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INTRODUCTION

- 3.1 This chapter provides a description of the reasonable alternatives studied by the Applicant, which are relevant to the proposed project and its specific characteristics. It also sets out the context for the alternative assessment by first setting out the need for the development with respect to national and regional policy as well as national renewable energy and climate change targets.
- 3.2 Careful consideration of alternative options throughout the design process provides one of the most effective means of reducing the environmental effects of a project. Following the establishment of the need for the development, the chapter details the main alternatives considered by the applicant during the evolution of the design, along with an indication of the main reasons for selecting the chosen option and a comparison of the environmental effects.

Statement of Authority

- 3.3 This chapter has been prepared by Lynn Hassett, Associate EIA Co-ordinator at SLR Consulting.
- 3.4 Lynn has a BSc in Applied Ecology (2000) and a MSc in Environmental Impact Assessment (2001). She has 15 years of experience of in EIA across the not-for-profit, public and private sectors in the UK and Ireland. She has worked on both the review of EIA on behalf of planning authorities assessing applications and in the production of them to support planning applications being lodged. She is a Practitioner member of the Institute of Environmental Management and Assessment, which she is a member of since 2001. She is also a Full Member of the Institution of Environmental Sciences, which she joined in 2023.
- 3.5 Lynn has acted as a project manager of the EIA process on a number of urban development, wind and quarry projects with responsibility for the co-ordination between project designers and the entire multi-disciplinary environmental team. As a generalist, she has also written the introductory chapters of a large number of EIARs, including the Introduction, Project Description, Alternatives, Population and Human Health, Material Assets, and Major Accidents and Disasters, co-ordinating with the wider EIA team for input.
- 3.6 The Chapter was reviewed by Aislinn O'Brien, MSc, MCD, MIPI, MRTPI. Aislinn is a chartered town planner with over 16 years professional planning experience. During this time Aislinn has project managed and coordinated numerous planning applications and EIARs.

THE NEED FOR THE DEVELOPMENT

- 3.7 The existing boilers at the Medite facility are approaching the end of their design life and require replacement. The proposed new energy system will see the introduction of a new, modern combustion, air filtration, and treatment system in line with European emissions performance for the best available technology. It will incorporate substantially improved technology that will guarantee the continued operation of the plant, secure greater energy efficiency and reduce environmental emissions. Importantly, the project will sustain continued employment in the region. From a national perspective, the project is critical to enable Medite to maintain its competitiveness internationally.
- 3.8 The new infrastructure proposed for the site is designed to meet the factory's significant heat requirement. The existing gas fired boilers will be replaced with two new biomass-fired energy plants,

one for each of Medite's production lines. As the existing boilers are approaching the end of their design life, their replacements will secure the continued operation of the plant.

- 3.9 Not only will investment in new renewable energy systems bring several benefits to Medite in terms of competitiveness and efficiency as a manufacturing facility but also in respect of its ability to meet new environmental targets for carbon emissions reductions. The specific benefits include:
- Reduced carbon emissions by reducing natural gas consumption for exceptional use as a back up generator fuel source;
 - Reduced waste through use of production waste as fuel;
 - Energy savings via improved thermal efficiency; and
 - Reduced energy costs.
- 3.10 At a strategic level, the need for the Project is supported by International, European, and National environmental and energy commitments and policies.
- 3.11 Under the Kyoto Protocol and the Doha Amendment, during the first commitment period, 37 industrialized countries and the European Community committed to reduce GHG emissions to an average of five percent below 1990 levels. During the second commitment period, various parties committed to reduce GHG emissions by at least 18 percent below 1990 levels in the eight-year period from 2013 to 2020.
- 3.12 The Conference of Parties (COP) is the decision-making body responsible for monitoring and reviewing the implementation of the United Nations Framework Convention on Climate Change. The COP meets every year, unless the Parties decide otherwise. The Paris Agreement was established at COP21 in Paris in 2015 and is an important milestone in terms of international climate change agreements. It is a legally binding international treaty on climate change, the goal of which is to limit global warming to well below 2°, preferably to 1.5° Celsius, compared to pre-industrial levels.
- 3.13 In October 2014, the European Council agreed the 2030 Climate and Energy Framework, which included actions such as setting out targets for reducing GHG emissions and reforming the EU Emissions Trading Scheme (ETS). The Framework proposed a commitment to an overall EU reduction of at least 40% in GHG emissions by 2030 compared to 1990 levels. The EU ETS legislation was revised in 2018 to enable it to achieve the EU's 2030 emission reduction targets in line with the 2030 Climate and Energy Policy Framework and as part of the EU's contribution to the 2015 Paris Agreement. The EU ETS is implemented in Ireland under S.I. 490 of 2012 and amendments and S.I. No. 261 of 2010 and amendments. The Effort Sharing Regulation was adopted in 2018 as part of the EU's implementation of the Paris Agreement. It established binding annual GHG emission targets for Member States for the periods 2013-2020 and 2021-2030. These targets concern emissions from most sectors not included in the EU ETS, such as transport, buildings, agriculture and waste.
- 3.14 In December 2018, the revised Energy Efficiency Directive, the revised Renewable Energy Directive and the new Governance Regulation were formally adopted. The new regulatory framework includes a binding renewable energy target for the EU for 2030 of 32% with an upwards revision clause by 2023. This agreement will help the EU meet the Paris Agreement goals. The commission has also indicated an intention to adopt the increased target of 55% at the EU's Nationally Determined Contribution (NDC) under the Paris Agreement by the end of 2020. As well as the target being given legislative force in the EU through the proposed EU Climate Law, it will oblige all EU institutions across all areas of competence, and the Member States, to work collectively to achieve the target of 55%. Provisions include:

- Sets a new, binding renewable energy target for the EU for 2030 of 32%, including a review clause by 2023 for an upward revision of the EU level target.
- A financial framework for investors is to be established to facilitate investment in renewable energy projects.
- Increases competition and market integration of renewable electricity.
- Will reduce dependence on energy imports and increase energy security.
- Improves the design and stability of support schemes for renewables.

3.15 The European Union is currently undertaking further changes to the Renewable Energy Directive (RED III). This is expected to expand the requirements for a more sustainable use of bioenergy in line with ambitious climate goals. The proposal amendments were written in July 2021 with further agreements in March 2023, the agreement requires formal adoption by the European Parliament and the council. After this process is completed, the new legislation will be published and enter into force.

3.16 Additionally, geopolitical tensions in Ukraine in tandem with decarbonisation goals in recent times have brought into sharp focus the importance of the divestment of fossil fuels and the strengthening of national and European energy security and local supply. Recent REPowerEU legislation from Europe notes that the rollout of renewable energy projects to be a matter of "overriding public interest".

3.17 The EU is lagging on decarbonisation targets, with a requirement to scale up projects that can contribute to them. As the REPowerEU framework rolls out, the role of national policy will be to adapt the ambitious decarbonisation and security of supply requirements and roll them out through policy and legislation, while speeding up the permitting of renewable energy projects. Ireland has already anticipated this with the release of the Climate Action Plan of 2024 (CAP24):

"The war in Ukraine has had a significant impact on the cost and security of our energy supply. In response to this, the EU launched the REPowerEU Plan in 2022 which aims to phase out the use of Russian fossil fuels and fast-forward the green transition. This includes enhanced energy savings, diversification of energy supplies and accelerated roll out of renewable energy in homes, industry and power generation by 2027."

3.18 Current national Government policy is becoming increasingly focussed on the need to reduce the use of fossil fuels and anthropogenic greenhouse gas emissions by promoting the generation of renewable electricity, including from biomass.

3.19 The Irish Government, through the Climate Action & Low Carbon Development (Amendment) Act 2021, commits to achieving 'net-zero' emissions by 2050. The latest Climate Action Plan published on 20th December 2023 (CAP 24) upholds the previously set target to up to 80% renewable electricity for the country by 2030. With respect to the Industry sector, biomass is identified as a key, albeit with limited resource, fuel for decarbonisation where alternative methods are not commercially or technically viable.

3.20 CAP24 underpins the ambition of Ireland in delivering upon its EU decarbonisation targets. It does this by setting out clear 2030 targets for each sector and the expected emissions savings that will result. The analysis presented in this Plan shows the rapid rate of climate change that is being experienced and that unprecedented growth in renewables is being driven by dramatic cost reductions, increased policy support and improved competitiveness in relation to fossil fuel

alternatives. However, actions to reduce emissions must be significantly accelerated in the period to 2030.

- 3.21 The Plan also sets out the ultimate objective of achieving a transition to a competitive, low-carbon, climate resilient, and environmentally sustainable society and economy by 2050. Corrective actions are identified for each sector found not be in compliance with its sectoral emission ceiling. For the Industry sector, an overshoot of the carbon budget of ~4.4 MtCO₂eq. in the period 2021 to 2025, and ~9.5 MtCO₂eq. in the period 2026 to 2030 is forecast. One of the key actions highlighted is to Expand and enhance supports with a focus on achieving energy demand reduction, electrification, and biomass adoption in industry.
- 3.22 The EPA published its Greenhouse Gas (GHG) emissions projections for the period 2022-2040 in June 2023. The projections indicate that Ireland will achieve a reduction of 29 per cent in Greenhouse Gas (GHG) emissions by 2030 compared to a target of 51 per cent. The industry sector is projected to be one of the worst performing sectors in relation to the sectoral emission ceilings set by the Government's carbon budget programme. Although the full target for 70-75% share of carbon neutral heating in Industry is not modelled in the projections, it is clear that all available options for the implementation of efficiency measures and renewable heat generation need to be delivered imminently if 2030 climate targets have any prospect of being achieved.
- 3.23 The Regional Spatial and Economic Strategy for the Southern Region acknowledges the potential for biomass technology to contribute to a switch from fossil fuel. Specifically, it promotes the efficient use of bio-based waste resources as part of a broader strategy to develop a Bioenergy Implementation Plan for the Region. It cites the renewable energy hub as an attribute of one of its key towns, Dungarvan, which is supported by the biomass energy plant developed by GSK for its manufacturing plant there.
- 3.24 The Proposed Development will generate power at Medite with 100% sustainable biomass as the fuel source and will represent a major milestone in the transition to a decarbonised enterprise in line with CAP24 and regional objectives.
- 3.25 At a basic level the use of solid biomass for electricity generation is regarded as carbon neutral. However, the accounting rules for quantifying the contribution that the use of biomass can have in reducing GHG emissions are complex and must take account of the interaction of the type and source of the feedstock, together with the variety of available transportation, processing, and production pathways. The European Commission's position is that; *bioenergy can play a key role in achieving the EU's renewable energy targets for 2030 and beyond. However, biomass for energy must be produced, processed and used in a sustainable and efficient way*¹.
- 3.26 Sustainability of the fuel source has been considered by the developer as part of the EIA process and has resulted in a fuel mix that meets sustainability criteria at defined by RED II and RED III but also supports principles of the circular economy. This is discussed in **Chapter 11 – Material Assets**.
- 3.27 **Chapter 9 - Climate** of this EIAR also examines climate change impacts of the Proposed Development and their significance and outlines any mitigation and adaptation measures that have been identified in order to reduce the impact of the development.

¹ Brief on biomass for energy in the European Union (2019)

REQUIREMENTS OF THE EIA DIRECTIVE

- 3.28 The requirement in relation to alternatives in the EIA process is set out in Directive 2011/92/EU, amended by Directive 2014/52/EU "the EIA Directive", in Article 5 (1)(d), which states that an EIAR should include:
- "A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment".*
- 3.29 Article 5(1)(f) of the EIA Directive requires that the EIAR contains "any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."
- 3.30 Annex IV of the EIA Directive states that the information provided in an Environmental Impact Assessment Report (EIAR) should include a:
- "Description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*
- 3.31 The alternatives considered have been described in line with the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (May, 2022). The Guidelines state that:
- "The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."*
- 3.32 EU Commission EIA guidance² also confirms that developers need to provide the main reasons for selecting the chosen option, but that "intricate" explanation is not necessary provided the reasons are transparent.
- 3.33 This EIA process has been undertaken for the upgrading of infrastructure at an existing operational facility, which is a major source of local employment. As such, the scope of alternatives options that could realistically be considered is largely focussed on the alternative technologies to be developed at the site.
- 3.34 Continuous input from a range of technical environmental experts involved in the EIA process has influenced the consideration of alternatives for the Proposed Development, as set out below.

² European Union (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)

ALTERNATIVES CONSIDERED

- 3.35 In an effective EIA process, different types of alternatives are considered at several key stages during the process. As environmental issues emerge during the preparation of the EIAR, alternative designs may need to be considered early on in the process or alternative mitigation options may need to be considered towards the end of the process.
- 3.36 The alternative options considered in the evolution of design of the Proposed Development is set out under the following headings:
- 'Do Nothing' Alternative
 - Alternative Project Locations
 - Alternative Generating Processes
 - Alternative Biomass Fuels -100% Indigenous Sources
 - Alternative Technology

'Do Nothing' Alternative

- 3.37 A 'Do Nothing' scenario represents a continuation of trends currently occurring at the site, and this section sets out the likely environmental implications should the proposed project not proceed.
- 3.38 In this case, the continuation of trends would mean no investment would be made in upgrading the existing energy infrastructure at the Medite Plant. Continued reliance on and increase in fossil fuel use would follow, as the applicant requires a stable source of fuel to support existing Medium Density Fibreboard (MDF) production at the plant. This will further contribute to greenhouse gas emissions, and hinder Ireland in its commitment to meet its target to increase electricity production from renewable sources and to reduce greenhouse gas emissions. There would also be a lost opportunity to reuse by-products (Medite residues) from the production process for the production of renewable energy in support of that process which results in the material use of biomass over its energy use. Medite residues, with the exception of a small quantity of bark, which can be used in the horticultural industry, has no other use other than reuse on site. Its use on site also requires less transportation and emissions associated with its removal off site.
- 3.39 The missed potential for enhanced development of an indigenous wood-based production industry would limit the potential of Medite residues (by-products) and Forestry/Sawmill residues to be re-used as part of a circular economy. It would also undermine existing employment in the sector and remove the potential of Medite to further maintain employment.
- 3.40 Existing gas energy infrastructure would eventually come to the end of its working life and cease to provide sufficient energy to support the production process.
- 3.41 As the boiler system / energy plant are essential elements to the working function of the facility, their breakdown would result in the decommissioning of the MDF Manufacturing facility and its complete closure. There would be a direct loss of employment and knock-on effect on suppliers and distribution companies as well as a range of indirect services.
- 3.42 In the 'Do Nothing' scenario, the potential residual environmental impacts of the proposed development as set out throughout this EIAR will not occur and noise, water and air emissions currently controlled under the facility's IPC licence would eventually cease.
- 3.43 Notwithstanding the planning conditions requiring decommissioning of the plant and instigation of the agricultural land uses on the site, given the lands industrial zoning and existing employment use,

it is likely that some form of industrial / manufacturing or commercial activity not associated with MDF manufacturing could be undertaken at the site. Should this occur, the principal manufacturing buildings would unlikely be suitable for other uses and would need to be demolished and new buildings and structures put in place. This would lead to further indirect greenhouse gas emissions given the embodied energy required to produce new structures as well as the waste of the embodied energy already involved in the production of the existing structures on site.

- 3.44 If the plant is decommissioned and demolished, critical infrastructure investment by Medite, in terms of finance and embodied energy, would be wasted. This includes recent major investment in manufacturing plant upgrades in 2018. Other than generating electricity through steam fuelled by either gas or biomass, there is very limited potential for other future uses for the existing plant and infrastructure other than recovery and recycling of the scraped metal.

Alternative Project Locations

- 3.45 Some locations have more inherent environmental sensitivities than others. Depending on the type of project and the range of alternatives which the developer can realistically consider, it may be possible to avoid environmentally sensitive sites in favour of those which have fewer constraints.
- 3.46 The MDF facility is already in place and has been operational on the site at Redmondstown since 1985. The additional works proposed to continue operations at Medite site are within the existing footprint of the facility and this is not a proposal to build a new facility on a green field site. The existing landuse and environmental baseline is therefore of an operating, industrial facility which is an established source of local employment. Environmental emissions from the active site are kept within acceptable limits in line with the facility's existing IPC licence.
- 3.47 Given the required investment is in existing infrastructure at this established site, an assessment of alternative site locations was not considered appropriate. As there is also a requirement for replacement energy plants to be located in close proximity to each of the production lines, relocation of the replacement energy plants within the wider Medite facility, although possible, would represent a much larger financial and technical outlay that would render the project unviable.

Alternative Generating Processes

- 3.48 Medite is connected to the national grid through the 110kV substation and supply of energy from the grid was considered as the main alternative energy generating process. Given the exceptionally high heat requirements for the MDF production process the supply of energy from the grid was considered a high cost option. The transition of the national grid to renewable energy sources from the prevailing fossil fuel dependence relies on the successful implementation of a number of wind and other large scale renewable projects across the Country. The applicant would have no direct control over the environmental credentials of its energy source, nor over its supply at a time when there are concerns over the guarantee of availability of a continued steady supply of energy from the national grid.
- 3.49 Given the opportunity presented to the applicant by the available fuel stream in the form of Medite residues, and its recognised potential for heat generation it was considered to represent a more sustainable option, by ensuring the reuse of a by-product without transportation. Through the supply of additional sustainable biomass requirements via the forestry industry, the applicant can access a renewable energy source. This is policy compliant and in terms of financial viability, it would involve lower potential costs to Medite from EU ETS compliance, whilst also contributing towards the overall EU reduction targets of EU ETS members.

Alternative Biomass Fuel Mix

- 3.50 Analysis of the requirements of Renewable Energy Directive (EU) 2018/2001 (RED II) of the European Parliament dated 11 December 2018, on the promotion of the use of energy from renewable sources has been carried out in order to determine appropriate options for fuel sourced by the applicant.
- 3.51 It is not considered that there is any other reasonable alternative to the proposed fuel mix if a renewable source is to be used to power the replacement energy plant. Hydrogen fuel is not sufficiently well known or available to the applicant. Other sources of biomass such as vegetable oil, biogas and food waste are not available in the local area on the scale required by the applicant, nor is the technology for its use sufficiently advanced. Wood biomass is readily available as a by-product from existing operations, is well understood to the applicant and is capable of generating the heat required for energy production at the Medite plant, hence it was selected as the fuel of choice.
- 3.52 Renewable Energy Directive III which was adopted in October 2023, has also been considered. This revision to the directive strengthens the sustainability criteria for the use of biomass for energy, to reduce the risk of unsustainable bioenergy production. This specifies that woody biomass is used according to its highest economic and environmental added value in the following order of priorities: 1) wood-based products, 2) extending their service life, 3) re-use, 4) recycling, 5) bioenergy and 6) disposal. On balance of economic and environmental considerations, the most sustainable option for use of waste biomass from the Medite plant is considered to be energy recovery helping to reduce energy generation from non-renewable sources, as supported by REDIII Directive.
- 3.53 Medite’s current installation includes combustion equipment that use natural gas and biomass. Medite’s current procurement of Irish-origin biomass is from forest residue and Sawmill Residues. The Proposed Development will result in an increased requirement for this material which will also comprise Irish-origin biomass from forest residue and Sawmill Residues.
- 3.54 The increased requirement for Irish-origin biomass from forest residue and sawmill residues will be met by sustainably sourced material in recognition that *‘Biomass for energy must be produced, processed and used in a sustainable and efficient way in order to optimise greenhouse gas savings and maintain ecosystem services’*.³
- 3.55 To this end, additional fuel requirement is consistent with European policy framework for ensuring the sustainable sourcing of biomass. This framework includes:
- Renewable Energy Directive (RED) Directive 2009/28/EC which imposed requirements for biofuels and their ability to meet certain sustainability criteria. These were applied to bioliquids for heat and power but not to other forms of biofuels such as solid biomass.
 - Renewable Energy Directive II (RED II) EU 2018/2001 which expanded the sustainability and GHG emission criteria to also include solid and gaseous biomass fuels. To be deemed ‘sustainable’, Member States where the biomass originated from must also follow sustainability criteria and be in compliance with the requirements of the EU Land Use, Land Use Change and Forestry (LULUCF) Regulation (EU) 2018/841. Namely:
 - Be a signatory of the Paris Agreement

³ https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biomass_en

- Submit a nationally determined contribution to the United Framework convention on Climate Change (UNFCCC)
 - Have a national system in place for accounting for LULUCF Emissions
 - Ensure that emissions do not exceed removals.
- 3.56 The biomass will be sourced from within the island of Ireland. This is regulated in the Republic of Ireland under the Forestry Acts 1988 to 2020 and Forestry Regulations 2017 to 2023. Where the biomass is sourced from Northern Ireland it would be required to meet the requirements of UK Forestry regulations. These legislative provisions ensure forestry operations and activities are carried out in compliance with the principles of sustainable forest management and meet the following criteria of the EU ETS & RED II:
- Legal harvesting
 - Ensuring forest regeneration of harvested areas.
 - Designated areas are sufficiently protected.
 - Harvesting is carried out whilst considering soil quality and biodiversity to minimise negative impacts.
 - Harvesting maintains or improves the long-term production capacity of the forest.
- 3.57 As a result of the requirements of RED II and RED III, the proposed fuel mix will be derived from Irish-origin biomass from forest residues from within the Republic of Ireland and potentially Northern Ireland and Sawmill Residues. Other sources of fuel including fuels imported to the island of Ireland were discounted on the basis of potential non compliance with RED II and RED III.
- 3.58 **Chapter 9 Climate** and **Chapter 11 Material Asset** of this EIAR provide further detail on the proposed source of biomass fuels for the Proposed Development.
- 3.59 Both sources of additional fuel comply with the requirements of RED II and RED III as is detailed in **Chapter 9 Climate**.

Alternative Technology

- 3.60 One main alternative was considered in relation to the technology used for the Proposed Development. This alternative considered the possibility of replacing both energy plants with one CHP which would meet the energy requirement of both MDF production lines. When compared to boiler technology, the provision of a singular CHP resulted in the need for a greater volume of fuel including recovered wood, which would have a knock-on effect in terms of embodied energy for the production and transport of fuels and the emission of greater CO₂ from more fuel.
- 3.61 The capital cost of a CHP plant would also be significantly higher than the boiler replacement. A factor of that higher cost is that a backup gas boiler capable of providing the same quantum of heat to the process as the CHP would be required. The gas backup boiler would be required as a CHP would have max 90% availability but the MDF process requires 98% availability.
- 3.62 Its configuration as a singular plant was also unsuited to the production lines configuration at Medite, where CHP maintenance requirements would involve disruption to both production lines simultaneously. Boiler technology as proposed would support each production line independently

and would maintain continuous production at the plant during maintenance periods. Hence, the choice of two new biomass-fired energy plants, one for each of Medite's production lines, was chosen as the preferred technological option.

SELECTED ALTERNATIVE

- 3.63 For the reasons set out above it is considered that, of the reasonably available options available to the applicant for continuation of the Medite facility in a manner that meets the national and wider requirements in terms of a transition away from reliance on fossil fuels, the proposed development represents the most environmentally acceptable option. The continuation of the facility will contribute to the long-term sustainability of the community in terms of providing continued employment and a mix of land uses in the Clonmel environs.