

21 October 2020

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Shipping Conditions, Citronen Project, Greenland

Ironbark Zinc Limited (“**Ironbark**”, “**the Company**” or “**IBG**”) is pleased to update its shareholders with respect to recent shipping conditions at its 100% owned Citronen Zinc-Lead Project in Greenland (“Citronen” or “the Project”), following the commissioning of a report by Canadian ice shipping specialist Fednav Ice Services.

Highlights

- Trend towards significantly improved shipping conditions seen across Arctic region mirrored at Citronen
- Multiple options exist to manage shipping to and from the Project, from ice breaking bulk carriers to close coupled towing regimes
- Ironbark is likely to focus on the chartered fleet for its shipping solution, Given the relative surplus of polar class vessels that could be available for charter during the shipping window at Citronen Fjord, when ice conditions are more favorable

IBG Managing Director Michael Jardine commented:

“As is well known, Citronen’s high Arctic location will necessitate a bespoke shipping solution and Ironbark is pleased to again be working with ice shipping specialists Fednav in updating its shipping plan.”

The trend towards more open waters during the Arctic summer is now widely cited and its impact on de-risking the shipping operation at Citronen is potentially significant. Whether it’s a potentially longer shipping season, younger ice on the shipping route, a larger charter fleet to choose from or the associated capex and opex savings, Ironbark is focused on maximising the benefits presented by this long term opportunity.”

Shipping to Citronen

Ice is present all year along the route to Citronen, but shipping becomes feasible during summer as seen in similar peer Arctic mining operations (Red Dog in Alaska currently, and the Polaris & Nanisivik Zn-Pb mines in the recent past).

Four specific events impact the exact timing of the annual shipping window:

1. Ice fracture in the Frederick Hyde and Citronen Fjords (see Figure 1) – the annual separation of the sea ice from the land, often occurs in July at Citronen;
2. Seasonal melt in the adjacent Wandel and Greenland Seas – the annual partial melt of the sea ice offshore, made up of seasonal (1st year) and perennial (multiyear) ice;
3. Openings in the sea ice pack – often impacted by local weather conditions, allows for the traverse of the shipping route with little to no interaction with areas of high ice concentration; and
4. Autumnal freeze up and ice cover expansion – the formation of new ice, again subject to local weather conditions in the early stages

Figure 1 – Example of Fast Ice Fracture at Citronen



Evolution of Ice Conditions

Summer sea ice in the Arctic is showing both an ongoing diminution in extent (see Figure 2) and an increase in the proportion of seasonal ice (see below for further details).

Figure 2 – September Arctic Sea Ice Extent

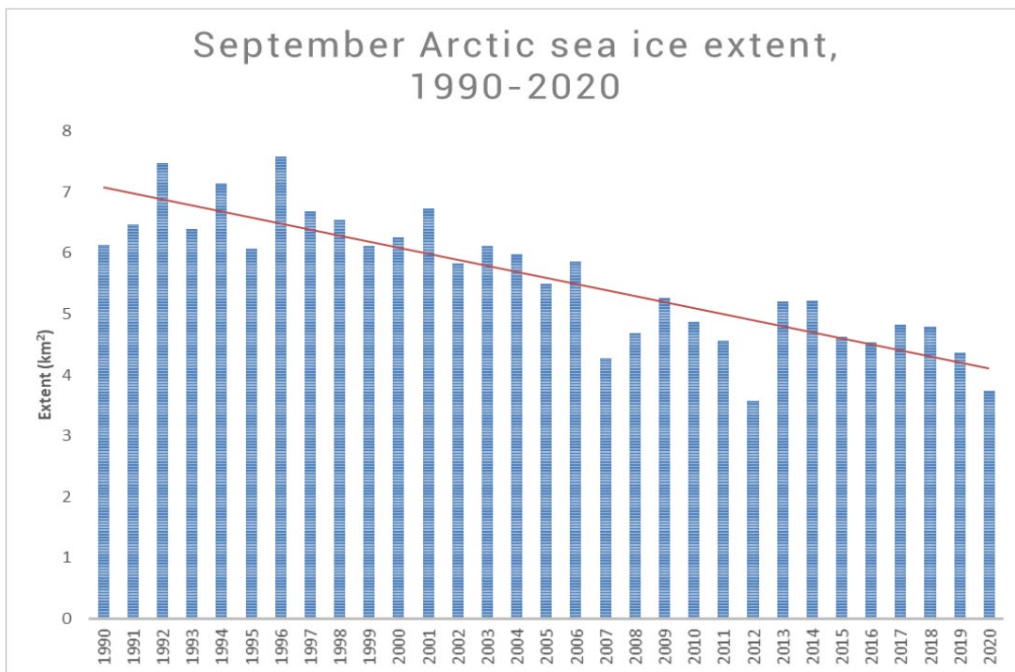


Figure 5: September Arctic sea ice extent from 1990 to 2020.
Source of data: NSIDC

With respect to Citronen, an analysis of 30 years of ice data (sea ice concentration, extent and age) shows three key factors that will dictate the shipping schedule:

1. An increase in open water conditions along the route to Citronen Fjord;
2. A relatively high degree of annual variability in the ice concentration along the route; and
3. A substantial decrease in the amount of ice that is over 2 years of age, with a higher concentration of seasonal and 2nd year ice in recent years.

As younger ice is substantially easier to navigate than multiyear ice, which becomes thicker, harder and less brittle as it ages, this is potentially of significant benefit in terms of extending the shipping window.

Impact on Vessel Selection

Given its high Arctic location and potential for local adverse weather events, despite these positive developments Citronen will still require a specialised shipping solution to ensure year-round access to site by sea.

Whilst it remains too early to commit to a preferred shipping model at present, and subjective to the approval of the relevant maritime authorities in Greenland and Denmark, it is likely that the Project will be served by one of two methods – either icebreaking bulk carriers or ice strengthened bulk carriers in close couple towing with an ice breaker - to export concentrates and conduct resupply.

Both of these options remain under consideration at present, with a final determination unlikely to occur pre-FID, but at present it is understood that option 1 is likely to yield a higher reliability solution.

Further Details

This announcement is authorised to be issued by the Board.

Please contact Managing Director Mr. Michael Jardine for any further inquiries on either mjardine@ironbark.gl or +61 424 615 047.