



Bulk Infrastructure Group Green Bond Second Opinion

June 09, 2022

Executive Summary

Bulk Infrastructure Group AS is a private company that provides industrial real estate and digital infrastructure services in the Nordics. With annual revenues of NOK 366 million, Bulk develops and operates warehouses, terminals, logistics parks, data centres, and subsea and terrestrial dark fibre networks.

Under its 2022 green bond framework, Bulk seeks to finance or refinance green buildings, sustainable digital infrastructure, and energy efficiency. The building categories are shaded Light to Medium Green. For new construction, the updated BREEAM Very Good standard now requires accounting for embodied carbon in building materials but still lacks absolute energy performance criteria that go beyond regulation. Therefore, it is positive that the additional energy label requirement of EPC A has been included, which will likely support better energy performance than regulation, hence the Medium Green shading. Renovated commercial buildings with 30% less specific energy demand relative to building codes at first construction could also qualify. As initial construction might have happened many years or even decades ago, a 30% improvement over decades is not necessarily very ambitious and has therefore been allocated a Light Green shading. Sustainable digital infrastructure projects are assigned Medium Green due to their robust power usage effectiveness (PUE) and global warming potential thresholds for data centres. Sub-sea data cables are shaded Light Green due to the benefits from connecting data centres using primarily renewable energy but otherwise limited ambition beyond regulatory requirements or standard practice and exposure to fossil fuels from vessels laying cables. The energy efficiency project category is shaded Medium Green as a positive contribution to the net zero transition, but limited certainty on quantified performance improvements as well as rebound and lifecycle emissions risks.

We rate the framework **CICERO Medium Green** and give it a governance score of **Good**. For the first issuance under this framework, Bulk intends to allocate 60% of proceeds towards new and existing commercial buildings, shaded Medium Green, and 40% towards energy efficient data centres, shaded Medium Green. Bulk has set a net zero by 2050 target and is taking steps to complete its carbon emissions inventory. Bulk could strengthen its governance score by reporting climate risks and other aspects following the recommendations of the Taskforce on Climate-Related Financial Disclosures (TCFD), as well as establishing an overarching sustainability strategy that anchors all their sustainability initiatives. We note that Bulk has plans to address these aspects.

SHADES OF GREEN



°CICERO
Medium Green

GOVERNANCE ASSESSMENT



GREEN BOND PRINCIPLES

Based on this review, this framework is found in alignment with the principles.



Key strengths

Bulk's exclusion of cryptocurrency mining activities, robust power usage effectiveness thresholds for data centres eligible under the framework, and efforts to reuse excess heat from its data centres are all strengths.

Bulk has a clear exclusion of cryptocurrency mining activities, where its customers are not permitted to use Bulk's colocation and connectivity services to mine digital cryptocurrencies. Such nascent technologies are known for their high energy consumption¹, and their economic value is still highly debated.²

Power usage effectiveness (PUE) is an important metric that describes a data centre's efficiency and how much energy is used by its equipment. The Sustainable Digital Infrastructure Alliance (SDIA), a European multistakeholder platform working to reduce the environmental impacts of the digital economy, forecasts that data centres' power use will be significant, reaching 13% of global electricity consumption by 2030. It is therefore a strength that Bulk aims to achieve a strong PUE ratio of 1.2 for new data centres and a robust ratio of 1.35-1.4 for current data centres financed under the framework, which is likely aligned to the EU taxonomy thresholds set for power use. Further, Bulk's global warming potential of refrigerants used in data centre cooling systems is measured at a low ≤ 10 , where the current EU Taxonomy threshold is not to exceed 675. CICERO Green views as a strength that the issuer surpasses and meets such thresholds.

Bulk is currently exploring various applications to re-use excess heat from its data centre operations to nearby businesses, such as a local greenhouse, as well as district heating infrastructure where feasible. Re-using the excess heat from data centres to district heating systems can often benefit the environment in the Nordic context, especially if the heat it replaces would otherwise come from waste to energy plants.³

Weaknesses

Under the framework, there are some risks of investments in vessel fossil fuel use during subsea data cable installation. Laying and maintaining subsea data cables is an emissions-intensive activity. Specialised vessels that transport and install fibre optic cables are typically powered by conventional fossil fuels such as diesel. According to Bulk, one-third of the total cost of installing such cables comes from ship operations, including the fossil-based fuels used. Although Bulk informs us that it is engaging its shipping operators on emissions reductions measures, this still constitutes significant exposure to fossil fuels for eligible projects under the framework.

Key pitfalls

Potential pitfalls include buildings that may not be more energy efficient than regulation and digital infrastructure and cables that use renewable energy but do not necessarily drive direct investments in cleaner generation. Under the framework, the energy efficiency improvement criteria of 30% or a two-step energy certificate improvement for renovated commercial buildings could be less ambitious than regulatory requirements or standard business practices. Specifically, only improving the energy efficiency of older warehouse facilities built decades ago by 30% could put such long-lived assets out of alignment with the improvements needed for a net zero future.

It is positive that Bulk is mainly using renewable energy for its data centres and connecting areas with high shares of renewables in their energy mixes, such as in Norway. However, taking advantage of sites where existing clean power is provided does not necessarily drive direct investments in new renewable energy capacity.

¹ [Recent Developments in Blockchain Technology and their Impact on Energy Consumption. Sedlmeir, et al. 2021](#)

² [The Economic Limits of Bitcoin and the Blockchain. Budish, et al. 2018.](#)

³ [Future views on waste heat utilization – Case of data centres in Northern Europe. Wahlroos, et al. 2018](#)



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1 Bulk Infrastructure environmental management and green bond framework

Company description

Bulk Infrastructure Group AS (“**Bulk**” or the “**company/issuer**”) is a private company that operates and provides industrial real estate and digital infrastructure services in the Nordics. The company invests in, develops, and operates industrial real estate (IRE), data centres (DC), and dark fibre⁴ networks. Bulk owns and operates over 10,000 km of fibre infrastructure, including both subsea and terrestrial connectivity routes. It manages three data centre sites in the Nordics, which utilise a high degree of renewable energy from the grid. Bulk’s DCs offer various services, primarily colocation⁵ and professional services⁶. In addition, Bulk develops and owns industrial buildings, such as warehouses, cross-dock terminals and logistic parks. In 2021, Bulk generated revenues of NOK 366 million and had 70 employees.

Governance assessment

Bulk has established good management and governance structures, including implementing various policies that support its overall sustainability approach. Such policies include a Code of Conduct (COC) for its employees and business partners, a waste handling policy to ensure that minimum requirements regarding recycling and re-use of materials are upheld, and a policy on prohibiting the mining of cryptocurrencies within Bulk’s colocation and connectivity services. To further implement its policies, Bulk has established an environmental impact assessment tool that aims to identify and monitor key environmental risks and potential impacts facing its business activities.

Bulk reports on sustainability related issues in its annual report, including ongoing initiatives and its vision going forward. The company is currently assessing its carbon inventory, following the Greenhouse Gas Protocol for scopes 1-3, and planning to report on its emissions. The company has committed to a net-zero by 2050 target and reducing scopes 1-2 emissions by 50% by 2030. The company informs us that it intends to verify its targets with the Science Based Targets Initiative (SBTi). Furthermore, the company informs that it will report according to the recommendations of the Taskforce on Climate-Related Financial Disclosures (TCFD) by 2023.

The framework and selection process is well-structured and is found to be in alignment with the Green Bond Principles, where all key considerations are included. The framework includes various specialised project categories catering for project-specific criteria and impact monitoring indicators.

To further strengthen its governance, the company should seek to establish an overarching sustainability strategy to anchor its current and planned environmental initiatives and reporting structures. Furthermore, the company should continue its work to identify and report climate risks following the recommendation set forth by the TCFD.

The overall assessment of Bulk’s governance structure and processes gives it a rating of **Good**.

⁴ Dark fibre is unused optical fibre that has been installed but is not currently being used for traffic and communications. Fibre-optic cables transmit information in the form of light pulses. Hence, a "dark" cable refers to one in which light pulses are not being transmitted.

⁵ Colocation facilities provide space, power, cooling, and physical security for other firms' servers, storage, and networking equipment and provide connectivity with various network service providers, aiming to reduce the overall cost and complexity of managing data centre systems.

⁶ Technical data centre services related to the installation and implementation of new solutions or expand existing solutions, as well as management services.



Sector risk exposure

Physical climate risks. Extreme weather events such as flooding and storms are becoming more frequent and intense due to climate change, and their impacts on buildings and infrastructure are expected to grow more severe over the coming years and decades. Bulk's industrial real estate assets, such as data centres, warehouses and logistic terminal operations may be directly affected.

Transition risks. Due to the profound changes needed to limit global warming to well-below 2°C, transition risk affects all sectors. Bulk is exposed to transition risks from stricter policies on improved energy efficiency and consumption requirements and an increased focus on circular economy performance for both industrial real estate and data centres in the EU. Insurance premiums may also rise as extreme weather events increase the likelihood of loss and damages to facilities.

Environmental risks. Developing industrial real estate projects risks polluting the local environment during the development stage of the project, especially concerning waste handling. Impact on biodiversity and the local habitats are also of concern throughout the lifetime of such properties. Furthermore, operating and installing subsea cables may cause negative environmental impacts such as chemical pollution, underwater noise, thermal radiation, and other consequences impacting ocean life.

Environmental strategies and policies

Emissions and target setting approach

In 2021, Bulk started work to inventory its GHG emissions based on the Greenhouse Gas Protocol. Bulk aims to be net-zero by 2050 across its Scopes 1, 2 and 3 emissions, and reduce its Scopes 1 and 2 emissions by 50% by 2030. It has also committed to reducing its emission intensity by 30% for scope 1-3 by 2030. Bulk's DCs consume most of its energy from renewable sources (98% in Norway and 67% for its DC site in Denmark).

The company informs us that its scope 3 emissions represent more than 90% of its total footprint. Bulk plans to work with its value chain and industry to obtain more accurate data on emissions, establish requirements for sustainable procurement, and include lifecycle analysis when screening both suppliers and products. Going forward, Bulk aims to align its emission targets with the SBTi. In 2022, Bulk also intends to advance its work in setting targets and identifying actions to improve energy efficiency, material management, water management, and protection of land and nature.

Energy management and buildings

Bulk utilises a voluntary Guarantees of Origin (GO) certificates scheme matched in real time by the hour with actual energy production to ensure that purchased power is from a renewable energy source, mainly hydropower. In addition, Bulk considers Power Purchase Agreements (PPA) as another energy sourcing option if the producers can demonstrate that their energy generation is 100% renewable.

In its contracts, Bulk has specifically prohibited customers from engaging in crypto mining activities or selling infrastructure to third parties for the same purpose, as such activities are highly energy intensive and could potentially lead to negative environmental impacts.



Bulk has developed more than 50 industrial real estate projects since 2006, totalling more than 500,000 sqm. Bulk aims to certify all properties over 5,000 sqm to be BREEAM-NOR, and ensure that such projects will be designed to meet energy classification standards⁷ of A or B. Furthermore, all such properties will be equipped with rooftop solar panels if feasible. As part of its construction process, Bulk intends to re-establish and restore the ecological diversity surrounding any newly built buildings.

Climate risk

The company notes that climate risk management and reporting is of growing importance and will be prioritised as a key initiative going forward. Furthermore, Bulk states that it intends to conduct a broad assessment of climate risks by the end of 2022. This assessment will follow the recommendations put forth by the TCFD, where the company aims to start such reporting processes during 2022 and issue its first TCFD aligned report in 2023. The company has also started work to explore the upcoming EU Taxonomy reporting requirements and how its business activities align with the relevant criteria set forth by the delegated acts. The company informs us that it has not experienced any interruptions or outages thus far due to extreme weather events or other climate related events.

Collaborations and partnerships

Bulk is a signatory of the Climate Neutral Data Centre Pact⁸, which focuses on five key areas including energy efficiency, clean energy, water use, circular economy, and circular energy systems to reuse the heat generated by DCs. Bulk has also committed to the roadmap established by the Sustainable Digital Infrastructure Alliance (SDIA)⁹, which targets improvements in several operational aspects of DC operations by 2030. Bulk informs us that its part of SDIA's steering committee, and actively participates in its initiatives. According to SDIA, a key area for improvement is to decrease the overall energy consumption from data centres, which may account for up to 13% of global electricity consumption by 2030. Bulk is also contributing to SDIA's efforts by working to establish an ecosystem for the management of electronic waste from its customers. Such initiatives are important, especially since the emissions created during the manufacturing process for electronic components that goes into DCs, such as servers, switches, storage, and cables, are often overlooked. Emissions stemming from these components could account for up to 40%¹⁰ of total lifecycle emissions when including emission from material extraction process, manufacturing process, and end of life uses of such components according to a recent study.¹¹ Bulk is involved in initiatives and research projects with SDIA that explore various alternatives to diesel-generators, which are used for backup power in case of grid outages or similar events. Alternatives include substituting sustainably produced fuels and looking at other longer-term solutions such as hydrogen and energy storage.

For certain sites, Bulk is exploring various applications for reusing the heat generated from its DCs, where an identified solution is to deliver excess heat to the local district heating systems. Such opportunities are being explored in Bulk's DC located in Kristiansand, where various options have been identified.

As part of its initiatives to improve energy efficiency and consumption, Bulk aims to certify its next DC projects to the BREEAM-NOR standard by collaborating with the Norwegian Green Building Council to develop a new and bespoke methodology for data centres buildings. Bulk was awarded Norway's first BREEAM-NOR certification for industrial buildings.

⁷ [NVE – Energy Labelling of Housing and Buildings](#)

⁸ [Climate Neutral Data Centre Pact](#)

⁹ [The Roadmap to Sustainable Digital Infrastructure by 2030](#)

¹⁰ In the Nordic context where a high degree of renewable energy is used, it is likely that such emissions would account for an even higher percentage when estimating life cycle emissions.

¹¹ [Copenhagen Centre on Energy Efficiency – Data centre brief series: Environmental sustainability of data centres: a need for a multi-impact and life cycle approach](#)



Implementation and oversight

Bulk's board of directors has the primary responsibility for Bulk's sustainability performance. The board approves the overall sustainability ambition and strategy. The board also reviews risks, targets, and KPIs on a regular basis. Group management is responsible for overseeing the implementation and necessary adjustments. The Head of Sustainability will participate in meetings with both the board and group management when relevant topics are on the agenda. The company informs us that such meetings take place on a quarterly basis, or on an ad-hoc basis relating to specific investments projects or related processes.

Other environmental issues

Bulk specialises in subsea fibre optic cable infrastructure installation. Such fibre optic cables are laid below the seabed using specialised vessels that run a 34-ton plough over the seabed, laying the cable at around two meters below it. Depending on the siting and route, several potential environmental impacts are associated with subsea cables, such as disturbance, underwater noise, heat emission, electromagnetic fields, and potential contamination. Bulk is currently involved in studies aimed at reducing emissions stemming from installing such subsea cables. It informs that one of its key initiatives involves working with the ship operators to require them to sail at slow speeds (slow steaming) to further reduce emissions stemming from the ships¹². Further, the company informs us that it takes ocean life and biodiversity concerns into account when assessing potential projects and identifying optimal routes to avoid environmental risks.

Green bond framework

Based on this review, this framework is found to be aligned with the Green Bond Principles. For details on the issuer's framework, please refer to the green bond framework dated May 2022.

Use of proceeds

For a description of the framework's use of proceeds criteria, and an assessment of the categories' environmental benefits, please refer to section 3.

Selection

Bulk has established a Green Finance Committee (GFC) to evaluate and select projects and assets that are eligible under the framework. The GFC is comprised of representatives from the executive team and the Head of Sustainability. The CFO chairs the committee, and decisions are made by consensus, giving each representative veto power. The GFC will meet on a semi-annual basis, or when needed to review specific investment cases.

During the selection process, relevant business units propose potential projects and assets to be financed or refinanced in accordance with the project category criteria. The GFC then assesses the eligibility of proposals according to the criteria and considers lifecycle assessments (LCA) and biodiversity and environmental impact screening. The GFC will then decide on projects to be financed and submit for final approval. The GFC reviews the register semi-annually and will remove projects that do not meet the criteria. The GFC is also responsible for managing any future updates to the green finance framework, including any expansion of the eligible categories.

Management of proceeds

Bulk will establish a green finance register (GFR) to monitor the eligible assets and projects and the allocation of the net proceeds from green bonds and loans issued under this framework. Net proceeds will be managed on a portfolio basis. Bulk will over the duration of the outstanding green bonds build up and maintain an aggregate amount of assets and projects in the GFR that is at least equal to the aggregate net proceeds of all outstanding green bonds. The GFR will form the basis for the impact reporting. Bulk informs us that there may be periods when the

¹² Bulk does not own such ships but works with partners who operate specialised vessels for such applications.



total outstanding net proceeds of green bonds and loans exceed the value of the eligible assets and projects in the GFR. Any such excess funds will be placed in a bank account or in the short-term money market. Bulk confirms that any temporarily unallocated proceeds will not be invested in any of the investments outlined in the exclusion criteria under the use of proceeds section.

Reporting

On an annual basis, Bulk will publish a report on the allocation and impact of green bonds and loans issued under this framework. The report will be made available on Bulk's website for as long as Bulk has outstanding green bonds or loans under this framework. Where relevant, Bulk informs us that it will seek to align reporting with the latest standards and practices identified by ICMA¹³ as well as the guidelines set forth by the Nordic Public Sector Issuers Position Paper on Green Bonds Impact Reporting.¹⁴ To the extent feasible, the impact report will also include a section on methodology, baselines, and assumptions used in impact calculations. Due to confidentiality clauses, loans are non-public agreements and therefore related reporting may be restricted. The issuer informs us that its current ambition is to receive a limited assurance of its allocation and impact report from an external auditor.

Allocation Report

The allocation report will, to the extent feasible, include the following components:

- Total amounts allocated
- Descriptions and case studies of selected eligible assets and projects financed
- Amounts invested in each category as defined in the use of proceeds section and the relative share of new financing versus refinancing
- Total amount of unallocated proceeds, if any

Impact Report

Bulk informs us that it aims to report on the actual environmental impact of the investments financed by its green bonds. When the actual impact is not observable or difficult to measure, Bulk will report on estimated impact instead. The impact indicators may vary with the investment category, as defined in this green bond framework. The impact metrics selected may include the following:

Category	Examples of impact indicators
Green commercial buildings	<ul style="list-style-type: none">▪ Number of new developments▪ Number of renovated buildings▪ Estimated ex-ante annual energy consumption in kilowatt hour/square meter (kWh/m²) or energy savings in megawatt hour (MWh) against the applicable buildings code
Sustainable digital infrastructure	<ul style="list-style-type: none">▪ Number of new developments▪ Power usage effectiveness (PUE) score per object
Energy efficiency	<ul style="list-style-type: none">▪ Volumes of heat reused (e.g., kWh)▪ Volume of capacity increases in electricity grid infrastructure (e.g., kilo volt (KV))
Sub-sea data cables	<ul style="list-style-type: none">▪ Grid emissions factor in national electricity grid of the countries which are being connected by cables▪ Share of renewable electricity in electricity mix of the countries which are being connected by cables

Table 1. Example impact indicators

¹³ [ICMA – Handbook: Harmonised Framework for Impact Reporting](#)

¹⁴ [Nordic Public Sector Issuers Position Paper on Green Bonds Impact Reporting](#)



2 Assessment of Bulk Infrastructure green bond framework

The eligible projects under Bulk’s green bond framework are shaded based on their environmental benefits and risks, based on the “Shades of Green” methodology.

Shading of eligible projects under the Bulk’s green bond framework

- Proceeds can be used for financing or refinancing, with a lookback period of three years
- The issuer intends to allocate 60% of proceeds towards the new and existing green commercial buildings project category and 40% towards sustainable digital infrastructure project category, such as data centre investments. Bulk intends to allocate proceeds towards the sub-sea data cables and energy efficiency project categories in subsequent issuances.
- Exclusions include financing assets related to the production, storing or transportation of fossil fuels, nuclear energy production, weapons or defence, potentially harmful resource extraction, gambling, tobacco or other drugs. Also excluded are assets not in accordance with Bulk’s investment policy or that breach internationally recognised frameworks such as the ten principles of the UN Global Compact.

Category	Eligible project types	Green Shading and considerations
New and existing green commercial buildings	<i>Development, construction and acquisition of buildings which have received certification and can document high energy efficiency. The buildings are in accordance with the following criteria:</i> <ul style="list-style-type: none">• Are certified minimum BREEAM “very-good” or equivalent AND <ul style="list-style-type: none">• Received an Energy Performance Certificate (EPC) character A	Medium Green <ul style="list-style-type: none">✓ Green building certification standards cover a broad set of issues that are important to sustainable development. At the same time, they differ considerably in their requirements for energy efficiency, embodied emissions of construction materials, related transportation emissions, and consideration of resilience.✓ For the development and construction of new buildings, the updated version of the BREEAM Very Good standard is more robust, requiring improved design and selection of construction materials with lower embodied climate emissions¹⁵, which CICERO Green views as positive.✓ The acquisition of existing buildings that are BREEAM Very Good may not be certified to the new, more robust certification standard, reducing the environmental benefits of these investments.✓ The requirement for new buildings to certify to EPC A is positive. Further, the issuer informs that commercial building projects in Denmark may receive funding under the framework if such projects meet the Danish EPC A2020 standards.✓ Investors should be aware that Bulk is investing in industrial real estate buildings that are associated with fossil fuel transportation emissions from logistics operations.

¹⁵ [BREEAM-NOR v6.0 New Construction Technical Manual](#)



Renovated green
commercial buildings



Renovated commercial buildings which have achieved an improvement in energy-efficiency of at least 30%:

- Improvement of the energy performance certificate character by at least two steps

OR

- Improvement of specific energy demand (kWh/m²) per year by at least 30% compared to the calculated energy efficiency of the building code applicable when the building was completed.

Light Green

- ✓ Renovation of buildings is positive, especially in the Nordic context where embodied emissions in the building materials typically make up for 50% of total lifecycle emissions.
- ✓ However, a two-step increase in EPC certification could potentially lead to an energy efficiency grade below current regulation, as the issuer informs us that the main project identified as potentially eligible for this subcategory is a warehouse built in the 1980s. Such buildings may be much less efficient than standard practice today.
- ✓ While it is positive that the 30% specific energy demand criterion is a quantitative performance threshold, Bulk is planning to acquire buildings constructed initially decades ago. It should be noted that this improvement relative to a baseline estimated from those previous building codes is less ambitious.
- ✓ Investors should note that specific energy demand is more commonly used in the Norwegian context and is a different metric than the primary energy demand (PED) used in the EU Taxonomy.

Sustainable digital
infrastructure



Development, construction and acquisition of energy efficient data centres and related infrastructure. The data centres are in accordance with the following criteria:

- Located in Norway, benefiting from the largely renewable electricity mix
- Have a design or actual average annual Power Usage Effectiveness (PUE) of:
 - Actual PUE 1.35-1.40 or below for data centres housed in renovated and repurposed buildings
 - Design PUE 1.20 or below for new data centres

Existing / new data centres are being / will be assessed for additional features:

- On-site renewable energy generation, e.g. rooftop solar panels
- Infrastructure to use spill heat, e.g. for heating adjacent buildings

Medium Green

- ✓ Digital solutions are expected to be an important enabling technology for climate mitigation and adaptation strategies. However, we note there are trade-offs in emissions and energy use from the increasing demand for data centres while reducing emissions in other sectors. The extent of material climate benefits from digitalisation and expanding networks is still disputed.
- ✓ It is a strength that data centres will be located where the renewable share of the energy mix is already high, such as in Norway. At the same time, this does not necessarily actively drive direct investment in additional renewable energy capacity or shift grids towards cleaner sources.
- ✓ A PUE score of 1.2 for new data centres is a leading performance threshold according to the Climate Neutral Data Centre Pact (a multistakeholder industry alliance), where its EU taxonomy aligned 2025 target for new DCs is a PUE of 1.3 in the Nordic context, and existing data centres should achieve a PUE of 1.3 by 2030. Using these goals as a reference point, the PUE threshold for renovated or repurposed buildings of 1.35-1.40 is positive but not currently fully aligned with a low carbon future as established by the EU taxonomy and the industry alliance.
- ✓ The issuer informs that it meets the criteria set by the taxonomy on the global warming potential (GWP) of refrigerants used in data centre cooling systems, where the issuers GWP is at ≤ 10, against the taxonomy requirement not to exceed 675, which CICERO Green views as encouraging.
- ✓ It should be noted that there is no widely used certification standard for data centre operations regarding energy consumption metrics and targets. However, CICERO Green views it as positive that the issuer is working with



industry alliances and other thought leaders in the industry to establish targets for energy metrics and other relevant factors.

- ✓ On-site renewable energy generation and heat reuse are well-aligned with a net zero future. Note that lifecycle emissions could be generated from raw materials sourcing, manufacturing, and installation processes. End users of spill heat could also have emissions-intensive operations absent screening criteria.
- ✓ The issuer informs us that there may be feasible energy efficiency projects that could receive funding under this framework over the next 6-12 months, but no such investments are yet confirmed and are not guaranteed to be incorporated into data centre development or renovation.
- ✓ No investments into on-site renewables have been confirmed and are not guaranteed to be included in eligible projects, but could potentially receive funding under this framework.
- ✓ The issuer informs us that proceeds allocated to any acquisitions will be pro rata so that proceeds only go towards funding eligible investments as outlined per the project criteria.

Sub-sea data Cables

Financing or refinancing of expenditures related to establishing sub-sea and terrestrial fibreoptic data-cable connections between countries

- The power needed to operate the cable is to the largest extent renewable, and no fossil assets are being financed (except emergency systems)
- The cable connects to an area where renewable electricity dominates the power mix, and where data centres can thus be operated on renewable energy

Light Green

- ✓ There are emissions and energy trade-offs when expanding digital solutions that may reduce emissions in other sectors but have their own climate footprints. Net climate benefits are currently contested.
- ✓ Fibre optic cables are the most energy efficient technology for broadband access networks, and fibre's reliance on fewer intermediate devices and amplifiers than other technologies facilitate its energy efficiency.¹⁶ At the same time, this is now a standard practice for intercontinental cables and does not necessarily represent a change from business-as-usual.
- ✓ Operating digital infrastructure using primarily energy generated from renewable sources is positive. According to the issuer, sub-sea data cables and related assets will only be considered if a high degree of local renewable power is available. However, this approach of siting where renewable energy is already plentiful does not necessarily drive direct investments in renewable energy generation or actively shift local electricity mixes towards cleaner sources. Moreover, in the absence of quantified criteria, it is somewhat unclear what constitutes an "area where renewable electricity dominates the power mix".
- ✓ The issuer has informed us that roughly 1/3 of expenditures associated with laying sub-sea cables is related to vessel operations. This creates risks that proceeds from the framework will be used for fossil fuels to power these ships over long distances, a significant potential weakness in the framework due to the climate emissions generated. Because fossil fuel-based shipping with no additional criteria would be shaded Red, not Light Green, CICERO Green encourages the issuer to avoid using proceeds from the framework for this purpose.

¹⁶ [EU Commission - Fibre is the most energy efficient broadband technology](#)




		<ul style="list-style-type: none"> ✓ It is positive that the issuer is aware of and screens for biodiversity and environmental risks and issues when assessing potential sub-sea data cable projects. While Bulk operates in more strictly regulated geographies, these efforts do not necessarily exceed regulatory requirements. Moreover, its commitment to work with ship operators to further reduce emission is encouraging but could be strengthened by quantitative emissions reduction goals or efficiency performance standards.
<p>Energy efficiency</p> 	<p><i>Measures to increase the energy efficiency, e.g. of buildings, and to reduce or replace the use of fossil energy. Examples can include:</i></p> <ul style="list-style-type: none"> • Infrastructure to use excess heat from data centres, e.g. for district heating, power generation or similar • Local strengthening of the electricity grid in Norway, e.g. transformer stations and related infrastructure to utilize the renewable energy • Replacing diesel used in back-up generators with lower-emission fuels or electricity from the grid • Advanced energy management systems, e.g. for buildings 	<p>Medium Green</p> <ul style="list-style-type: none"> ✓ Energy efficiency measures are an important contribution to the net zero transition. ✓ While individual energy efficiency measures carry little climate risk, is not clear what level of quantifiable improvements these types of eligible projects would achieve. We encourage the issuer to be aware of and mitigate potential rebound effects. ✓ Using excess heat produced from data centres is positive, and such solutions could potentially be integrated to existing district heating infrastructure. The issuer informs us that for its remote sites, where local district heating infrastructure is not available, other options will be explored such as using the excess heat for local greenhouses. Further, its positive that the issuer intends to include the re-use of excess heat as part of its impact reporting for this project category. ✓ Supporting grid infrastructure improvements to enhance renewable energy utilisation is positive. Note that these infrastructure projects could have lifecycle emissions from building materials and construction processes as well as local environmental impacts. ✓ It is positive that the issuer intends to replace backup systems for power generation that are currently running on fossil fuels. The issuer informs that such solutions could include the use of hydrotreated vegetable oil (HVO) fuel instead of diesel and other fossil fuels such as gas. Note that biofuels may create significant biodiversity and emissions risks in feedstock supply chains, including from direct and indirect land use change. According to Bulk, they plan to use waste-based (rather than food and feed crop) feedstocks that comply with EU Renewable Energy Directive II requirements to mitigate these concerns. It is positive that the issuer is involved in research projects to find longer-term solutions for such backup systems, including the use of energy storage systems (ESS) and hydro based generators. ✓ Energy management systems are an important tool for improving building energy efficiency.

Table 2. Eligible project categories









3 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated May 2022. This second opinion remains relevant to all green bonds and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Green encourages the client to make this second opinion publicly available. If any part of the second opinion is quoted, the full report must be made available.

The second opinion is based on a review of the framework and documentation of the client's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence.

'Shades of Green' methodology

CICERO Green second opinions are graded dark green, medium green or light green, reflecting a broad, qualitative review of the climate and environmental risks and ambitions. The shading methodology aims to provide transparency to investors that seek to understand and act upon potential exposure to climate risks and impacts. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The shades are intended to communicate the following:

Shading	Examples
 Dark Green is allocated to projects and solutions that correspond to the long-term vision of a low-carbon and climate resilient future.	 Solar power plants
 Medium Green is allocated to projects and solutions that represent significant steps towards the long-term vision but are not quite there yet.	 Energy efficient buildings
 Light Green is allocated to transition activities that do not lock in emissions. These projects reduce emissions or have other environmental benefits in the near term rather than representing low carbon and climate resilient long-term solutions.	 Hybrid road vehicles

The "Shades of Green" methodology considers the strengths, weaknesses and pitfalls of the project categories and their criteria. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects; weaknesses are typically areas that are unclear or too general. Pitfalls are also raised, including potential macro-level impacts of investment projects.

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, key governance aspects that can influence the implementation of the green bond are carefully considered and reflected in the overall shading. CICERO Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify and approve eligible projects under the framework, 3) the management of proceeds and 4) the reporting on the projects to investors. Based on these factors, we assign an overall governance grade: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.



Assessment of alignment with Green Bond Principles

CICERO Green assesses alignment with the International Capital Markets' Association's (ICMA) Green Bond Principles. We review whether the framework is in line with the four core components of the GBP (use of proceeds, selection, management of proceeds and reporting). We assess whether project categories have clear environmental benefits with defined eligibility criteria. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed. The selection process is a key governance factor to consider in CICERO Green's assessment. CICERO Green typically looks at how climate and environmental considerations are considered when evaluating whether projects can qualify for green finance funding. The broader the project categories, the more importance CICERO Green places on the selection process. CICERO Green assesses whether net proceeds or an equivalent amount are tracked by the issuer in an appropriate manner and provides transparency on the intended types of temporary placement for unallocated proceeds. Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs.



Appendix 1:

Referenced Documents List

Document Number	Document Name	Description
1	Bulk Infrastructure Green Finance Framework May 2022	Green Finance Framework, dated June 2022.
2	2021 Bulk Infrastructure Group AS Annual Report	Annual and sustainability reporting for 2021
3	Bulk Infrastructure Holding AS Consolidated First Half-Year 2021	Board of Directors report covering the first half of 2021
4	Bulk Infrastructure Group Presentation	Internal slide deck providing an overview of Bulk operations, strategy, and sustainability dated 9 May 2022
5	Leif Erikson Submarine Cable: Feasibility Study to Bulk Fibre Network AS	1.0 version of data cable feasibility study, including sustainability aspects, dated 22 December 2021
6	Bulk infrastructure AS Investment Committee Evaluation Form	Form used to evaluate and approve investments dated 20 August 2021
7	Code of Ethics and Business Conduct	Guidelines for behaviour dated 4 June 2019
8	Bulk Infrastructure Quality, Health Safety and Environmental Policy	Company policy on QHSE issues dated 8 September 2020
9	Waste Management at Bulk Locations	Policy on requirements for waste management dated 22 September 2020
10	Bulk Infrastructure— Environmental Best Practices	Guidelines for sustainable activities dated 13 October 2020



Appendix 2: About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO. CICERO is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international cooperation. CICERO has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995. CICERO staff provide quality control and methodological development for CICERO Green.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Green is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University, the International Institute for Sustainable Development (IISD) and the School for Environment and Sustainability (SEAS) at the University of Michigan.



- ★ **2020 External Assessment Provider Of The Year**, Environmental Finance Green Bond Awards
- ★ **2020 Largest External Review Provider In Number Of Deals**, Climate Bonds Initiative Awards
- ★ **2019 External Assessment Provider Of The Year**, Environmental Finance Green Bond Awards
- ★ **2019 Largest Green Bond SPO Provider**, Climate Bonds Initiative Awards
- ★ **2018 External Assessment Provider Of The Year**, Environmental Finance Green Bond Awards
- ★ **2018 Largest External Reviewer**, Climate Bonds Initiative Awards
- ★ **2017 Best External Assessment Provider**, Environmental Finance Green Bond Awards
- ★ **2016 Most Second Opinions**, Climate Bonds Initiative Awards