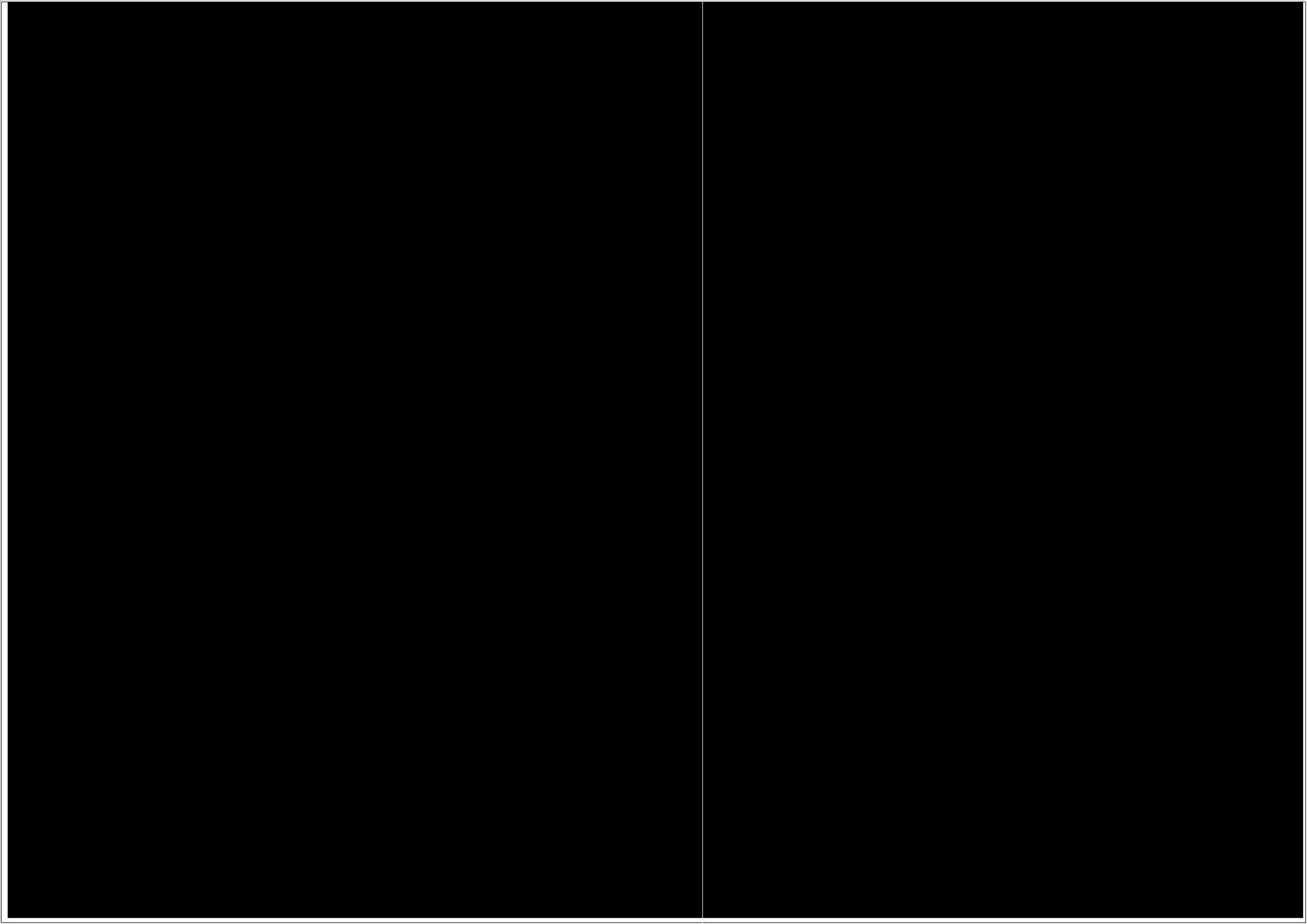


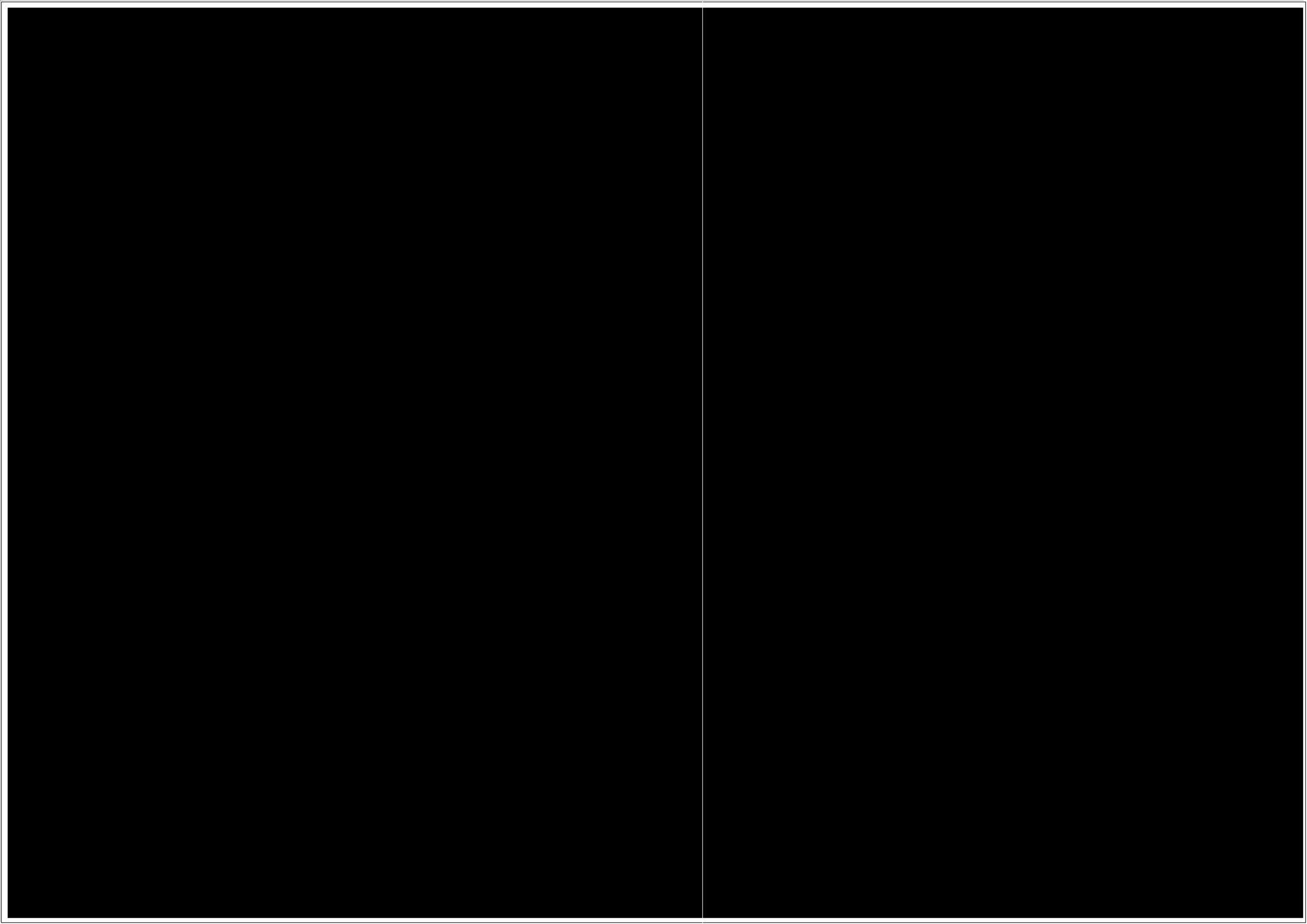
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| PROJECT                                                                                                                                                                                        |                         |                                           |                                                                                                                                                                                                                                      |      |          |
| STRATEGIC GAS<br>EMERGENCY RESERVE                                                                                                                                                             |                         |                                           |                                                                                                                                                                                                                                      |      |          |
| TITLE                                                                                                                                                                                          |                         |                                           |                                                                                                                                                                                                                                      |      |          |
| SITE AND PIPE ROUTE SELECTION STEP 5<br>SE7 DETAILED ASSESSMENT                                                                                                                                |                         |                                           |                                                                                                                                                                                                                                      |      |          |
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|                                                                                                                                                                                                | 19.12.2025              | 19.12.2025                                | 19.12.2025                                                                                                                                                                                                                           |      |          |
| SUITABILITY CODE                                                                                                                                                                               | SUITABILITY DESCRIPTION |                                           |                                                                                                                                                                                                                                      |      |          |
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| DRAWING No.                                                                                                                                                                                    |                         |                                           |                                                                                                                                                                                                                                      |      | REVISION |
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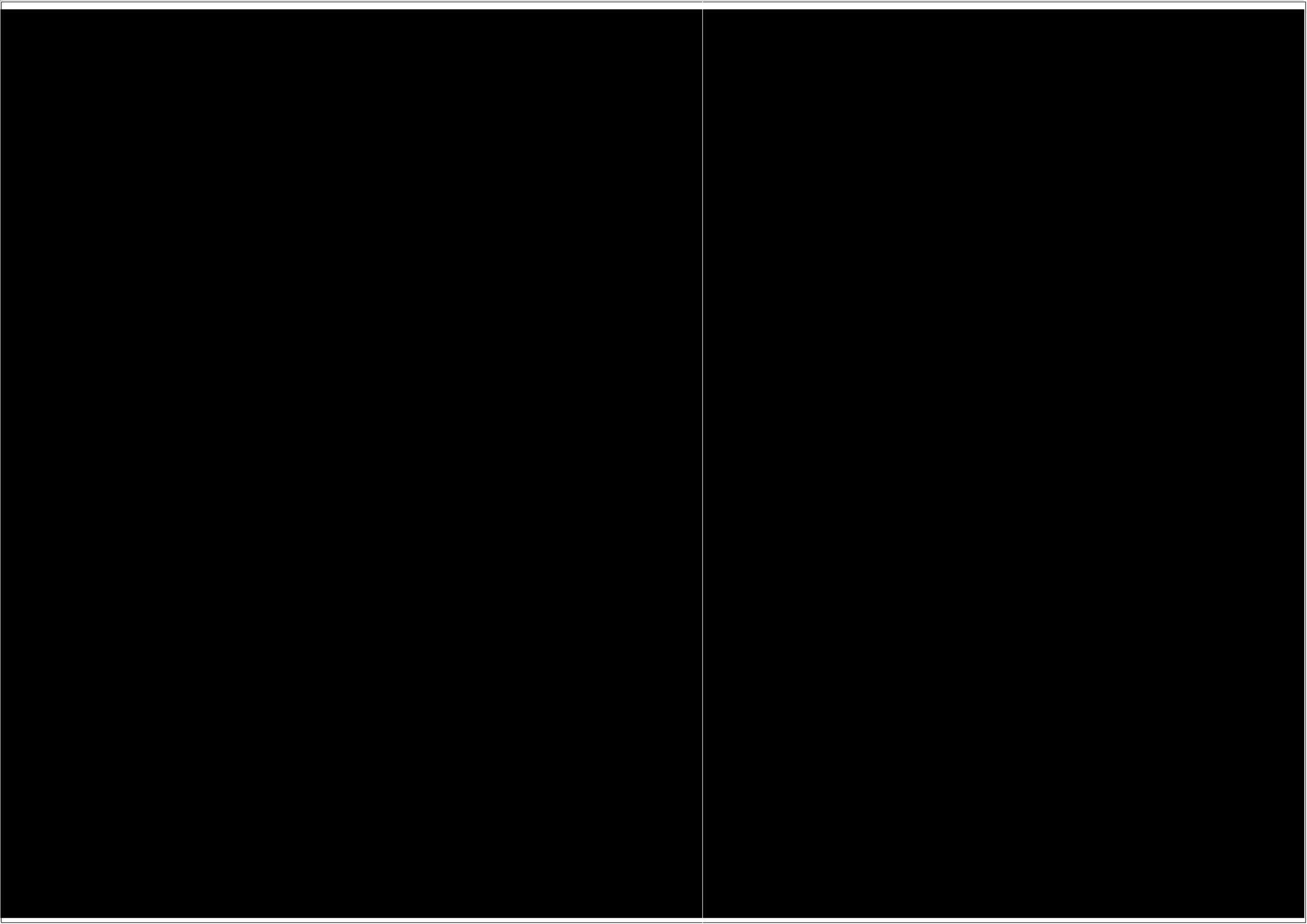




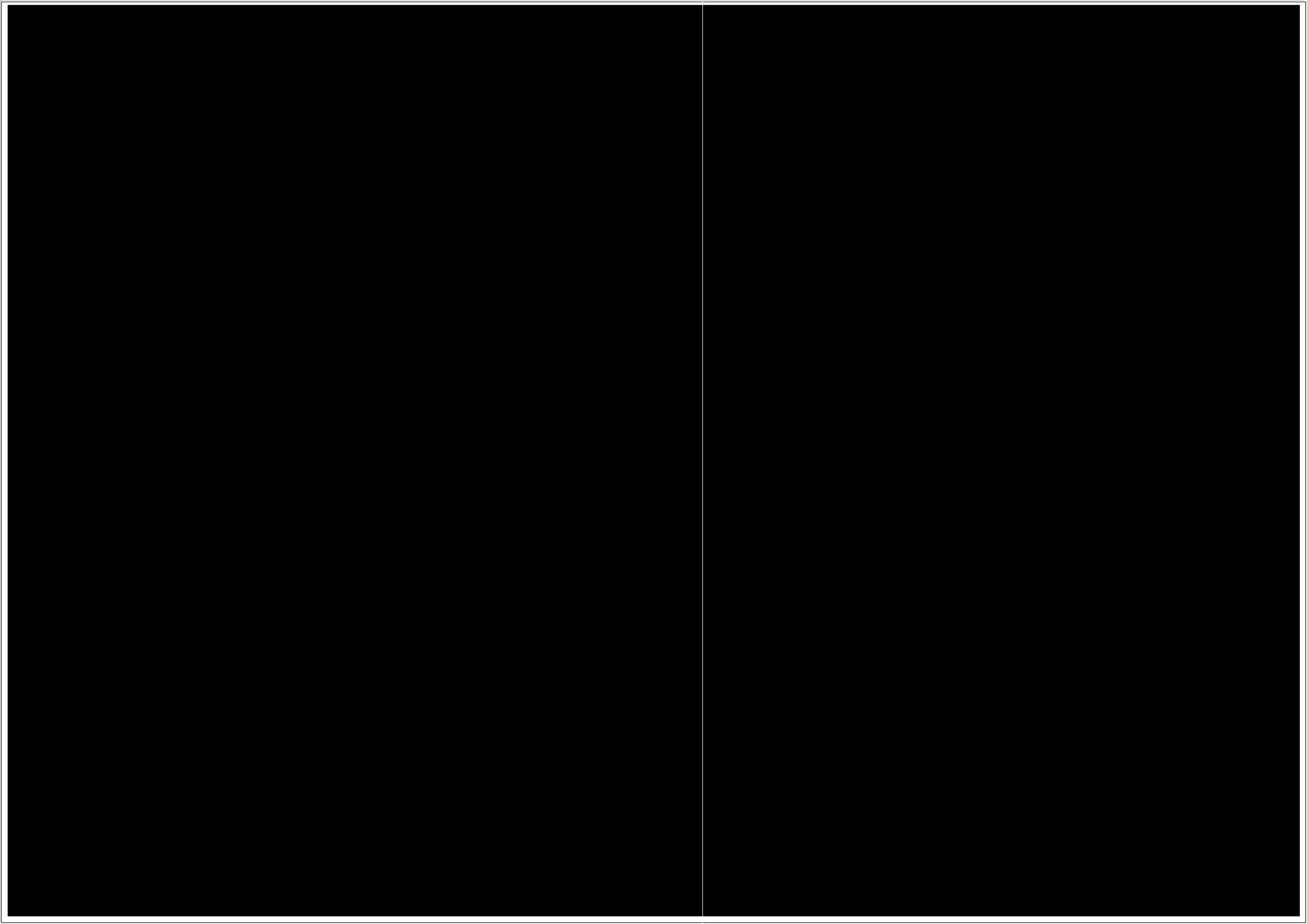


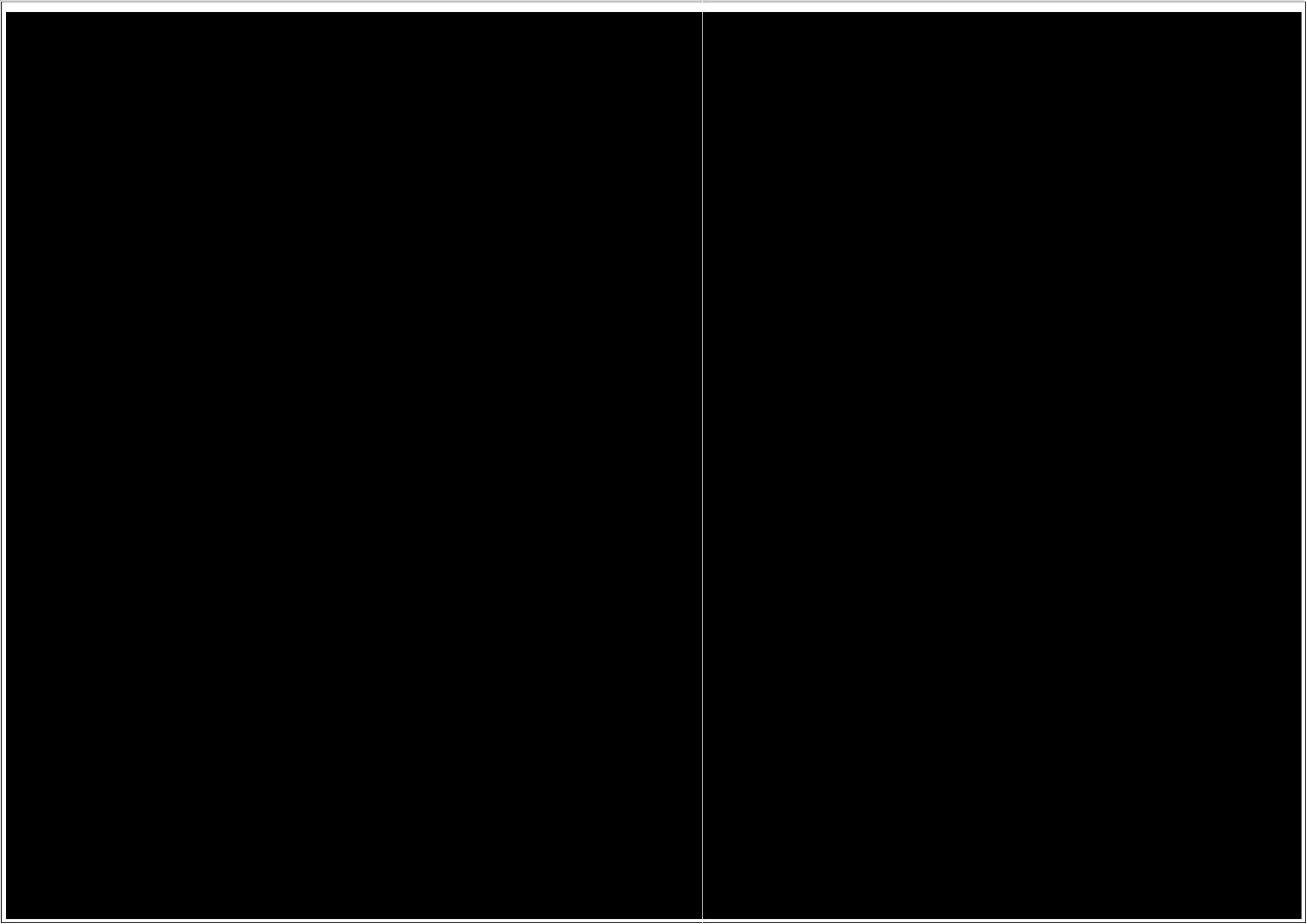








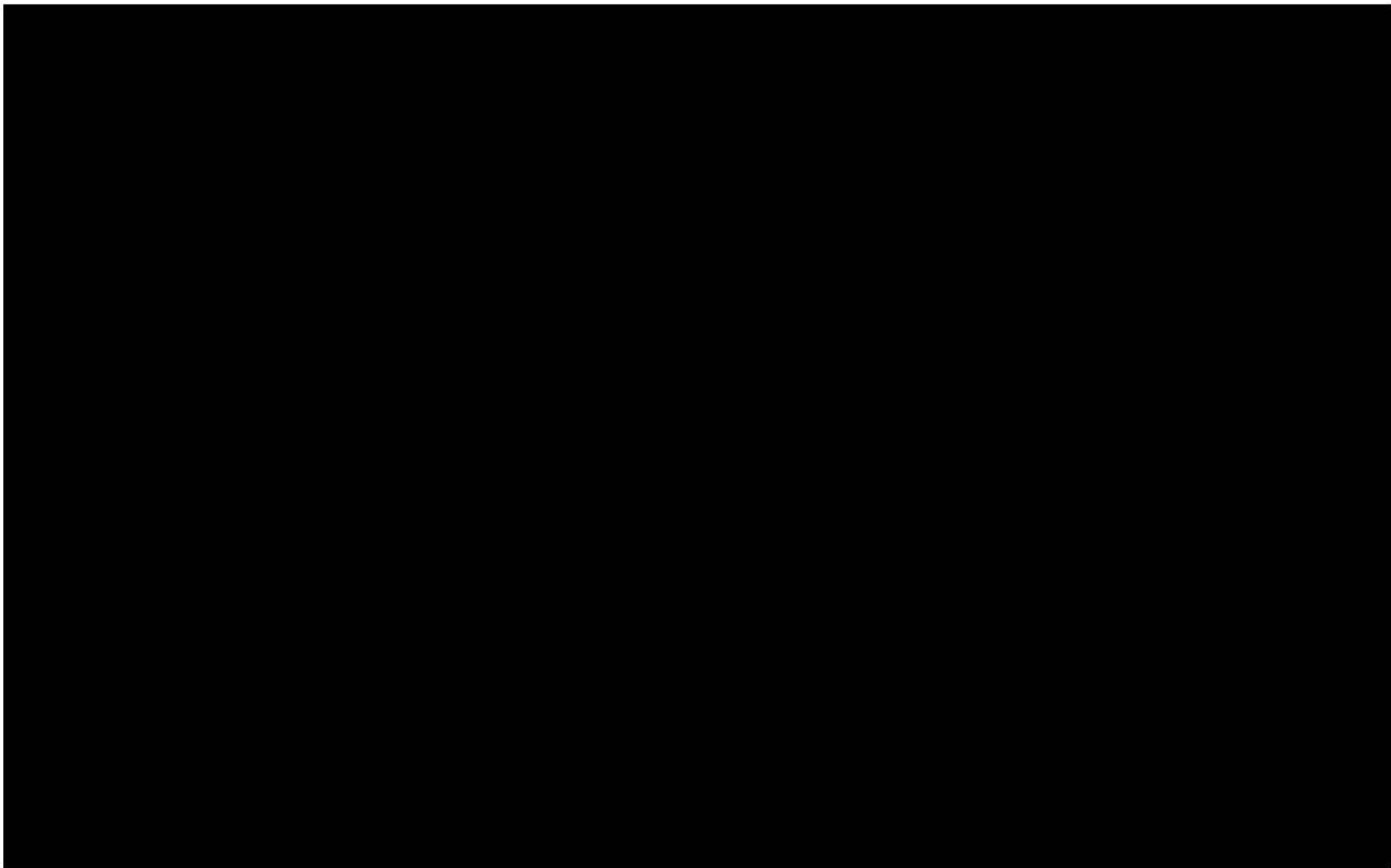


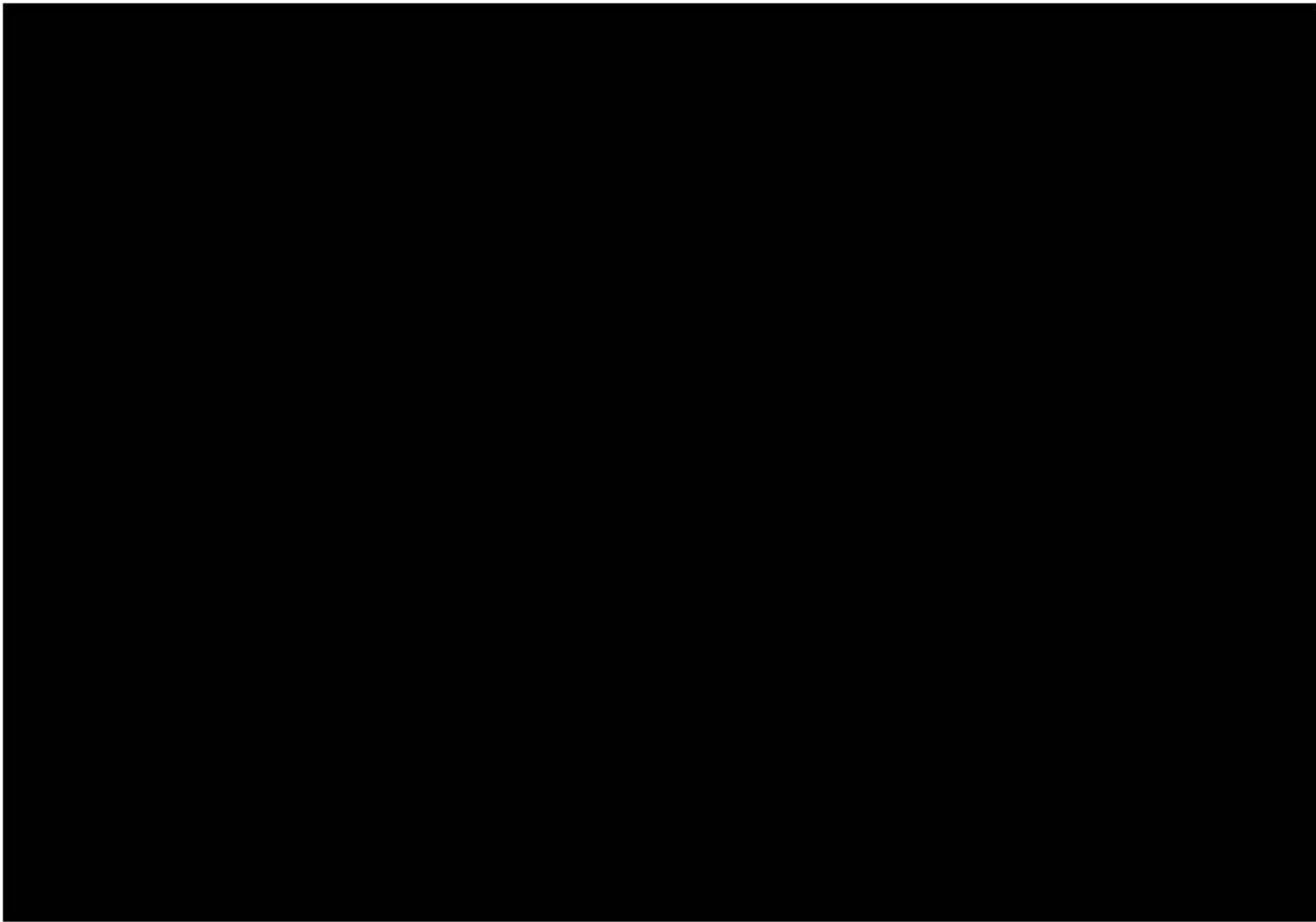


## Appendix 2 – Site Selection Step 4a Assessment











## Appendix 3 – Site Selection Step 4b Assessment

## Step 4b Approach

- Annex II of 'Securing Ireland's Gas Supplies' requires GNI as the independent Gas Transmission Operator (TSO), amongst other things, to prepare a detailed proposal that will deliver a solution that can be implemented quickly, further Strategic Objective No.1 is to '**Deliver a solution as early as possible**'. As such delivery of the N-1 solution in line with timeframes identified by the government is a critical factor for success.
- **The site selection process will ensure that only sites that have a reasonable expectation of achieving the timing set out within the N-1 project programme will be brought forward to Step 5.** This factor may mean that a site that performs better against one or more key criteria may not be brought forward for further assessment in Step 5, due to it being unable to meet the N-1 preferred programme and hence 'project need'.
- Upon completion of the high-level screening at Step 4a sites will then undergo further evaluation to determine whether there is a **reasonable expectation that they can meet the N-1 project programme, starting with those sites identified as "most aligned" with the strategic objectives in Step 4a.**
- Sites deemed capable of meeting the N-1 project programme will receive a 'pass' score. **Conversely, any of the sites that are unlikely to meet the N-1 project programme will be given a 'fail' score.** If a site receives a 'fail' score, it will not be brought forward for further assessment in Step 5. Instead, **the next best-aligned site as identified in Step 4a, should one exist, will be evaluated.** This process is repeated until either three sites are identified that can meet the N-1 project programme, or no further sites are available for assessment in Step 4b, in which case fewer than three sites will be brought forward to Step 5.

# Step 4b Project Programme Alignment Evaluation

| Site Ref | Site Name | Rank | 4b Programme | Reasonable Expectation of meeting N-1 | Comment           |
|----------|-----------|------|--------------|---------------------------------------|-------------------|
| █        | █         | 1    | ✓            | ✗                                     | Fail              |
| SE7      | Cahiracon | 2    | ✓            | ✓                                     | Pass              |
| █        | █         | 2    | ✓            | ✓                                     | Pass              |
| █        | █         | 4    | ✓            | ✗                                     | Fail              |
| █        | █         | 4    | ✓            | ✗                                     | Fail              |
| █        | █         | 6    | ✓            | ✗                                     | Fail              |
| █        | █         | 6    | ✓            | ✗                                     | Fail              |
| █        | █         | 8    | ✓            | ✗                                     | Fail              |
| █        | █         | 8    | ✗            | ✗                                     | Fail by reference |
| █        | █         | 8    | ✗            | ✗                                     | Fail by reference |
| █        | █         | 11   | ✓            | ✗                                     | Fail              |
| █        | █         | 11   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 13   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 13   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 15   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 15   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 17   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 17   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 19   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 20   | ✗            | ✗                                     | Fail by reference |
| █        | █ ss      | 21   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 22   | ✗            | ✗                                     | Fail by reference |
| █        | █         | 23   | ✗            | ✗                                     | Fail by reference |

- Starting with those sites identified as “most aligned” with the strategic objectives in Step 4a, High-level schedules were developed to evaluate whether there is a reasonable expectation that they can meet the N-1 project programme,
- Given the high-level nature and inherent uncertainty of the Schedules developed as part of Step 4b, “**reasonable expectation**” was considered to **mean the emerging N-1 Project Programme recommended within the preliminary business case** (i.e. 73 months from approval of the Preliminary Business Case) **plus 12 months**.
- On the basis of the Project Programme Alignment evaluation **only two sites are considered as having a reasonable expectation of supporting accelerated delivery of the project “as early as possible”**. These sites are:

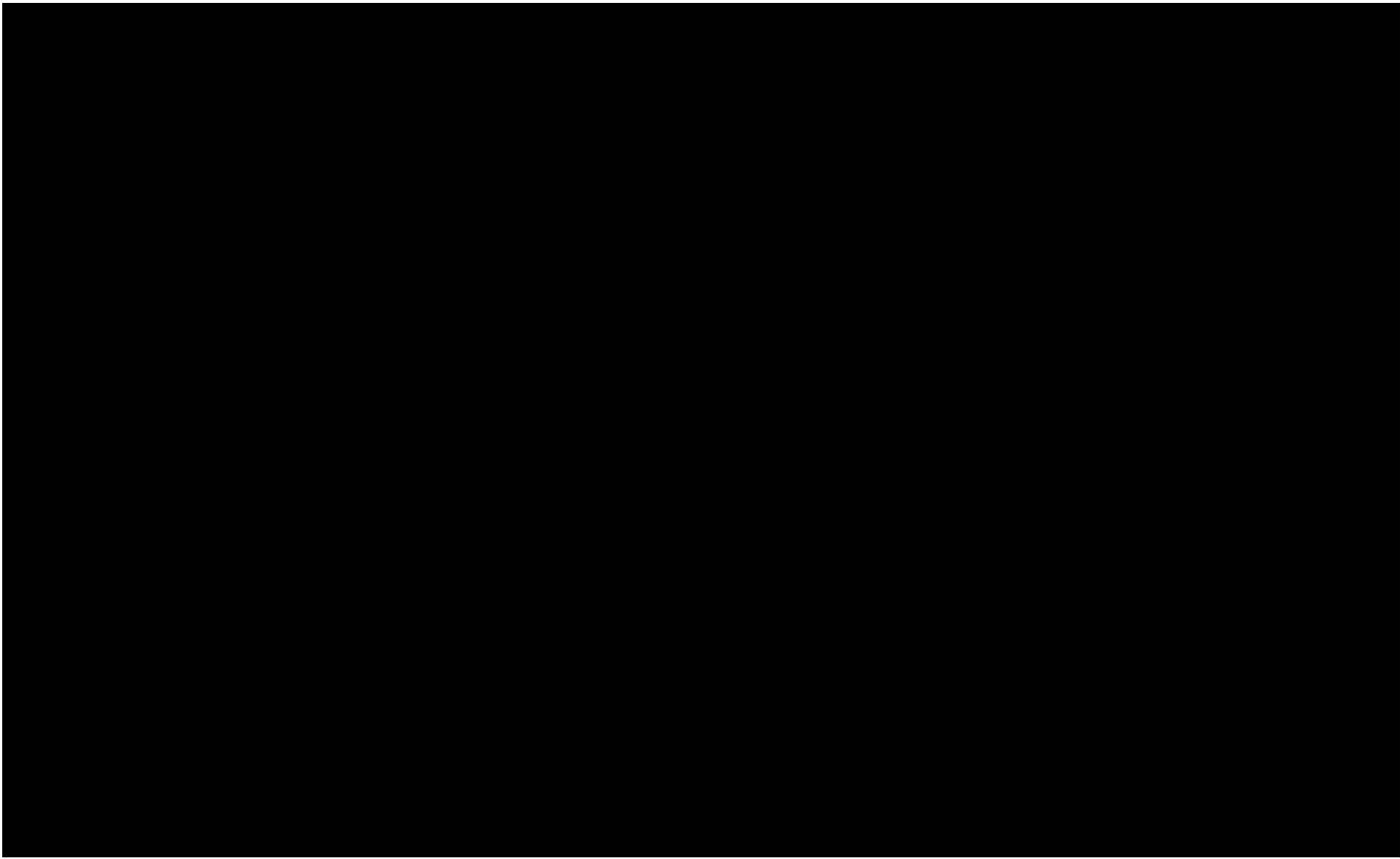
| Site               |
|--------------------|
| █                  |
| Site SE7 Cahiracon |

- Note:** The high-level schedules prepared have been developed exclusively to support the Site Selection process and does not purport to represent the definitive master programme for the project. It is intended solely as a high level framework to inform comparative evaluation and should not be relied upon for detailed delivery sequencing, regulatory or contractual commitments.

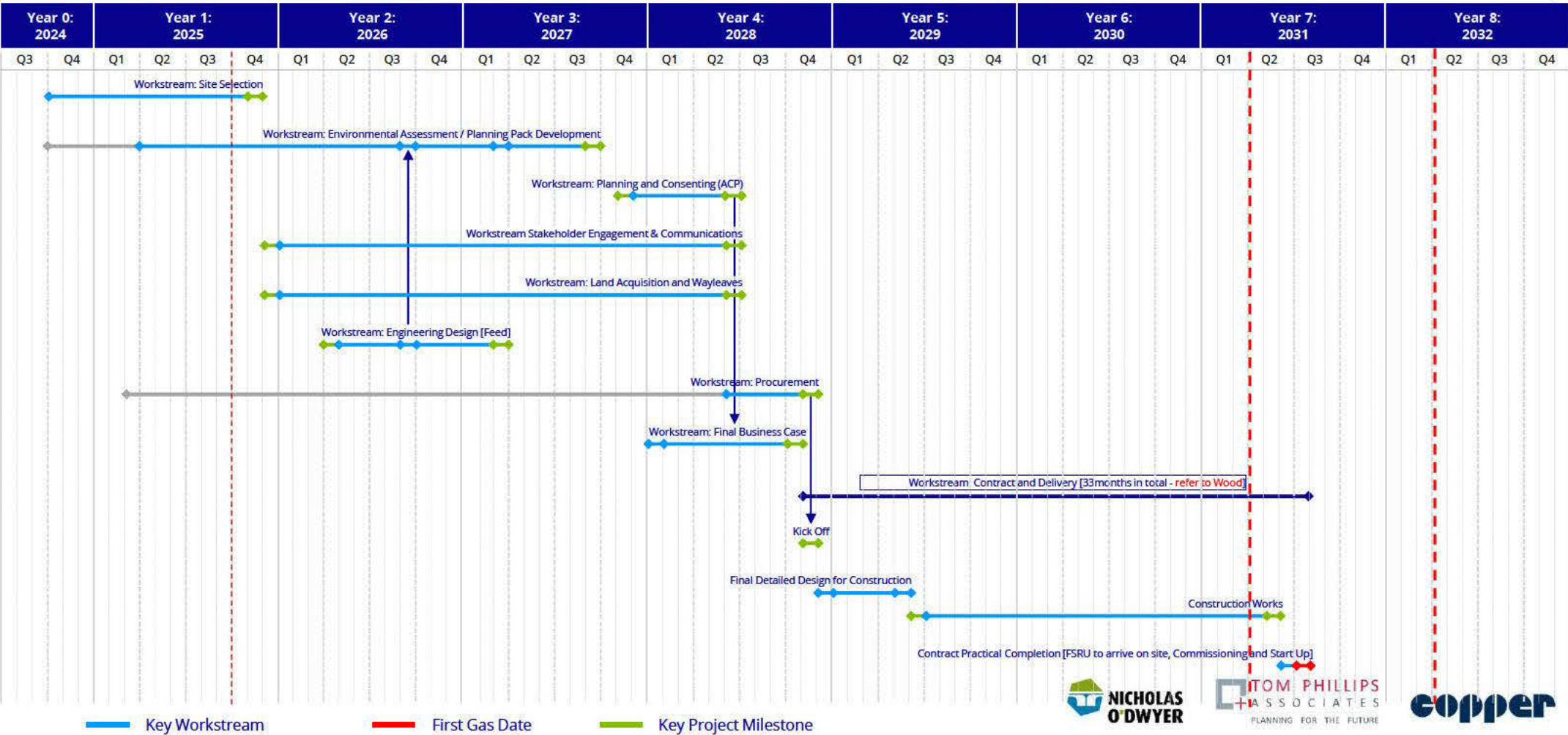


# Step 4b Approach

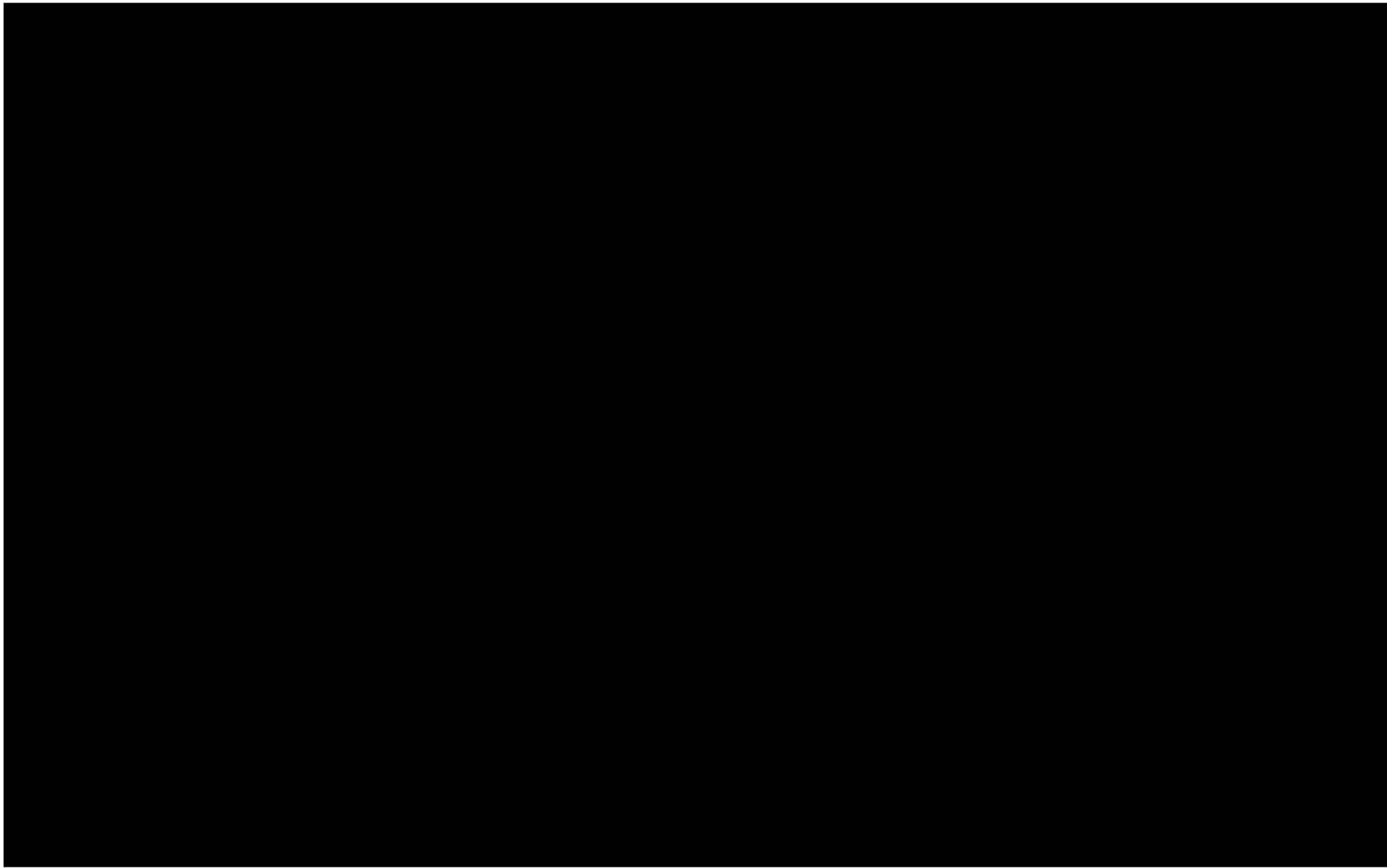
|                             |                                                     | SE7 |   |   |    |    |    |    |   |    |   |   |    |    |    |    |   |   |   |    |    | Commentary |   |    |  |
|-----------------------------|-----------------------------------------------------|-----|---|---|----|----|----|----|---|----|---|---|----|----|----|----|---|---|---|----|----|------------|---|----|--|
| Step 4b Initial Pass        | Step 4a Ranking                                     | 6   | 8 | 4 | 19 | 17 | 15 | 13 | 2 | 11 | 1 | 6 | 11 | 21 | 22 | 15 | 8 | 8 | 2 | 17 | 23 | 13         | 4 | 20 |  |
|                             | Step 4b programme prepared for Initial Shortlist    |     |   |   |    |    |    |    | Y |    | Y |   |    |    |    |    |   |   | Y |    |    |            |   |    |  |
|                             | Reasonable Expectation of meeting N-1 programme     |     |   |   |    |    |    |    | Y |    | N |   |    |    |    |    |   |   | Y |    |    |            |   |    |  |
| Step 4b - Subsequent Passes | Next Highest Ranked Site at Step 4a brought forward |     |   | Y |    |    |    |    | ↓ |    |   |   |    |    |    |    |   |   | ↓ |    |    |            | Y |    |  |
|                             | Step 4b programme prepared                          |     |   | Y |    |    |    |    |   |    |   |   |    |    |    |    |   |   |   |    |    | Y          |   |    |  |
|                             | Reasonable Expectation of meeting N-1 programme     |     |   | N |    |    |    |    |   |    |   |   |    |    |    |    |   |   |   |    |    | N          |   |    |  |
| Step 4b - Subsequent Passes | Next Highest Ranked Site at Step 4a brought forward |     |   |   |    |    |    |    |   |    | Y |   |    |    |    |    |   |   |   |    |    |            |   |    |  |
|                             | Step 4b programme prepared                          |     |   |   |    |    |    |    |   |    | Y |   |    |    |    |    |   |   |   |    |    |            |   |    |  |
|                             | Reasonable Expectation of meeting N-1 programme     |     |   |   |    |    |    |    |   |    | N |   |    |    |    |    |   |   |   |    |    |            |   |    |  |
| Step 4b - Subsequent Passes | Next Highest Ranked Site at Step 4a brought forward |     |   |   |    |    |    |    |   |    |   |   |    |    |    |    | Y |   |   |    |    |            |   |    |  |
|                             | Step 4b programme prepared                          |     |   |   |    |    |    |    |   |    |   |   |    |    |    |    | Y |   |   |    |    |            |   |    |  |
|                             | Reasonable Expectation of meeting N-1 programme     |     |   |   |    |    |    |    |   |    |   |   |    |    |    |    | N |   |   |    |    |            |   |    |  |
| Step 4b - Subsequent Passes | Next Highest Ranked Site at Step 4a brought forward |     |   |   |    |    |    |    |   |    |   | Y |    |    |    |    |   |   |   |    |    |            |   |    |  |
|                             | Step 4b programme prepared                          |     |   |   |    |    |    |    |   |    |   | Y |    |    |    |    |   |   |   |    |    |            |   |    |  |
|                             | Reasonable Expectation of meeting N-1 programme     |     |   |   |    |    |    |    |   |    |   | N |    |    |    |    |   |   |   |    |    |            |   |    |  |
| Step 4b                     | To Brought Forward to Step 5                        |     |   |   |    |    |    |    | Y |    |   |   |    |    |    |    |   |   | Y |    |    |            |   |    |  |

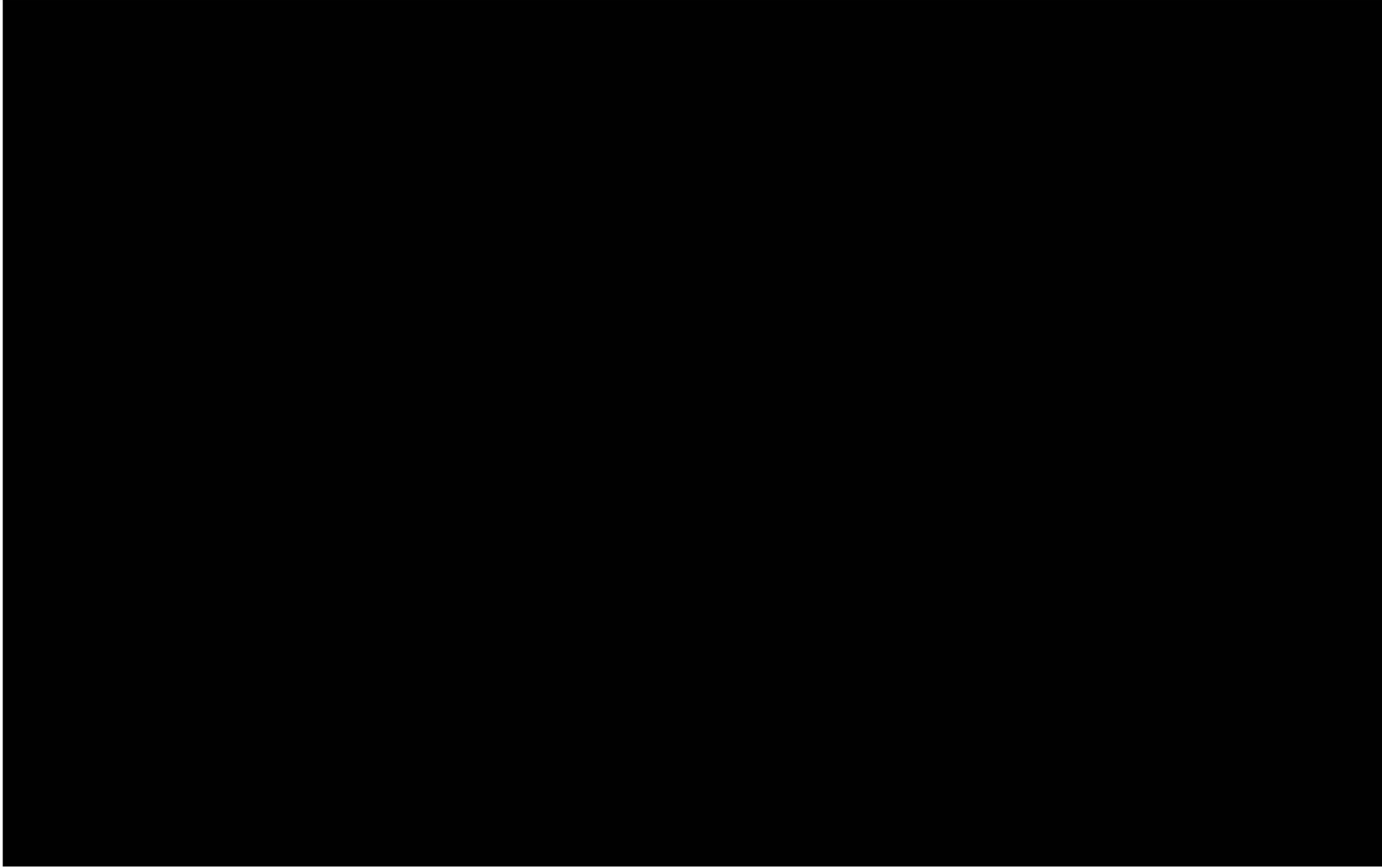


# Site: SE7 Cahiracon





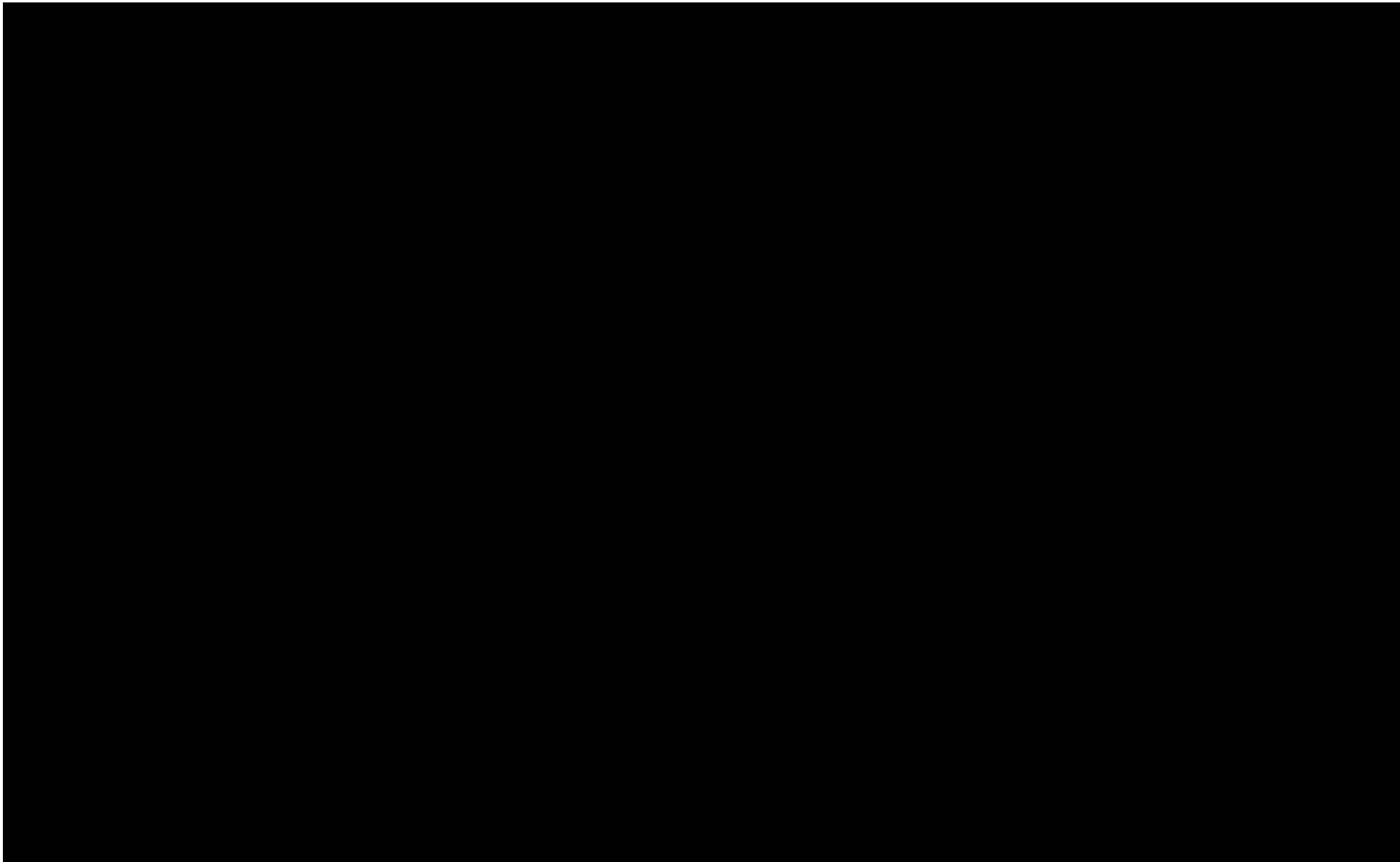


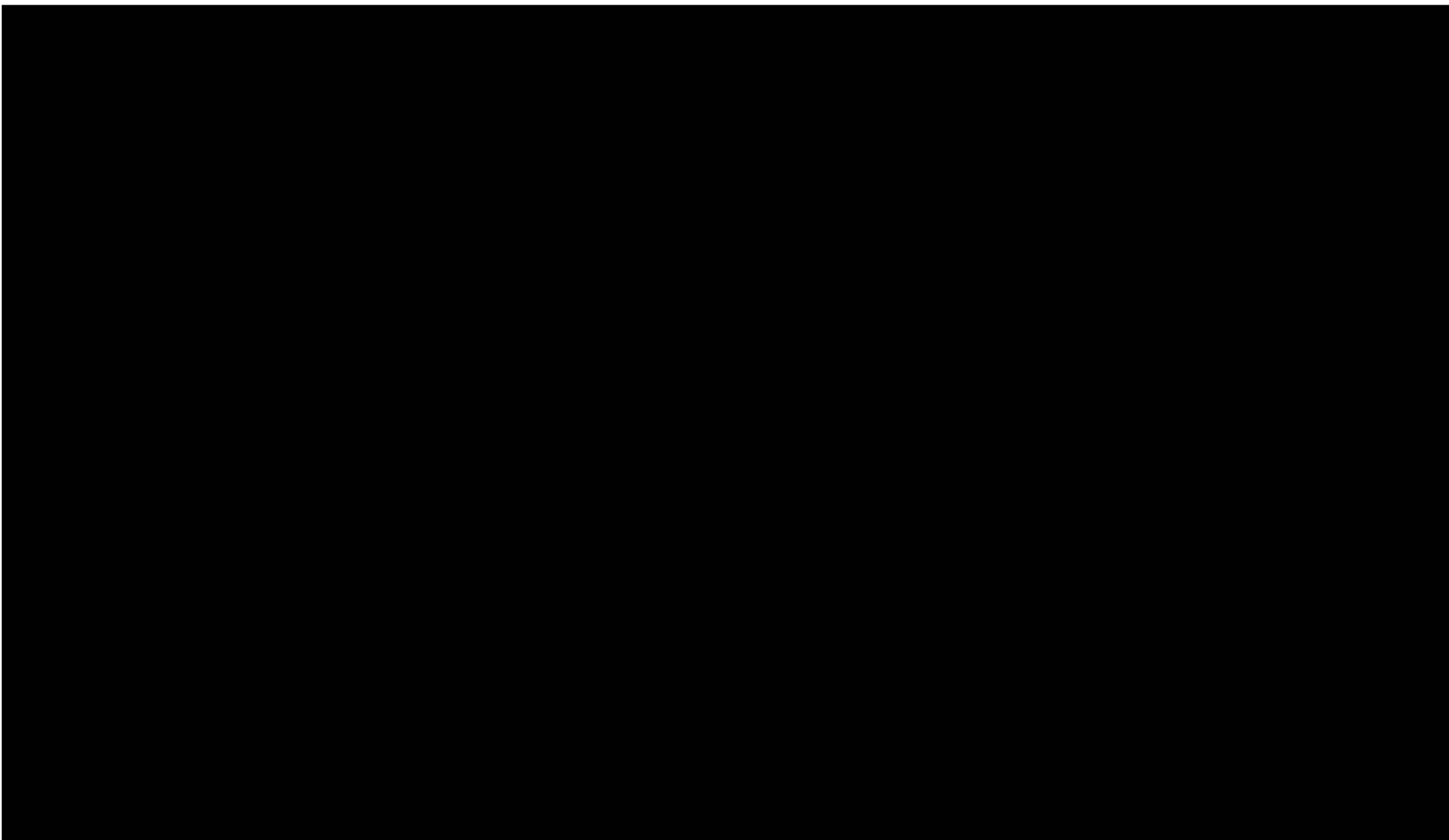












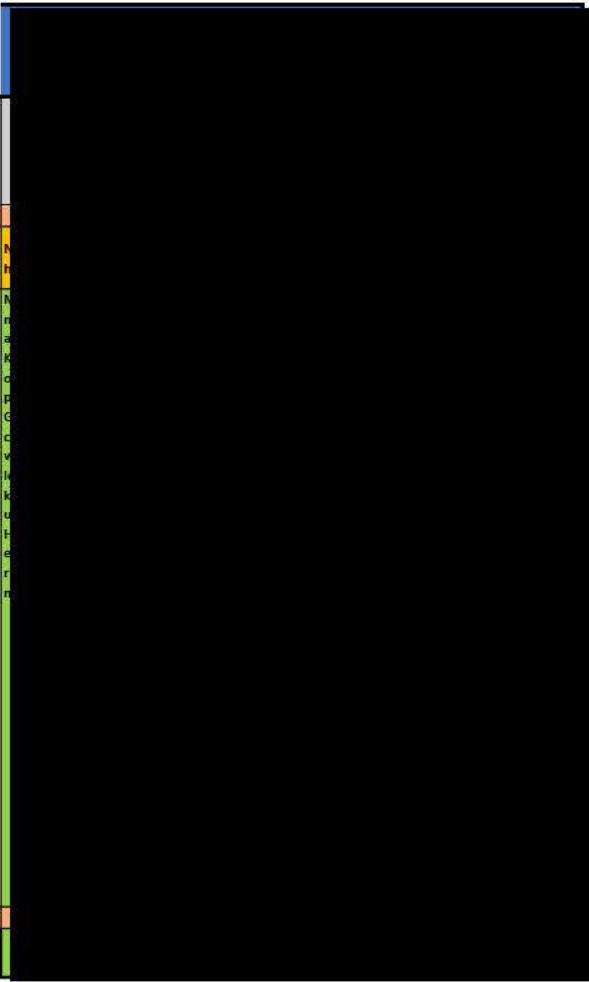


## **Appendix 4 – Pipeline Route Selection Step 4 Assessment**

| Step 4b Criteria                                                                                                                                                                                                                                                                                                                 |                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Technical Criteria                                                                                                                                                                                                                                                                                                               |                                                     |
| Preference will be given to the shortest pipeline length.                                                                                                                                                                                                                                                                        |                                                     |
| Preference will be given to the route that minimises the number of land parcels that may need to be acquired                                                                                                                                                                                                                     | P                                                   |
| Infrastructure and Utilities                                                                                                                                                                                                                                                                                                     |                                                     |
| Preference will be given to the route which minimises special crossings (such as water, road, rail, [significant] infrastructure)                                                                                                                                                                                                |                                                     |
| Environmental Criteria                                                                                                                                                                                                                                                                                                           |                                                     |
| Preference will be given to a route corridor with the greatest availability of reliable baseline (ecological) data in terms of quality and quantity.                                                                                                                                                                             | A<br>e<br>a                                         |
| Preference will be given to sites that are not located within designated sites and/or have no source, pathway, receptor connection to a designated site. Secondary preference will be given to a route that can likely be capable of meeting the requirements of Article 6(3) of the Habitats Directive (Appropriate Assessment) | H<br>(L<br>a<br>R<br>b<br>S                         |
| Cultural Heritage                                                                                                                                                                                                                                                                                                                |                                                     |
| Preference to avoid impacts to National Monuments, archaeological sites as identified in the Record of Monuments and Places (RMP), structures listed in the Record of Protected Structures (RPS), and Architectural Conservation Areas].                                                                                         | V<br>a<br>c<br>m<br>i                               |
| Hydrology and Hydrogeology                                                                                                                                                                                                                                                                                                       |                                                     |
| Preference will be given to a route corridor that is not located in areas which are at risk of widespread flooding which increases construction costs & time and potentially compromises the resilience of the solution.                                                                                                         | T<br>y<br>f<br>N<br>a<br>m<br>f<br>d<br>F<br>e<br>f |
| Preference will be given to routes that avoid / minimise impacts to recreational waters, designated bathing waters, designated nutrient sensitive waters, designated shellfish waters and aquifers designated as extremely vulnerable                                                                                            | D<br>r<br>d<br>e                                    |

| Site SE7Cahiracon                                                                                                                                                                                  |                                                                                                                                                                                  |                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site SE7<br>Cahiracon<br>Most Westerly Route                                                                                                                                                       | Site SE7<br>Cahiracon<br>Central Route                                                                                                                                           | Site SE7<br>Cahiracon<br>Most Easterly Route                                                                                                                                     |
| Corridor SE7-01                                                                                                                                                                                    | Corridor SE7-02                                                                                                                                                                  | Corridor SE7-03                                                                                                                                                                  |
| 1.14 km                                                                                                                                                                                            | 0.89 km                                                                                                                                                                          | 1.26 km                                                                                                                                                                          |
| c. 5 no. dwellings along route                                                                                                                                                                     | c. 10 no. dwellings along route                                                                                                                                                  | c. 16 no. dwellings along route                                                                                                                                                  |
| 2                                                                                                                                                                                                  | 2                                                                                                                                                                                | 4                                                                                                                                                                                |
| Assumes similar available ecological data                                                                                                                                                          | Assumes similar available ecological data                                                                                                                                        | Assumes similar available ecological data                                                                                                                                        |
| Has connection to SAC (Lower River Shannon SAC), SPA (River Shannon and River Fergus Estuaries SPA).                                                                                               | Has connection to SAC (Lower River Shannon SAC), SPA (River Shannon and River Fergus Estuaries SPA).                                                                             | Has connection to SAC (Lower River Shannon SAC), SPA (River Shannon and River Fergus Estuaries SPA).                                                                             |
| Corridor impinges upon RMP CL069-015 - Ringfort. Tie-in point within vicinity of RMP CL069-02600 Fulacht fia                                                                                       | While RMPs, RPS, and Areas are located within the corridor a min 200m can be mapped with little to no impact.                                                                    | While RMPs, RPS, and Areas are located within the corridor a min 200m can be mapped with little to no impact.                                                                    |
| The 200 year and the 1000 year NCFHM 2021 coastal flood mapping show minor inundation in the south of the site. The datasets available on Floodinfo.ie show no evidence of groundwater flood risk. | The 200 year and the 1000 year NCFHM 2021 coastal flood mapping show no flooding in the area. The datasets available on Floodinfo.ie show no evidence of groundwater flood risk. | The 200 year and the 1000 year NCFHM 2021 coastal flood mapping show no flooding in the area. The datasets available on Floodinfo.ie show no evidence of groundwater flood risk. |
| Does not directly impact recreational waters, designated bathing waters etc                                                                                                                        | Does not directly impact recreational waters, designated bathing waters etc                                                                                                      | Does not directly impact recreational waters, designated bathing waters etc                                                                                                      |

| Step 4b Criteria                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soils and Geology                                                                                                                                                                                                                               |
| Geological Heritage                                                                                                                                                                                                                             |
| Preference will be given to avoiding areas of poor ground which increases construction costs & time and environmental risks (e.g. peat, lake deposits, soils containing alluvial or fluvioglacial deposits and shallow rock or karst features). |
| Pipe Corridor Scoring                                                                                                                                                                                                                           |
| Identification of the preferred pipe corridor per site                                                                                                                                                                                          |



| Site SE7Cahiracon                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site SE7<br>Cahiracon<br>Most Westerly Route                                                                                                                                                                                                                                                                                                      | Site SE7<br>Cahiracon<br>Central Route                                                                                                                                                                                                                                                                                         | Site SE7<br>Cahiracon<br>Most Easterly Route                                                                                                                                                                                                                                                                          |
| No sites of geological heritage recorded on path                                                                                                                                                                                                                                                                                                  | No sites of geological heritage recorded on path                                                                                                                                                                                                                                                                               | No sites of geological heritage recorded on path                                                                                                                                                                                                                                                                      |
| Majority mineral soils with small deposit of alluvium and made ground. No specific identified Karst landforms identified on footprint, however possible karsts identified in Ground Water vulnerability charts Surface rocks or karsts which are unavoidable, Ground water vulnerability high 0 Heritage sites Moderate - High risk of landslide. | Majority mineral soils with small deposit of alluvium and peat. No specific Karst landforms identified on footprint, however possible karsts identified in Ground Water vulnerability charts Surface rocks or karsts which are unavoidable, Ground water vulnerability high 0 Heritage sites Moderate - High risk of landslide | Majority mineral soils with moderate deposits of peat. No specific Karst landforms identified on footprint, however possible karsts identified in Ground Water vulnerability charts Surface rocks or karsts which are unavoidable, Ground water vulnerability high 0 Heritage sites Moderate - High risk of landslide |
| It is noted that there is two apparent features in close proximity to the proposed tie-in location. The features are unidentified but could represent, small lakes / ponds or disused quarries that have flooded. In either case their proximity to the tie in location may increase risk of flooding and / or resilience of the solution.        |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                       |
| 19                                                                                                                                                                                                                                                                                                                                                | 21                                                                                                                                                                                                                                                                                                                             | 17                                                                                                                                                                                                                                                                                                                    |



## **Appendix 5 – Step 5 Site and Pipeline Detailed Assessment**

Step 5 Detailed Assessment

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Site SET Calibration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Step 5a: Detailed Site Assessment - Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |
| <b>Technical criteria for consideration</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |
| <p><b>4) Land availability</b><br/>The assessment of land availability will consider if a new jetty and on shore gas plant facilities need to be constructed, and if there is there enough space at the potential site for the necessary infrastructure including vehicle monitoring, import controls, and vehicle reprocessing areas on the onshore site. Preference will be given to sites that are existing facilities and have sufficient space for the required technical project requirements. If no site with existing facilities is found, preference will be given to next most favourable site in relation to land availability.</p> <p>For the purpose of the site selection criteria, it is assumed that the onshore facilities will be accommodated within a site of approximately 20ha. The 20ha site limitation has been identified by the Engineering Team as the minimum required area to provide the relevant onshore gas plant, AGU, provision of landscaping, drainage measures and provision of suitable space to allow for future-proofing/transition to renewables. The 20ha site area will be subject to more detailed engineering spatial design prior to commencing the site selection process.</p> | <p><b>Neutral</b><br/>Land availability Fully Aligned with project requirements.<br/>Site area of 20ha identified within largely rural setting allowing for flexibility in site layouts to take account of particular site features which include presence of pockets of woodland etc.</p> <p>Land availability facilitates technical project requirements together with landscaping, drainage measures and provision of suitable space to allow for future-proofing/transition to renewables.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2 |
| <p><b>5) Sufficient space to moor an FSRU and an LNGC side-by-side whilst allowing passing vessels and other port activities to continue.</b><br/>In order to accommodate the LNGC berthing and subsequent LNG unloading operations, a minimum distance on the seaward side of the moored LNGC and FSRU to the port roundabout/ navigational channel such that it still allows safe passage in the navigational channel for passing vessels without risk of damage to be required. Preference will be given to sites that provide the safest ship to ship transfer configuration. This will be established by expert review and advice.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>Neutral</b><br/>Channel depth and width indicates sufficient space to moor an FSRU and an LNGC side-by-side whilst allowing passing vessels and other port activities to continue. Limited impact on navigation anticipated. Note the availability of navigation risk assessment for Shannon estuary which is contextually supportive while not prepared specifically for this site.</p> <p>Preliminary Navigation Assessment undertaken as part of Concept Definition notes that "commercial vessel traffic to pass the FSRU jetty is low and does not pose a serious risk". The preliminary Navigation Assessment indicates that a jetty at this location has "a large area for turning and manoeuvring" and that "the recommended two times length rule for a turning circle is easy to achieve". The report goes on to indicate that the Cahracon site a low risk due to its location and being parallel to the navigation channel.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 |
| <p><b>6) Adequate distance of Jetty from other commercial port users / Impacts on existing port operations</b><br/>Industry guidance recommends that the location of the jetty and ultimate moored FSRU should be well removed from other marine traffic and any port activity which may cause hazard. Preference will be given to sites that are well removed from other commercial port users. Separation distances will be informed by expert advice and industry guidance.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b>Neutral</b><br/>Proposed site located c. 3.9km as crow flies from existing Foynes Port, c. 4.2km from existing Aughlish jetty and c. 2.2km from proposed Foynes Island deep water port proposed by Shannon Foynes Port. Site not located adjacent to commercial port users and is unlikely to impinge on existing port operations.</p> <p>Preliminary Navigation Assessment prepared by Concept Definition Consultant concludes the following in respect of this Site: "It is expected that the commercial vessel traffic to pass the FSRU jetty is low and does not pose a serious risk."</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 |
| <p><b>7) Service and utility connections</b><br/>The availability of utilities required to service the new development at each site will be considered. Utilities that will be reviewed will include surface water discharge, potable water supply, electricity supply (MW) and telecommunications. Preference will be given to a site with existing service and utility connections or falling this the site is closest proximity to same.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p><b>Neutral</b><br/>Power: Tail-fed connection to existing 38 kV station in Clonsilla. A new 38 kV substation will be needed at the proposed site. Dual circuit (i.e. 2 circuits). Completely underground – overhead lines would be significantly cheaper – but assumed underground for purpose of assessment.</p> <p>Water / Wastewater: Existing water supply network immediately adjacent to Site, however to provide for greater resilience assumed that a small Booster Station (readily) required in approx. vicinity of Kilgarry GAA and a new water supply pipeline route along R473 for approx. 3km. Assumed minimum diameter of 100mm. For wastewater, Kilgarry WWTP is around 4 km away from the site however Concept design proposes that wastewater is treated on site.</p> <p>Surface Water: Surface water to be managed on site in accordance with SIUDS principals and development plan policies and objectives.</p> <p>Telecoms: Approximately 5 km of fibre optic cable will be required to connect either site (SE7 or SE15) to the existing broadband network. The installation will include dual-redundant (backup) routes to ensure resilient communications, with all new ducting and civil works assumed. Final distances and costs will be subject to a detailed survey and confirmation by the service provider.</p> <p>In overall terms the service and utility connections for this site are reasonably standard and are similar for each shortlisted site.</p> | 2 |
| <p><b>8) Safety</b><br/>Project will fall under COMAH Regulations, as such the site ability to meet the relevant COMAH Regulation requirements must be considered. Preference will be given to a site that can clearly meet the required COMAH Regulations from initial expert review. Where there are obvious issues, such as proximity to residential receptors, which could make it difficult to gain support from the HSA then these sites would be deemed less favourable.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><b>Neutral</b><br/>This site would become a COMAH site. It is expected that the relevant COMAH requirements can be met. There is currently a derelict dwelling on the wider estate being redeveloped to be brought back into use but sites outside the expected risk contours. The outer limit of the individual risk contour is expected to be c.750 m from the FSRU/LNGC. No sensitive properties fall within this zone.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 |
| <p><b>9) Topography</b><br/>Identification of steep slopes, high ground to be avoided. Professional judgement from review of available material as well as site inspections will be required to establish the sites topography. Preference will be given to a site that has a topography that will enable ease of project development.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Neutral</b><br/>Ground levels vary moderately with an approximate differential of 25m across the site. No areas of pronounced steep gradients were observed which would be prejudicial to development at the site in the context of the flexibility associated with the 20 ha site. Concept definition has identified initial terminal layout within the site and associated cut / fill volumes. No specific topographical constraints noted. Site visit - initial inspection noted boggy conditions in sparse patches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 |
| <p><b>10) Construction constraints</b><br/>Construction access to a site will require deliveries via major roads and potentially rail. A review of the available road and rail connections to the site will be required. Preference will be given to a site that has better road and rail connections.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Neutral</b><br/>Proposed green field site with no discernible construction constraints of significant scale. Primary road access is available via the R473 regional road from Ennis which provides connection for construction traffic and deliveries. The R473 is subject to a 50km / hr limit on approaches to Killybeg but increases to 80km/hr outside of village / town areas. The R473 connects with the N5 and M18 on the outskirts of Ennis / Glencaradea. In respect of marine side construction - traditional marine derrick and scows for inshore construction is anticipated. The site does not have rail access which is not considered to be a significant constraint.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2 |
| <p><b>11) Proximity to existing gas network and current capacity to service the development</b><br/>The development will require connection to the national gas network. Ability to easily connect and avoid/reduce require pipeline upgrades will be considered beneficial. Preference will be given to a site that is closest to the existing gas network and the network has capacity to service the development with minimal or no upgrades. Failing this, preference will be given where there is an established or permitted onshore pipeline route. Failing this, preference will be given to the site that can be provided with the least constrained pipeline route (high-level review).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>More Favourable</b><br/>A pipeline of c.650m would be required to connect to the National Transmission System (NTS). The NTS in this location has confirmed capacity to accommodate the proposed development without upgrades. The proximity of the site to the NTS is considered to be more favourable for the project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3 |
| <p><b>12) Avoidance of areas which are at risk from fluvial and tidal flooding.</b><br/>Preference will be given to sites where there is low risk from fluvial and/or tidal flooding as determined by a competent expert.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p><b>Neutral</b><br/>Low Risk - The 200 year and the 1000 year NCFHM 2021 coastal flood mapping show some flooding at the south-western boundary in the climate change and current scenarios. The datasets available on FloodRisk.ie show no evidence of groundwater flood risk. No increases in construction costs &amp; time foreseen as a result or no foreseen compromise the resilience of the solution.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2 |

Step 5 Detailed Assessment

| Site SET Cahoon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |
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| <p><b>(j)Appropriate ground conditions (geotechnical stability) /Biology)</b><br/>Preference will be given to sites where ground conditions would be favourable to accommodating the technical project requirements.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><b>Neutral</b></p> <p>Records of onsite geotechnical investigations generally support previous assessment (Phase 4) reproduced below:</p> <p>Mapped Quaternary Sediment Type: Bedrock outcrop / near surface bedrock and glacial till. Estuarine silts and clays mapped nearby. Mapped Soil Type/Category: Deep well drained mineral (Mainly acidic)</p> <p>No records of nearby landslides - low risk of landslides at site. Indications of coastal erosion in aerial photographs.</p> <p>Mapped bedrock: Only estuarine and sandstone of Oul Island Formation, and thin-bedded pale sandstone - Tullig Sandstone. Some bedrock exposures along coastline. Moderately deeply dipping bedrock. Heavily faulted. No mapped karst features nearby.</p> <p>Historical Maps indicate: Presence of shale series (Yonahda Beds), steeply dipping beds. Possibly drift and mud flats / tidal zones - waterlogged soft ground areas. No mapped historical quarries / pits identified at site.</p> <p>Additionally, no significant soft ground zones identified in the boreholes and trial pits, which encountered relatively shallow bedrock of varying degree of weathering.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2 |
| <p><b>k)Proximity to potential high-energy use clusters and future hydrogen production</b><br/>The development will likely transition to hydrogen supply in the future. As such the proximity of the site to potential high-energy users would encourage and support hydrogen use in the future. Preference will be given to a site that is in close proximity to high energy users.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><b>Neutral</b></p> <p>Located within a large landscape with the ability to accommodate future large energy users. However SFP designation refers to Marine uses not high energy users. The site is in proximity to European Hydrogen Backbone represented by existing national transmission main. As there is potential to feed into the network to supply future high energy users downstream and there is some potential for marine related industries and high energy users to develop in the future on the surrounding lands, this site is deemed 'neutral' rather than 'less favourable'.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2 |
| <p><b>(l)Flexibility to receive a range of LNGCs</b><br/>Consideration will be given to the range of LNGCs to be accommodated. Preference will be given to a site which can accommodate the greatest range of LNGCs and hence provide the greatest flexibility.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>Neutral</b></p> <p>Green field site and jetty as such design can include flexibility to receive a range of LNGCs</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 |
| <p><b>m)Adequate Sheltering</b><br/>Adequate sheltering has been considered in Step 3 of the Site Selection process at a high level to ensure that each parcel brought forward into Step 4 is capable (with or without mitigation) of meeting SIGTTO guidance on suitable sheltering conditions. At Step 5 adequate sheltering will be considered in the context of any new and material information on sheltering that may have arisen. Preference will be given to those sites which, without mitigation, are best aligned with SIGTTO recommended thresholds. If all sites are aligned with the recommended thresholds without mitigation, they will be scored the same.</p>                                                                                                                                                                 | <p><b>Neutral</b></p> <p>Analysis undertaken as part of Concept Definition does not identify the need for site specific mitigations such as a breakwater at any of the sites based on a review of the site conditions and SIGTTO recommendations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2 |
| <b>Environmental criteria for consideration:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |
| <p><b>(n)Biodiversity</b><br/>The biodiversity assessment will involve a desktop study of available records of protected species and habitats and a field study at each site, typically at field boundaries, and surrounding lands to survey habitats, plants, birds, mammals, bats and fish habitats. The assessment will consider the proximity to and potential for impact on environmental designated sites, designated bathing waters, recreational waters, designated shellfish waters, salmonid waters, and designated nutrient sensitive waters. Biodiversity policies by local authorities will also be considered. Preference will be given to a site which can avoid a designated site. Failing this, preference will be given to a site, when developed, is not likely to have a significant impact on identified biodiversity.</p> | <p><b>Neutral</b></p> <p>European sites<br/>Lower River Shannon SAC 002466<br/>River Shannon and River Fergus Estuaries SPA 004077<br/>New jetty would be located within the SAC/SPA</p> <p>The Clare County Development Plan and the Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary identifies and zones Cahoon for marine-related industry. Policy CDP12.2 encourages environmentally sustainable development of maritime industries at suitable locations (as identified in the SIFP) and that these developments will be in accordance with Birds, Habitats and Water Framework Directives and apply appropriate mitigation measures that will ensure the integrity of the Natura 2000 network. Policy CDP12.5 identifies Inahmurry/Cahoon as Strategic Development Location (SDL) A. Site SET partly lies within SDL A.</p> <p>Habitats on site (as described from winter 2024/2025 surveys)<br/>Mixed broadleaved woodland (MWD) and Oak-archival woodland (MWD) with some scattered Rhododendron ponticum in places (Third Schedule Invasive Species, under the EC (Birds and Natural Habitats) Regulations, 2011, so there is a legal requirement to control). Other non-native invasive species noted during surveys included Crocosmia x crocosmiiflora, Symphoricarpos albus, and Acor pseudoplatanus. Most of the site is now improved grassland (GAI). Recent activity on site appears to have resulted in the removal of hedgerows in places and potentially some treefalls (large stacks of timber around farm buildings were noted during the site survey). Habitats listed in Annex I of the EU Habitats Directive were identified within the study area or adjacent to the study area. This included the of 91AC Old sessile oak woods within the study area and c.0.1410 Mediterranean salt meadows immediately adjacent to the study area. The habitat is surrounded by and grades into exposed rocky shores (LRI) and moderately exposed rocky shores (LRC). Below these two habitats the habitat grades into littoral sediments likely to correspond to the Annex I habitats 1130 Estuaries, and 1140 Muds and sandflats not covered by seaweed at low tide.</p> <p>Terrestrial faunal appraisal following site surveys:<br/>Mammal trials were recorded throughout the site, particularly along tree lines and within the patches of woodland present. Other activity was recorded along the shoreline. Other is listed in Annex I and Annex IV of the Habitats Directive and protected under the Wildlife Act, 1976, as amended. Additionally, this species is a qualifying interest species of the Lower River Shannon SAC, which includes the north bank of the Shannon Estuary adjoining the south boundary of the Cahoon site. Other mammals recorded include badger and pine martin. The highly invasive species, mink, was also recorded on the shoreline. Five bat species were recorded during surveys.</p> | 2 |
| <p><b>(o)Geology and Hydrogeology</b><br/>The assessment of geology and hydrogeology will consider the potential impact of development at the potential sites on the underlying geological and hydrogeological attributes (aquifer classification, vulnerability, karst features) and the proximity to sensitive groundwater receptors (rivers, and major groundwater assets), along with their importance, for each potential site. Soil, geology, and hydrogeology information will be obtained from spatial mapping published by Geological Survey of Ireland (GSI) and site investigation information where it was available. Preference will be given to a site with more favourable underlying geological and hydrogeological attributes.</p>                                                                                             | <p><b>Neutral</b></p> <p><b>Reception Facility - Hydrogeological Assessment</b><br/>Groundwater vulnerability is mainly "rock above surface". There is no overburden to attenuate potential contaminant pathway to bedrock.</p> <p>Low risk of migration of potential contaminants during construction phase through poorly connected fracturing within the sandstone (Locally important Aquifer) rock mass. No likely impact on the current status of the WFD groundwater body, due to low potential loading, natural retention and dispersion in the grounds, natural attenuation within weathered rock and discrete nature of fracturing reducing off site migration. No likely offsite migration towards WFD groundwater/ coastal waterbodies downstream of identified Natura 2000 Sites. No risk of deterioration of current status of any WFD waterbodies.</p> <p><b>WFD - Hydrogeological Assessment</b><br/>Moderate risk of impact on hydrogeological environment and groundwater quality during construction phase in absence of mitigation measures given the required excavation depth levels. However, no risk of deterioration of current status of the WFD waterbodies is foreseen due to natural attenuation within weathered rock and discrete nature of fracturing reducing off site migration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2 |
| <p><b>(p)Hydrology / Water quality</b><br/>The assessment for hydrology will compare the suitability of each site in terms of its hydrology and will involve collation of existing hydrological information of each site in order to identify, quantify and assess its potential hydrological impacts at the potential sites and surrounding lands. This assessment will consider potential flood risk (coastal, fluvial, pluvial, groundwater and artificial drainage systems), potential impacts caused by drainage discharge, and the potential to increase flooding downstream at each of the potential sites. Preference will be given to a site that is unlikely/less likely to result in hydrological impacts at the potential sites and surrounding lands.</p>                                                                          | <p><b>Neutral</b></p> <p><b>Reception Facility - Hydrological Assessment</b><br/>There is a direct hydrological linkage between the proposed works and receiving WFD watercourses / Natura 2000 sites located adjacent to the site within the Lower Shannon Estuary.</p> <p>Low to moderate risk of contamination during construction phase in absence of mitigation measures due to proximity of receiving waters. However, this risk may be mitigated by the negligible leaching of contaminants, natural retention and dispersion in the grounds (there is no natural drainage network at the site) eventually significant dilution in the waterbodies will ensure any released contaminants/huff are at background levels. No risk of deterioration of current status of the WFD waterbodies.</p> <p><b>WFD - Hydrological Assessment</b><br/>Direct hydrological linkage between the proposed works and WFD watercourses / Natura 2000 sites located adjacent to the site within the Lower Shannon Estuary. Moderate risk of effect on hydrological environment and surface water quality during construction phase in absence of mitigation measures. However, no risk of deterioration of current status of the WFD waterbodies is foreseen.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2 |



Step 5 Detailed Assessment

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| <p><b>d) Odour</b></p> <p>The assessment of the potential risk of odour impacts will be carried out using the methodology provided in Guidance on the Assessment of Odour for Planning (AQM, 2018) combined with additional analysis of both the number and locations of receptors and a review of meteorological conditions. Field surveys will be carried out in accordance with Air Guidance Note 5 (AG5): Odour Impact Assessment Guidance for EPA Licensed Sites. Preference is to be given to a site which is less likely to result in odour impacts.</p> | <p><b>Neutral</b></p> <p>A predictive qualitative risk based assessment, aligned with AQM, was used.</p> <p><b>Construction Phase:</b> During the construction phase, construction activities including excavations and earthworks, temporary stockpiling may give rise to short term, localised air quality impacts, including the risk of potential fugitive odour emissions. For this site odour potential is low due to minimal odorous materials, effective (standard) site management and the distance to sensitive receptors. With standard mitigation measures (e.g. good housekeeping, controlled material handling etc.) the effect during construction is considered limited and is assessed as Low to Negligible.</p> <p><b>Operation phase:</b> Natural gas does not have an odour. Prior to export gas will be odourised as an essential safety feature to aid leak detection at its points of use. The storage of odourised gas and the odourisation plant will be completely sealed and releases of odour during operation will not occur. The design of the plant and the mitigation measures employed will prevent odour impacts at off-site sensitive locations taking cognisance of AQM guidance and EPA licence conditions etc. During maintenance, any releases to air will be mitigated / controlled using standard methodologies. Although the odourant has a very low odour threshold (i.e. is very odorous), its containment within sealed systems, the low likelihood of uncontrolled release and the distance to sensitive receptors means that the impact is considered to be negligible. As such a more detailed assessment is not warranted at this stage. Consequently the site is considered to be Neutral.</p>                                                                                                                                                                                                                                                                                                                                                                                                         | 2 |
| <p><b>e) Noise and Vibration</b></p> <p>The assessment for noise will consider the potential impact at each site from noise during operation upon noise sensitive receptors (residential dwellings, schools, healthcare facilities, retirement homes and churches) located nearby and will take account of existing noise levels. The assessment will take account of the number of receptors within fixed distance of the site boundary. Preference is to be given to a site which is less likely to result in noise &amp; vibration impacts.</p>              | <p><b>Neutral</b></p> <p>The potential impact of noise and vibration is primarily influenced by the distance between the noise/vibration source and the sensitive receptor together with any screening effects depending on topography or other natural elements such as tree lines. In this case Caltracon House is approximately 1000m from the site boundary, another four individual dwellings are located between 300 and 550m from the site boundary.</p> <p>The TI Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TI, 2004) effectively screens out for preliminary assessment purposes those receptors greater than 300m away i.e. only those receptors within 300m are assigned a Potential Impact Rating (PIR) during route corridor selection. This reinforces that receptors &gt;300m away from the site boundary are unlikely to be impacted.</p> <p><b>Construction noise impacts:</b> Noise during construction will be intermittent and vary with plant operating periods and machinery being used, rather than being constant. The guidelines recommend applying indicate limited during daytime and lower limits for evening and weekends, alongside best practice mitigations such as restricting working hours and plant selection. Implementation of an oCEMP will help to minimise negative effects during construction with a focus on measures that minimise impacts at source.</p> <p><b>Operational impacts:</b> will be caused by noise emitting equipment and other operational equipment. Operational traffic impacts depends on change at sensitive receptors compared to baseline and will need to be assessed. Mitigation measures and monitoring will be included to minimise any negative effects. The principal mitigation measures required for the Proposed Development in relation to noise concern selection of equipment, sound containment, and acoustic attenuation, in order to achieve the required limits. Noise and vibration are considered to be readily technically achievable using standard methods.</p> <p>In overall terms the site is considered to be Neutral.</p> | 2 |
| <p><b>f) Air Quality</b></p> <p>The assessment will consider the potential impact at each site from emissions caused by the construction and operation of the facility and traffic generated by the development upon sensitive receptors. Preference is to be given to a site which is less likely to result in air quality impacts.</p>                                                                                                                                                                                                                        | <p><b>Neutral</b></p> <p>Air quality receptors include residential properties located closest to the Proposed Development in each direction, and properties located adjacent to the local road network on the approach to and from the Proposed Development. Ecological receptors include air quality sensitive habitats.</p> <p><b>Construction and Decommissioning Phase</b></p> <p>There is the potential for emissions to atmosphere to arise during the construction (and decommissioning) of the site. These activities may generate quantities of dust. Road traffic, construction vehicles, generators, etc., will give rise to exhaust emissions.</p> <p>The Sensitivity of the Area would be dependent on distance between the source and the sensitive receptors, and sensitivity of the receptors. Dust risk is categorised (AQM guidance, 2024) as 'high', 'Medium', and 'Low'.</p> <p>For a separation distance of 50m or less, the sensitivity of the area would be 'Medium' if there exist 10-100 highly sensitive receptors.</p> <p>Sensitivity of the Area together with the Magnitude of Impact (determined as per the quantity and quality of construction/decommissioning materials involved) determines the dust risk.</p> <p>Low dust risk to human receptors is anticipated given the low number of sensitive receptors in the vicinity.</p> <p>Low dust risk to ecological receptors provided a 50m buffer can be maintained from source.</p> <p><b>Operational impacts</b></p> <p>Operational phase activities are likely to include maintenance and repair works, involving machinery and road vehicles.</p> <p>In common with other vehicles on the local road network, vehicles accessing the site will emit carbon monoxide, nitrogen oxides, particulates and hydrocarbons.</p>                                                                                                                                                                                                                                                                                                                                           | 2 |
| <p><b>g) Land-use</b></p> <p>The consideration of existing land uses will inform the selected site. For example, preference will be given to a site that utilises land which would not otherwise be sought for an alternative use. Commonage land will also be avoided where possible.</p>                                                                                                                                                                                                                                                                      | <p><b>Neutral</b></p> <p>The site identified as SET is zoned greenfield land. The site itself has no history of land use. The surrounding area appears to be part of the former Caltracon House although the boundaries of the estate are unclear. Historic maps indicate the site has been greenfield for the past 200+ years.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 |
| <p><b>h) Marine (Human)</b></p> <p>Preference will be given to sites for the LNO Jetty including side by side arrangement of LNOC and FBRU that avoid existing merchant shipping lanes, designated fishing areas and active licensed / proposed dredging areas and dump sites.</p>                                                                                                                                                                                                                                                                              | <p><b>Neutral</b></p> <p>Nearest designated shellfish area is approx. 24.5km to the southwest of the site (West Shannon Ballylongford shellfish area.)</p> <p>Whilst there are existing licences around Foyes Island, there are no active Dumping at Sea licences within the proximity of the Caltracon site that would impact the proposed use.</p> <p>Foyes Port is a frequently used shipping route.</p> <p>Several commercial fisheries activities occur within the Shannon Estuary. Local licensed fishing vessels most frequently partake in pot fishing, gillnets and tangle nets (Shannon Estuary Strategic Integrated Framework Plan, 2015). Licensed aquaculture areas are also present. Shrimp fishing also takes place within the later summer and early spring. Several sections of the Shannon Estuary are also designated under the Shellfish Waters Directive. The nearest designated shellfish waters are the West Shannon Ballylongford Shellfish Waters.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 |

Step 5 Detailed Assessment

| Site SET Cahoon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |
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| <b>i)Climate</b><br>Preference will be given to sites that are less susceptible to other climate related impacts not already captured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Neutral</b> - No differentiator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2 |
| <b>Planning criteria for consideration:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |
| <b>ii)Adjoining Land Use</b><br>The assessment of adjacent land use will reference zoning maps contained in the relevant City/County Development Plan and online searches to determine adjoining land uses. Land uses in proximity to the candidate site will be assessed based on compatibility with the expected intensification and/or development at each potential site. Preference will be given to sites with more favourable adjoining land use zones or uses.                                                                                                                                      | <b>Less favourable</b> - The land to the east is zoned for Marine Related Industry as is Foynes Island which is opposite the site. Rumoured and public expectation of the development of the historic house as hotel may not be compatible with project. Some residential refurbishment also taking place within the curtilage of the surrounding estate. Cottage has been granted permission for refurbishment and would introduce a residential use within proximity to the site but still provided with buffer. Therefore, the site is deemed less favourable than SE15.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 |
| <b>iii)Landowners</b><br>Preference will be given the site that minimised impact on the number of landowners in relation to delivery of the project. A site with multiple landowners will be deemed less favourable.                                                                                                                                                                                                                                                                                                                                                                                        | <b>Neutral</b> - It is understood that the identified at SE7 is controlled by a single entity. This ownership is no more or less favourable than SE15.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2 |
| <b>iv)Planning History</b><br>In assessing the planning history of a candidate site, planning records will be reviewed through the website of the relevant Planning Authority and, where necessary, the website of An Bord Pleanála. Consideration will be given to granted planning applications and the implications on these, if any, of the expected intensification and/or development at each potential site and adjoining site. For example, if an adjoining site has an estand consent for development or intensification of an existing use it may be deemed less favourable to one that does not. | <b>Neutral</b> - Principle of some development on the site has already been supported by ASP (historic).<br>No enforcement registered - A Tree Preservation Order is noted in proximity to the site but not within the site boundary.<br>062401 - permission for the construction of facilities and infrastructure for the Importation, manufacturing, storage, distribution and exportation of explosives materials. (Granted 10/09/2006). Site SE7 appears to have similar redline boundary. Principle for development on the lands already consented by ASP, however previous development consent was historic and not related to marine development.<br>054684 - permission to construct slated house. (Granted 11/09/1906).<br>The Planning History relating to the site is limited or no consequence to the future planned project, as such, SE7 is deemed neutral.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2 |
| <b>v)Archaeology, Cultural and Architectural Heritage</b><br>The assessment of sites will include desktop review of archaeology, cultural and architectural heritage data bases. Site visitors may also be arranged depending on outcomes of desktop review. Preference will be given to sites that are located away from shipwrecks and archaeological sites.                                                                                                                                                                                                                                              | <b>Neutral</b> - The constraints remain unconfirmed, and the site demonstrates no identified archaeological features requiring avoidance or significant mitigation at this stage. The potential for uncovering assets of value remains. The absence of confirmed constraints may reflect the lack of field survey rather than certainty of low sensitivity.<br><b>Designated Sites:</b><br>No RMPs or NIAT sites within the proposed development area.<br>One modern metal wreck (W10603) is recorded off the western shoreline of Foynes Island.<br>CL069-017, is in proximity to the site is a redundant record and is related as possible 'tree ring'<br>Note that there are a cluster of RMP records in the vicinity of Cahoon House but are >500m away.<br>A review of the Historic Environment Viewer and National monument service wreck viewer (accessed March 2025) indicated the presence of a single known (physical) wreck which comprises a modern metal wreck (W10603) located on the west shoreline of Foynes Island (ADCO, 2025).<br><b>Confirmed Constraints (identified through testing/surveys):</b> Data based on desk-based assessment only.<br><b>Potential Constraints (identified through desktop review):</b><br>A review of cartographic sources, aerial photography and topographical files from the National Museum of Ireland have not highlighted any sites, features or finds of potential archaeological interest within the site.<br>The Cultural Heritage Impact Assessment identified that the subject site area has a general greenfield archaeological potential to reveal features or finds of archaeological significance particularly given its location in immediate proximity to the River Shannon, which would have attracted settlement activity throughout all periods.<br><b>Constraint Extent:</b> Constraints, if present, are unquantified and currently limited to desktop-based potential only.<br><b>Constraint Sensitivity:</b> Overall archaeological sensitivity is considered low to moderate pending further field investigation. | 2 |
| <b>vi)Specific Development Plan Policies/Objectives</b><br>Development Plan Policies will be reviewed and the potential for impact of expected intensification and/or development at each potential site on the realisation of specific policies will be considered. Such policies generally include but are not limited to: access and rights of way, amenity areas, landscape, open space, pedestrian routes, and Specific Local Objectives (e.g. safety zones / amenity objectives / long term roads objectives / transport policies).                                                                   | <b>Neutral</b><br>Positive zoning and Planning Objectives - Planning Objectives refer to Marine Uses.<br><b>Greenfield / Zoned:</b><br>Strategic Development Location A: Inishmurry/Cahoon<br>SPP MRI 12.1 - Inishmurry/Cahoon Marine Related Industry - To facilitate and promote the sustainable development of these lands for marine related industry, utilising the presence of deep water, existing infrastructure, natural resources and location adjacent to the Port of Foyne to harness the potential for economic development. Alternative compatible land uses may be acceptable where the ability to deliver the primary use (maritime industry) is not compromised, subject to compliance with the criteria in SPP MRI 12.<br>CDP12.5 - It is an objective of Clare County Council: To facilitate and promote the sustainable development of the lands at Strategic Development Location A - Inishmurry/Cahoon for marine related industry. All proposed developments shall be in accordance with the Birds and Habitats Directive, Water Framework Directive and all other relevant EC Directives. All proposed development at Strategic Development Location A shall incorporate the Mitigation Measures as contained in the Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary (Volume 9 of this plan) for ensuring the integrity of the Natura 2000 Network.<br>The land zoning and specific development plan policies are not restrictive for the future development of the project as such SE7 is provided with a neutral. However, SE15 is provided with more specific policy support as it relates to energy and LNG, as such, SE15 is provided with a more favourable ranking.                                                                                                                                                                                                                                                                                                                                                                      | 2 |
| <b>vii)Landscape and Visual Impacts</b><br>The assessment of landscape and visual impacts will involve a review of the relevant County Development Plan to identify designated Landscape Character Areas, the presence of any designated scenic routes, protected views and prospects, nearby landmarks or recorded monuments. Other landscape policies and objectives that might inform the nature or scale of expected intensification and/or development at each potential site. Visibility of proposed development from nearby receptors (publicly accessible) and potential for screening development. | <b>Less Favourable</b><br>Seascape Character Area - 11 River Shannon - CDP 14.6 (demonstrate every effort has been made to integrate development within a seascape character area)<br>Scenic route - CDP 14.7 (protect sensitive areas from inappropriate development)<br>Trees for Preservation route - CDP 15.19 (preserve and conserve)<br>The site is in proximity to a designated scenic route. Whilst the site appears well screened some visibility of the development along this scenic route is possible. Further objectives to limit impacts on seascape character area also exist. This site scoring is less favourable than SE15.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 |

Step 5 Detailed Assessment

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| <p><b>g) Access and Traffic</b><br/>The access and traffic assessment will involve an assessment of the road network near each site. The junctions and roads considered most likely to be impacted by traffic movements associated with both construction and operation will be assessed in terms of suitability and road safety. The assessment will consider visibility at access points, capacity of the road network based on traffic survey data, and the operation of nearby junctions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Neutral</b></p> <p>Site entrance identified by Concept Definition as via existing entrance and access road from R473.</p> <p>Desktop assessment of site lines (Y Visibility distance) indicates availability of c. 200m in one direction and c. 140m in the other. Based on T1 DN-DEO-0306, this appears (in one direction) slightly below the desirable of 100m. With reference to T1 DN-DEO-0301-10, the Stopping Sight Distance appears to be less than the "desirable minimum" but meets the "One Step below Desirable Minimum". Should this site be selected the design of the entrance and visibility splay will be subject to further consideration. Which may include provision for additional visibility splay, consideration of reducing speed limits in comparison to posted speed limits etc.</p> <p>Access to the site will be via the R473. While there is limited traffic information available, no significant reports of traffic capacity issues at this section are reported.</p> <p>No assessment of road safety was undertaken as recorded as Personal Injury Collision (PIC) data was unavailable at the time of assessment and</p> <p>Close to R473 Regional Road</p> <p>As per Concept Definition: "Traffic associated with the project is expected to consist mainly of heavy goods vehicle (HGV) deliveries and personnel movements to and from the site. Certain process equipment and structural components are anticipated to be delivered as complete units or large sub-assemblies, which may exceed standard transport dimensions. It is envisaged that these items will be shipped to Foyens or Limerick Port, or transported by rail to Limerick Station, and subsequently delivered to the site via the public road network."</p> <p>Concept Definition noted that the site is "located within a relatively short distance of public roads, allowing equipment, materials, and personnel to be transported using the existing road network." It goes on to state that the "Site C (Phalapsne) offers the shortest connection to Foyens Port (approximately 28 km), which makes it slightly more favourable from a logistics standpoint."</p> | 2 |
| <p><b>h) Local Receptors</b><br/>The impact of the development on local receptors, incorporating the technical, environmental and planning considerations above, will be considered, including public amenity areas, and tourist sites. Preference will be given to the site that would have demonstrably lesser impact on local receptors not considered previously.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p><b>Neutral</b></p> <p>Dwellings (&lt;100 no.). New dwellings being constructed on surrounding Calverton House estate, however is located c.400m from onshore site. There are no existing public amenity facilities within proximity to the site that would be impacted. It is noted that Invermurray pier is located c.1km to the north-east of the marine related area. Given the separation distance, it is not expected that the proposed use and development would have any impact on the use or enjoyment of Invermurray pier.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2 |
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| <b>Step 5b: Detailed Pipeline Route Selection: - Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Shannon<br/>Calverton<br/>Calverton Route</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |
| <b>Technical criteria for consideration</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Calverton: 987-40</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
| a) Provide a transmission pipeline route from the onshore reception facility associated with the LNG Jetty to the Irish gas transmission network. An AGI will be required at the reception facility and of the pipeline. An AGI will also be required at the point of connection with the gas transmission network.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - required infrastructure can be provided.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2 |
| b) Installed pipeline capacity of up to 21 mmamGM (approximately 228 GWh/day) for supply of natural gas in the H-1 scenario to the Irish gas transmission network.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - it is understood that this can be accommodated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| c) Pipeline pressure of approx. 85bar (b/c on review of expert engineering advice)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - it is understood that this can be accommodated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| d) Have approximate 24" (NB) Pipeline diameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - it is understood that this can be accommodated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| e) Site provided with 30m pipeline corridor. A wider working width may be required at water crossing, road and service crossings to provide access, storage of excavated materials, space for equipment and off-road temporary parking space.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - it is understood that this can be accommodated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| f) Site provided with 100m wide pipeline "deviation limits" as defined in Gas Act 1976 (as amended).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - it is understood that this can be accommodated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| g) Buried to min 1.2m depth of cover.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - it is understood that this can be accommodated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| h) Safety i.e. 328 in respect of building proximity distances.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - it is understood that this can be accommodated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| i) Satisfy relevant transmission standards in respect of high-pressure hydrogen pipelines as outlined in the Technical Project Parameters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>Neutral</b></p> <p><b>Fully Aligned</b> - it is understood that this can be accommodated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| <b>Environmental criteria for consideration</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |
| <p><b>j) Biodiversity including interaction with European Sites.</b></p> <p>The biodiversity assessment will involve a desktop study of available records of protected species and habitats and a field study along each pipe route, typically at field boundaries, and surrounding lands to survey habitats, plants, birds, mammals, bat and fish habitats. The assessment will consider the proximity to and potential for impact on environmental designated sites, designated bathing waters, recreational waters, designated shellfish waters, salmonid waters, and designated nutrient sensitive waters. Biodiversity policies by local authorities will also be considered. Preference will be given to a pipe route which can avoid a designated site. Failing this, preference will be given to a pipe route, which when developed, is not likely to have a significant impact on identified biodiversity.</p> | <p><b>Neutral</b></p> <p>No sites of European or National significance are within a 100m buffer of the selected pipeline route</p> <p>The proposed site is approx. 0.5km from the River Shannon &amp; River Fergus Estuaries SPA (Site Code: 004077) and the Lower River Shannon SAC (Site Code: 002166) on the Sotham boundary of the site.</p> <p>No works will be carried out within the SAC/SPA boundary.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2 |



Step 5 Detailed Assessment

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| <p><b>b)Geology and Hydrogeology</b></p> <p>The assessment of geology and hydrogeology will consider the potential impact of development at the potential pipe routes on the underlying geological and hydrogeological attributes (aquifer classification, vulnerability, karst features) and the proximity to sensitive groundwater receptors (BHRs, and major groundwater users), along with their importance, for each potential pipe route. Soils, geology, and hydrogeology information will be obtained from spatial mapping published by Geological Survey of Ireland (GSI) and also investigation information where it was available. Preference will be given to a pipe route with more favourable underlying geological and hydrogeological attributes.</p>                                                                                                                                                                                                                                                               | <p><b>More Favourable</b></p> <p><u>Hydrogeological Assessment</u><br/>Groundwater vulnerability is "High" to "Rock at/near Surface" which means 0-5m of overburden (low permeable silts) that attenuates potential contaminant pathway to bedrock.<br/><br/>Low risk of migration of potential contaminants during construction phase through poorly connected fracturing within the sandstone (Locally Important Aquifer) rock mass. No likely impact on the current status of the WFD groundwater body.<br/><br/>More favourable route due to its extension and portion of the aquifer potentially affected.<br/><br/>Site visit: shallow weathered rock confirmed, rotary core borings conducted for SI.<br/><br/>SI Report: Based on the findings of the ground investigation, a Presumed Bearing Resistance of 200 kPa at depths of 2.0m on Weathered Bedrock/Dense Gravel and &gt;250kPa at depths of 5.0m on moderately weak to medium strong intact siltstone (at the location of BH01, BH02 and BH04).<br/><br/>Based on above the route is considered to be More Favourable given the lesser potential (lower risk) for impact than SE15 given the extent of the interactions.</p> | 3 |
| <p><b>c)Hydrology / Water quality</b></p> <p>The assessment for hydrology will compare the suitability of each pipe route in terms of its hydrology and will involve collation of existing hydrological information of each route in order to identify, quantify and assess its potential hydrological impacts at the potential routes and surrounding lands. This assessment will consider potential flood risk (coastal, fluvial, pluvial, groundwater and artificial drainage systems), potential impacts caused by drainage discharge, and the potential to increase flooding downstream at each of the potential routes. Preference will be given to a route that is unlikely/less likely to result in hydrological impacts at the potential routes and surrounding lands.</p>                                                                                                                                                                                                                                                 | <p><b>More Favourable</b></p> <p>The route does not cross any surface waterbodies that have hydrological connectivity to receiving WFD watercourses / Nature 2000 sites downstream within the Lower Shannon Estuary.<br/><br/>No risk of contamination during construction phase even in absence of mitigation measures. No risk of deterioration of current status of the WFD waterbodies.<br/><br/>Based on above the route is considered to be More Favourable given the lesser potential (lower risk) for impact than SE15 given the extent of the interactions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3 |
| <p><b>d)Noise and Vibration</b></p> <p>Potential impacts along the pipeline route are mostly associated with construction noise on sensitive receptors (residential dwellings, schools, healthcare facilities, retirement homes and churches) located nearby. The assessment takes account of the number of receptors within fixed distances up to 500m from the route. Preference is to be given to a site which is less likely to result in noise &amp; vibration impacts.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>More Favourable</b></p> <p>The highest potential for noise and vibration impact from a pipeline occurs during the construction phase. During this time potential noise and vibration impacts will arise from activities such as earth moving, rock breaking, piling and tunnelling works, general civil and structural engineering works, traffic noise, both near the construction sites due to HGVs and construction vehicles, and potentially remote from the sites caused by traffic diversions, and vibration could impact on sensitive receptors due to piling, possible rock blasting, the use of tunnelling equipment or the use of heavy vibrating compaction machinery. The impact would be dependent on distance between the vibration source and the sensitive receptor.<br/>Short term noise impacts associated with piling and hydrostatic testing during commissioning may also occur.<br/>Operational impacts are not likely from the pipeline.<br/>Given the short length of pipeline and limited affected sensitive receptors SE7 is considered more favourable</p>                                                                                                   | 3 |
| <p><b>e)Land-use</b></p> <p>The consideration of existing land uses will be used to inform the selected pipeline route. For example, preference will be given to a site that utilises land which wouldn't otherwise be sought for an alternative use. Commonage land will also be avoided where possible.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Neutral</b> - The pipeline route is zoned greenfield land.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 |
| <p><b>f)Climate</b></p> <p>Preference will be given to pipeline routes that are less susceptible to other climate related impacts not already captured.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Neutral</b> - No differentiator</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2 |
| <b>Planning criteria for consideration</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |
| <p><b>g)Planning History / extant permissions:</b></p> <p>In assessing the planning history of a candidate site, planning records will be reviewed through the website of the relevant Planning Authority and, where necessary, the website of An Bord Pleanála. Consideration will be given to granted planning applications and the implications on these, if any, of the expected intensification and/or development at each potential site.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p><b>Neutral</b></p> <p>No relevant planning history which would affect the construction of the required pipeline.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2 |
| <p><b>h)Land Use</b></p> <p>Preference will be given the route that minimised impact on the existing land uses. Less preference will be given to a pipe route which has the greater propensity to cause disruption to the existing land uses being traversed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Mostly Greenfield, Some Forestry and Agriculture land</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2 |
| <p><b>i)Landowners</b></p> <p>The assessment will seek to minimise the quantum of land that may need to be impacted in the interest of the common good e.g. to minimise overall administrative burden (including procurement costs, additional licensing requirements etc.), potential for inconvenience etc. Preference will be given to pipe routes that:<br/>- minimise to the extent practicable the quantum of land required,<br/>- minimise to the extent practicable the number of landowners that the proposal directly impacts (the greater the number of landowners the greater the administrative requirements including CPO requirements); and<br/>- minimise to the extent practicable the level of impact on landowners (including amount of land take, location of land take etc.).<br/>It is assumed that CPO powers will exist at this point in the site and route selection process, although any decisions made on this basis will be re-evaluated if it is confirmed that CPO powers will not be available.</p> | <p><b>More Favourable</b></p> <p>CE57250F Freehold, CE58461F Freehold, CE58461F Freehold, CE57250F Freehold, CE29818 Freehold, CE30176F Freehold, CE46247F Freehold, CE34480F Freehold, CE22613 Freehold, CE6002F Freehold, CE30176F Freehold, CE8602F Freehold, CE46251F Freehold, CE19340F Freehold, CE9540 Freehold, CE6623 Freehold, CE345 Freehold.<br/><br/>Given the limited number of landholders to be negotiated with and the existence of the NTS in the area and landowner familiarity, SE7 is deemed more favourable.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3 |

Step 5 Detailed Assessment

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Site SE7 Culivreen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <p><b>d) Archaeology, Cultural and Architectural Heritage</b></p> <p>The assessment of routes will include desktop review of archaeology, cultural and architectural heritage data bases. Route walkovers may also be arranged depending on outcomes of desktop review. Preference will be given to routes that are located away from shipwrecks and archaeological sites</p>                                                                                                                                                                                                                    | <p><b>Neutral</b> – The constraints remain unconfirmed, and the site demonstrates no identified archaeological features requiring avoidance or significant mitigation at this stage. The potential for uncovering assets of value remains. The absence of confirmed constraints may reflect the lack of field survey.</p> <p>The relatively short pipeline length (c. 0.87 km) limits the extent of ground disturbance and reduces the likelihood of archaeological impacts</p> <p>Designated Sites:<br/>No RMPs or NIAH sites within the proposed development area.</p> <p>CL085-D17, is in proximity to the site is a redundant record and is isolated as possible 'tree ring'</p> <p>Confirmed Constraints (identified through testingsurveys): Data based on desk-based assessment only.</p> <p>Potential Constraints (identified through desktop review):<br/>A review of cartographic sources, aerial photography and topographical files from the National Museum of Ireland have not highlighted any sites, features or finds of potential archaeological interest within the site.</p> <p>The Cultural Heritage Impact Assessment identified that the subject site area has a general greenfield archaeological potential to reveal features or finds of archaeological significance particularly given its location in immediate proximity to the River Shannon, which would have attracted settlement activity throughout all periods.</p> <p>Constraint Extent: Constraints, if present, are unquantified and currently limited to desktop-based potential only.</p> <p>Constraint Sensitivity: Overall archaeological sensitivity is considered low to moderate pending further field investigation.</p> <p>Certainty: Certainty is low due to the absence of field survey or intrusive investigation.</p> | 2   |
| <p><b>e) Specific Development Plan Policies/Objectives</b></p> <p>Development Plan Policies will be reviewed and the potential impact of expected intensification and/or development at each potential site on the realisation of specific policies will be considered. Such policies generally include but are not limited to: access and rights of way, amenity areas, landscape, cycle ways/pedestrian routes, and Specific Local Objectives (e.g. safety zones/amenity objectives/long term roads objectives/transport policies).</p>                                                        | <p><b>Neutral</b> - Policy will have limited impact on Pipeline</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2   |
| <p><b>f) Accesses and Traffic</b></p> <p>The access and traffic assessment will involve an assessment of the road network near each site. The junctions and roads considered most likely to be impacted by traffic movements associated with both construction and operation will be assessed in terms of suitability and road safety. The assessment will consider visibility at access points, capacity of the road network based on traffic survey data, and the operation of nearby junctions.</p>                                                                                           | <p><b>More Favourable</b></p> <p>Only one road crossing identified. The road crossing (of R473) point identified by Concept Definition. Crossing length is approximately 10m with short length of downstream pipeline to connect to NTS.</p> <p>Construction methodology for crossing expected to be open cut or trenchless technology. Given the short length of the crossing it is expected that the construction of the crossing itself will be of very short duration and unlikely to give rise to road capacity, traffic impacts or safety issues under standard temporary traffic management regime. Vehicular crossing of R473 to facilitate construction of downstream pipelines / hot tap (e.g. material delivery, machinery) similarly expected to be of short duration and undertaken under an appropriate traffic management regime during working hours. Note that the short duration of downstream pipeline and its proximity to the terminal site will give rise to limited crossing movements.</p> <p>In overall terms no significant impact in terms of traffic impact, safety (including visibility) and the operation of nearby junctions is anticipated. With only one crossing versus c20 crossings for BE15 it is considered that BE7 is more favourable</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3   |
| <p><b>g) Local Receptors</b></p> <p>The impact of the development on local receptors, incorporating the technical, environmental and planning considerations above, will be considered, including public amenity areas, and tourist sites.</p>                                                                                                                                                                                                                                                                                                                                                   | <p><b>Neutral</b> - Pipeline will have limited impact on Local Receptors</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2   |
| <p><b>h) Landscape &amp; Visual Impact</b></p> <p>The assessment of landscape and visual impacts will involve a review of the relevant County Development Plan to identify designated Landscape Character Areas, the presence of any designated scenic routes, protected views and prospects, nearby landmarks or recorded monuments. Other landscape policies and objectives that might inform the nature or scale of expected intensification and/or development at each potential site. Visibility of proposed development from nearby receptors and potential for screening development.</p> | <p><b>Neutral</b> - Pipeline will have limited impact on Landscape &amp; Visual Impact</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2   |
| Technical, Environmental, Planning Criteria Sub-Total (Excluding Financial)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 110 |

Legend as per Methodology

| Classification Categories | Key |
|---------------------------|-----|
| More Favourable           | 3   |
| Neutral                   | 2   |
| Less Favourable           | 1   |