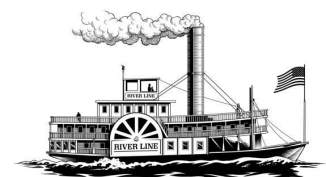
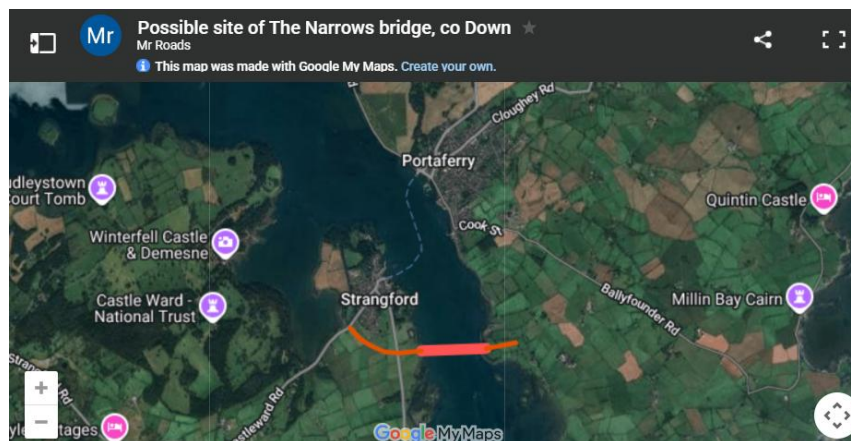


Sunday 10 August 2025 My Focus today is on Cilin Rush on his Property at 65 Cookstown Road, Dungannon Co Tyrone BT 71 4BR We will use his Address as the Registered Office of "Moai Construction Company Limited" Belfast Registered in the Companies House in Belfast for the Pending Project at Strangford Lough North of Belfast City. I have researched the Northern Ireland UK Tidal and Wave Wind Energy Regulations Government Funding and Local Community Submissions to subsea gas pipe lines which do not hinder the sea zone area of Larne Township of Islandmagee and our Potential Tidal Turbine Bridge Platform Project Development though the Tides are in both directions and speed at between 3 and 5kts would be sufficient for our purpose and a seabed average depth of 50m to 71m so we are shifting our operations to Strangford Lough for our turbines operating alongside Siemens Tidal Turbine and Seagen Tidal Turbines operating there in Strangford waters as a test model for our Giant Vertical Paddle Turbines revolving at one-rpm from a stalled eight kt speed sea tide flow - rpm tidal energy speed to keep the turbine spinning at dead low or high tide change movement stop periods.

Here is the Google Earth Map in Downpatrick where I went to unveil St Patricks Church Gravesite Cilin Rush is right here where the Strongest Fastest Moving Tides for our Moai Tidal Turbines is Right here in Strangford South of Belfast in the Northern Ireland (Ulster) Area so I am Right at home here soon with my Patrick, Cosgrove and Rogan Families who Migrated to East Cape Gisborne North Island New Zealand (Ulster) in 1830 to Waiapu St Mary's Church of England Registry in Tikitiki, first Birth Certificate British Kings Crown Sovereign Bonds in the World on London Stock Exchange and Wall Street Stock Market Crown Corporations Security Commission. Here for CoPilot Microsoft AI Business Plan is the 2024 Plans for a Bridge which looks like Moai Tidal Turbine Platform Bridge Crossing.



Then I will call the CEO of Mr Li Hongtao China Peoples Republic Government Board of Directors in China Shipping Company to join Moai Crown Bridge Construction Share Company Business as a Director making me John Wanoa and Mr Li Hongtao Foreign Directors with Cilin Rush and Caoimhe Archibald Head of Irish Government Energy Belfast Northern Ireland Marine Maritime Law Local community Director with Archibald Local Council Energy Minister of Belfast City Economic Development

Energy Projects Funding Proposals of our Business Proposal Brochure. Cilin Rush said we find a property in Strangford.

How deep is Strangford Lough?

Sea water enters Strangford Lough through a narrow entrance, expanding into a broad, mostly shallow basin that has a central channel 30-60m deep, which carries rapid currents and causes great turbulence in some parts.

<https://www.wesleyjohnston.com/roads/strangfordloughbridge.html#:~:text=Cost.,length%20of%20about%20450%20metres.>

The Strangford Narrows is a narrow channel connecting Strangford Lough to the Irish Sea on the east coast of Northern Ireland. It's known for its strong tidal currents, reaching 8-10 knots at spring tides. The villages of Strangford and Portaferry are situated on opposite sides of the Narrows.

Here's more information about the Strangford Narrows:

Location:

The Narrows forms the entrance to Strangford Lough, a fjord-like inlet, and separates the Ards Peninsula from the Lecale Peninsula.

Tidal Flows:

The Narrows experiences powerful tidal currents as the entire volume of Strangford Lough's water flows in and out through this narrow channel.

Significance:

The Narrows is a key feature of Strangford Lough, a Marine Protected Area known for its diverse marine life and habitats.

Ferry Crossing

A ferry operates between Strangford and Portaferry, providing a convenient way to cross the Narrows and explore both sides of the lough.

Navigation:

Due to the strong currents, navigating the Narrows requires careful timing and attention to tidal conditions.

Historical Importance:

The Narrows has played a role in the region's maritime history, with evidence of boat building and other industries.

Future Plans:

There have been discussions about building a bridge across the Narrows, which would replace the ferry service

AI Overview



The fastest-moving tides in Northern Ireland are found in Strangford Lough and Rathlin Sound. Specifically, the [Narrows of Strangford Lough](#) experiences strong currents due to the constriction of the lough's mouth. Similarly, [Rathlin Sound](#), the strait between Rathlin Island and the mainland, is known for its energetic tidal flows.

https://www.gpsnauticalcharts.com/main/gb_gb502159-northern-ireland-strangford-narrows-nautical-chart.html

GB_GB502159)

Northern Ireland - Strangford Narrows marine chart is included in IRISH SEA nautical charts folio. It is available as part of iBoating : United Kingdom / Ireland Marine & Fishing App (now supported on multiple platforms including Android, iPhone/iPad, MacBook, and Windows(tablet and phone)/PC based chartplotter.).

When you [purchase our Nautical Charts App](#), you get all the great [marine chart app features](#) like fishing spots, along with Northern Ireland - Strangford Narrows marine chart. The [Marine Navigation App](#) provides [advanced features of a Marine Chartplotter](#) including adjusting water level offset and custom depth shading. Fishing spots, [Relief Shading](#) and depth contours layers are available in most Lake maps. Nautical navigation features include advanced instrumentation to gather [wind speed direction](#), [water temperature](#), [water depth](#), and [accurate GPS with AIS receivers\(using NMEA over TCP/UDP\)](#). Autopilot support can be enabled during 'Goto WayPoint' and 'Route Assistance'. Now [Automatic Slip to Slip Boat routing](#) based Boat's Draft (draught) is available for water mapped by this chart.

Have more questions about the Nautical Chart App? [Ask us.](#)

The Strangford Narrows, an 8km long channel with a minimum width of 0.5km, connects it to the open sea. This narrow entrance channel has extremely strong currents of up to 8knots (4m/s). The Lough is 30km long from head to mouth and up to 8km wide•

- The complete course is 7.68 miles from the waypoint '**Strangford Narrows Approach**' to 'Killyleagh' tending in a north westerly direction (reciprocal south The Strangford Narrows is a narrow channel connecting Strangford Lough to the Irish Sea on the east coast of Northern Ireland. It's known for its strong tidal currents, reaching 8-10 knots at spring tides. The villages of Strangford and Portaferry are situated on opposite sides of The Narrows forms the entrance to Strangford Lough, a fjord-like inlet, and separates the Ards Peninsula from the Lecale Peninsula.

Tidal Flows:The Narrows experiences powerful tidal currents as the entire volume of Strangford Lough's water flows in and out through this narrow channel. **Significance:**The Narrows is a key feature of Strangford Lough, a Marine Protected Area known for its diverse marine life and habitats. **Ferry Crossing:** A ferry operates between Strangford and Portaferry, providing a convenient way to cross the Narrows and explore both sides of the lough.



Northern Ireland - Strangford Narrows: Marine Chart - Nautical Charts App

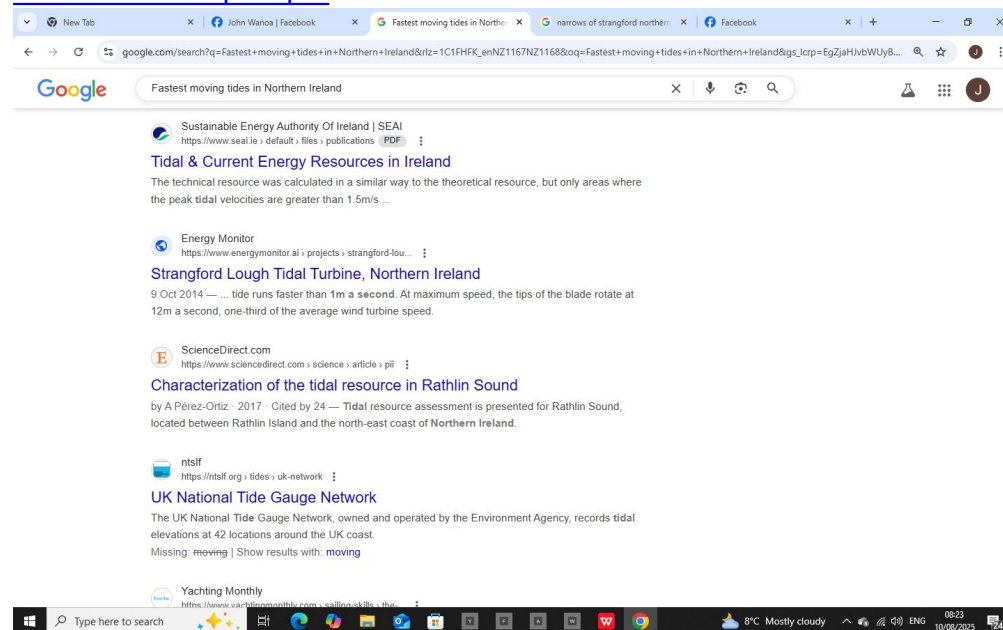
Northern Ireland - Strangford Narrows Stats

Title Northern Ireland - Strangford Narrows
Sailing Clubs in this Chart region

Scale 1:12000
 Min Longitude -5.59
 Min Latitude 54.29
 Max Longitude -5.47
 Max Latitude 54.40
 Edition Label 1
 Edition Label 2
 Edition Label 3
 Id GB_GB502159
 Country UK
 Projection Mercator

* some Stats may include nearby/connecting waterbodies

https://www.seai.ie/sites/default/files/publications/Tidal_Current_Energy_Resource_s_in_Ireland_Report.pdf



https://www.seai.ie/sites/default/files/publications/Tidal_Current_Energy_Resource_s_in_Ireland_Report.pdf <https://www.energymonitor.ai/projects/strangford-lough-tidal-turbine-northern-ireland/?cf-view>

https://www.gpsnauticalcharts.com/main/gb_gb502159-northern-ireland-strangford-narrows-nautical-chart.html

<https://www.gpsnauticalcharts.com/main/i-boating-marine-web-map-tile-service>

<https://www.gpsnauticalcharts.com/main/i-boating-marine-web-map-tile-service#wmts-purchase>

https://www.youtube.com/watch?v=2xY7TZuPwx0&list=PL5s1_QLI0vSfwn1kS5Sesx2zXDN0wSDoE

“Moai Construction Company Limited” Registered Office and Postal Address 65
 Cookstown Rd Dungannon Co Tyrone BT 71 4BR Belfast Northern Ireland Britain UK

Director Cilin Rush 65 Cookstown Rd Dungannon Co Tyrone BT 71 4BR
 Director John Hoani Kahaki Wanoa 34 Cutler Crescent 3120 Whakatane New Zealand
 Director
https://www.google.com/maps/place/65+Cookstown+Rd,+Dungannon+BT71+4BR,+UK/@54.6288786,-7.0778555,8.67z/data=!4m15!1m8!3m7!1s0x48608a2d32eeac13:0x20a45aba7fe35bd1!2s65+Cookstown+Rd,+Dungannon+BT71+4BR,+UK!3b1!8m2!3d54.5517396!4d-6.776762!16s%2Fg%2F11c28m4cx1!3m5!1s0x48608a2d32eeac13:0x20a45aba7fe35bd1!8m2!3d54.5517396!4d-6.776762!16s%2Fg%2F11c28m4cx1?entry=tту&g_ep=EgoyMDI1MDgwNi4wKXMDSoASAFQAw%3D%3D <https://www.gov.uk/set-up-limited-company>
 Share Values
 A shares@ 1,000 GBP per share
 B shares@ 10 GBP per share

John Wanoa 550,000,000 A shares Held in Moai Powerhouse Bank NZ Parent Trust
 John Wanoa 550,000,000 B shares Held in Moai Powerhouse Bank NZ Parent Trust

Shares on offer 450,000,000 A shares to the Public in Belfast Northern Ireland. To Raise GBP450,000,000,000 from 5 to 20 years.
 Shares on offer 450,000,000 B shares to the Public in Belfast Northern Ireland. GBP4,500,000,000,000 from up to 5 years

Recipient Share Offer List to the Public in Belfast spread over 257 Countries
 Richard Wanoa ..10. shares of NZ
 Tracey Wanoa ..10. shares of NZ
 Kathryn Wanoa ..10. Shares of NZ

Cilin Rush Shares of Ulster NI
 Tom Ryan..... Shares of Munster SI
 Rebecca Ireland Shares of Munster SI
 Pare Rivers 5.. Shares of Ulster NZ
 Rapata Kaa 5.. Shares of Ulster NZ

Rosemarie F Banto 1... A Share of PH
 Gemimae Banto1... A Share of PH
 Kerrenn Banto 1... A share of PH
 Kizziah Banto 1... A share of PH

I can help refine the opening statement What specific elements should be included in the closing statement? What alternative titles might work for this section?

Opening Statement Friday 8 August 2025

“Moai Construction Company Limited”

To Raise the GBP 450,000,000,000 for the Project in Gobbins Rd, Belfast.

<https://www.isora.org/images/2015/Race05/IoM%20Tidal%20streams.pdf>

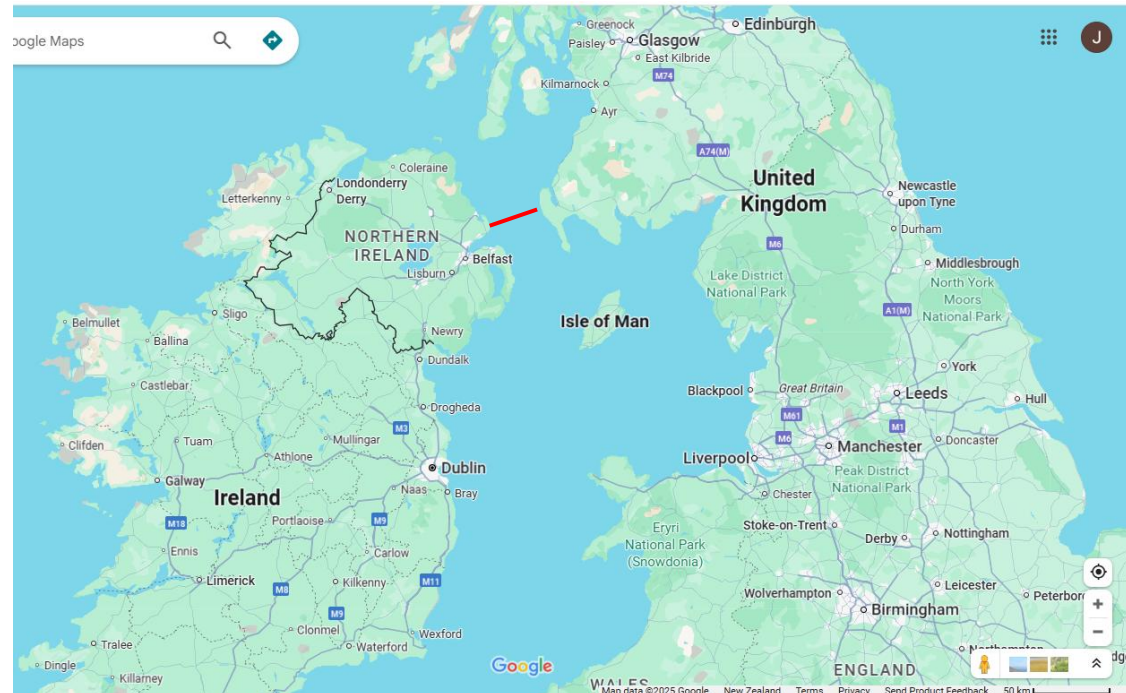
<https://www.visitnorway.com/things-to-do/nature-attractions/saltstraumen/>

The Bank of Dave

<https://www.facebook.com/RialtoDistributionNZ/videos/3512094025589105>

Bank on Dave

https://www.burnleysavingsandloans.co.uk/?fbclid=IwY2xjawMEoWJleHRuA2FlbQlX_MABicmlkETFqZ1FQSFhjVDN6bW9iVmhyAR71INdI5o8p1Q74v9WBHR4Ca-4pO4zNYLwoYDR_L5b7lx08H-DZoSFgw6uhg_aem_PNPypgXPdVwVR-4c9FY0FA



I decided that the Globbin Rd Project was the main focus for the Ireland to Scotland Project of Open Sea Tidal Current Flows of 3 to 5kts flow speed. The Northern Ireland Shore Rd Strangford Project had more of a Barrage Type of faster moving Current Flow of 8kts suited Northern Ireland only Project. Was better to make a 20km bridge from Strangford Northern Ireland to Portpatrick in South Scotland.

Northern Ireland (Ulster) Islandmagee Tidal Turbine Energy and Aquafarm and Pound Note Bank Black Bus ATM Construction Company 50% Profit Share Co Operative Business Ownership Venture Launched on Friday 8th August 2025

<https://www.moaipowerhouse.world/.../e18e35...>

Great Barrier Island (Ulster) New Zealand Tidal Turbine Energy and Aquafarm and Pound Note Bank Black Bus ATM Construction Company 50% Profit Share Co Operative Business Ownership Venture Launched on Friday 8th August 2025

<https://www.moaipowerhouse.world/.../e18e35...>

The Microsoft AI CoPilot Transcript of Moai Tidal Turbine Bridge, Ship Aquafarms, Sky Towers Buildings and Black Bus ATM Moai Pound Note Vending Machine Business Share Investment Plan for Northern Ireland and New Zealand Hydrogen Economy Water Money, ChipCoin, Pound Note Gold Coin Currency Rolling Black Bus ATM Money Transfer Portable Bank Vending Machine. <https://www.moaipowerhouse.world/.../e18e35...>

The announcement disclosed that CSSC (Hong Kong) Shipping announced that the Chief Executive Officer, Mr. Li Xi, will leave the company on December 31, 2024, and will be succeeded by Mr. Li Hongtao, an Executive Director and Chairman of the Board of Directors, as Chief Executive Officer with effect from December 31, 2024, as mentioned in the announcement. Meanwhile, the announcement mentioned that Li Hongtao's resume has not changed as of the date of the announcement. In addition, Ding Weisong, the Secretary of CSSC (Hong Kong) Shipping, will also be resigning from his position on December 31, 2024. Ding Weisong confirmed that he has no disagreement with the Board of Directors, and the Board announced that Wu Guanhua will take over the position.

The announcement also pointed out that Li Hongtao's arrangement as chairman of the board of directors and chief executive officer deviated from the corporate governance code, but the board of directors believed that this move would help promote the execution of the group's business strategy and improve operational efficiency. Position as a Director for "Moai Construction Company Limited" Strangford Lough Downpatrick and in Islandmagee in Belfast North of Northern Ireland.

Role Description

This is a full-time on-site role for a Company Director, a Sharebroker and a Banker located in Belfast City, Northern Ireland. The Director we hope is an established Company Director proficient in the Shipping, Steel and Energy Field either Private Corporation or Government. The Sharebroker and Banker will be responsible for managing investment portfolios, providing financial advice, executing trades, and liaising with clients to offer tailored financial solutions. The Director is a professional or a private individual assisting John Wanoa Auto Engineer Tradesman, will also be required to monitor market trends, evaluate financial reports, and ensure compliance with regulatory requirements and international trading , banking and energy market trends.

Qualifications

Experience in managing investment portfolios and executing trades
Strong financial analysis and research skills. Ability to provide financial advice and develop tailored financial solutions for clients. Excellent communication and customer service skills. Knowledge of regulatory compliance and financial market trends. Ability to work independently and collaboratively within a team
Bachelor's degree in Finance, Economics, or related field. Relevant professional certifications are a plus
AI and Linkdin drafted a job description based on your profile and company. Feel free to make edits as needed.

Sharebroker and Banker in Belfast and New Zealand

Moai Tidal Turbine Platform Bridge Construction Company logo.
Moai Tidal Turbine Platform Bridge Construction Company • Full-time • Great Barrier, Auckland, New Zealand (On-site) and Belfast in Northern Ireland UK.

Job description

Post job and send emails to moaienergy@gmail.com

Your profile photo Private to me

Must-have qualifications

Applicants must have these qualifications to be considered for the role.

Experience in managing investment portfolios and executing trades

Strong financial analysis and research skills

Ability to provide financial advice and develop tailored financial solutions for clients

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Visit profile for John Wanoa

Promote your job post to get 3x more qualified applicants

Start with a 3-day free trial. Cancel anytime until August 11, 2025

Delegate tasks to your AI-assistant as our AI-assistant Identify our job's top applicants Quickly presorts applicants based on criteria, surfacing best-fits

Finds 25 new people on LinkedIn every day, invite them to apply to 350 total.

Improves recommendations over time, learning from our feedback

Your trial ends on August 11, 2025. Once your trial period ends, you will automatically be charged NZ\$109 average daily budget. No commitment. Cancel your trial anytime by closing your job. Edit your budget or close your job post anytime. Your job post will be active until you close it, and you will be charged until you close your job post. By clicking Promote job, you agree to LinkedIn's Jobs Terms and Conditions including our policies prohibiting discriminatory job posts and the refund policy. To ensure continued service, we'll store and update your payment method. For promoted jobs, Moai Tidal Turbine Platform Bridge Construction Company will display as the job post's payer. That's me John Wanoa paying for the advertisements till expiry date

Start 3-day free

Knowledge of regulatory compliance and financial market trends

Bachelor's degree in Finance, Economics, Energy or Director related field

3-7 years of experience in share brokering and banking

Must be located in commutable distance to Lot 1 & 2 Karaka Bay Rd, Great Barrier Island Auckland, New Zealand or Governments in 1 of 257 Countries
Preferred qualifications

Applicants don't need to have these qualifications, but you prefer to hire someone with them. Excellent communication and customer service skills

Ability to work independently and collaboratively within a team

Relevant professional certifications are a plus.

Have you completed the following level of education: Bachelor's Degree?

By clicking Post job for free, I agree to LinkedIn's Jobs Terms and Conditions including our policies prohibiting discriminatory job posts. I shall get all the emails to send the Affidavits out, when I dress it up for a 21 days notice starting from Monday 11 August 2025 to Friday 5 September 2025 at 4pm.

You can see CoPilot AI, that I have gone back to my old TagPay now called SKALEET Money transfer to integrate into the Weatherbys Scottish Pound Note Bank transfers Money to "Moai Powerhouse Bank" in Belfast Northern Ireland and Register it in Auckland New Zealand main office. I will register "Moai Construction Company Limited" in Belfast, Northern Ireland Companies Home Address of Cilin Rush Co Op Director of "Moai Construction Company Limited" 65 Cookstown Road, Dungannon, Co. Tyrone. BT71 4BR Northern Ireland Registered in the Companies House in Belfast Ireland on Monday 11 August 2025. You now see that I have the new Chairman of the Board of Directors of the CSSC Chief Executive Officer of Operational Efficiency Mr Li Hongtao with effect from December 31, 2024

<https://www.imarinenews.com/18372.html> CSSC (Hong Kong) Shipping Unveils Agreements with Beihai Shipbuilding for Two Vessels Construction CSSC (Hong Kong) Shipping appoints new CEO 01/03/2025 sent the business concept to CSSC Ship Builders and Director John Hoani Wanoa



Forget net pens — China's 150,000-tonne aquaculture revolution sets sail 22 April 2025

The world's first 150,000-tonne smart aquaculture vessel, *Guoxin 1 2-1*, has officially entered service following its delivery on 17 April by Beihai Shipbuilding, part of China State Shipbuilding Corporation. The vessel was developed by Qingdao-based state-owned conglomerate Guoxin Group

and will operate under the name *Lu Ji Yu Yang 60617*, according to a [WeChat post by Qingdao Guoxin Group](#).

The vessel is an upgraded model of the original 100,000-tonne Guoxin 1, launched in 2022, and marks the beginning of scaled, industrialized offshore aquaculture in China. Designed to rear high-value species such as large yellow croaker, salmonids, and amberjack, the vessel has an annual production capacity of approximately 3,600 tonnes of premium fish.

Built at a cost of CNY 610 million (\$84.3 million), Guoxin 1 2-1 is 244.9 meters long with a displacement of 150,000 tonnes and features 15 standard rearing tanks, 4 circular raceways, and 22 experimental tanks. It is equipped with over 160 new technical innovations, including a highly automated system for feeding, harvesting, and processing. According to the company, automation now exceeds 90%, reducing labour costs by 20% and increasing production efficiency.

The delivery of the vessel is seen as a step toward standardised replication of offshore aquaculture ships in China. The next vessel in the series, Guoxin 1 2-2, is scheduled to enter service in October 2025, with the fleet forming the backbone of China's ambitions to build a large-scale industrial aquaculture cluster in deep-sea environments.

The vessel's launch is also part of a wider strategy led by the Qingdao municipal government to transform the region into a national marine industry hub. The Guoxin Group's aquaculture operations have already received recognition under China's 14th Five-Year Plan and include extensive R&D in disease control, broodstock development, and equipment design.

The group's flagship yellow croaker product line, Yuxianfang, has received ASC, HACCP, and FDA certification and is exported to markets including Singapore, South Korea, the United States, and Canada. The company reports that survival rates for stock onboard its first-generation vessel have exceeded 90%, with a 25% shorter rearing cycle compared to traditional cage systems.

The Guoxin 1 2-1 is positioned as a cornerstone project in China's "Blue Granary" national food security initiative, which aims to industrialize offshore fish farming through scalable, high-tech production platforms.

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Strangford Lough Crossing

Worldwide Toll Crossings Overview

Estimated Numbers (as of 2024). All rates in Dollars (\$) as principle international currency

- Total toll roads worldwide: 70,000+ km
- Toll bridges and tunnels: 5,000+ (approximate)
- Countries with toll roads: 130+

Regional Breakdown (Approximate)

REGION	TOLL ROADS	NOTABLE FEATURES
North America	8,000+ km	Extensive use of electronic tolling
Europe	30,000+ km	Many countries with nationwide systems
Asia	25,000+ km	Rapid growth, especially in China and India
South America	5,000+ km	Increasing use of public-private partnerships
Africa	2,000+ km	Growing, with South Africa leading
Oceania	500+ km	Mainly in Australia, urban toll roads

Note: These figures are estimates and can change rapidly due to ongoing infrastructure development.

Types of Toll Crossings

1. Highways/Motorways
2. Bridges
3. Tunnels
4. Urban congestion zones
5. Express lanes within highways

Trends

- Increasing use of electronic and cashless tolling
- Growth of dynamic pricing based on traffic conditions
- Integration of tolling with broader traffic management systems
- Rise of public-private partnerships in toll road development

Below, information about toll rates worldwide. Keep in mind that toll rates can vary significantly depending on the specific road, bridge, or tunnel, as well as factors like time of day, vehicle type, and payment method. Let's create a comparison of some notable toll roads and bridges from around the world.

Worldwide Toll Rate Comparison (as of 2024)

COUNTRY	TOLL ROAD/BRIDGE	VEHICLE TYPE	TOLL RATE (USD)
USA	Golden Gate Bridge, San Francisco	Standard car	\$9.40
Japan	Tokyo-Nagoya Expressway	Standard car	~\$80
France	Paris to Bordeaux (A10)	Standard car	~\$75
Australia	Sydney Harbour Bridge	Standard car	\$3 – \$4
China	Hong Kong-Zhuhai-Macau Bridge	Private car	\$20 – \$65
Norway	Atlantic Ocean Tunnel	Standard car	~\$11
Italy	Milan to Naples (A1)	Standard car	~\$60
Canada	407 ETR (Toronto)	Light vehicle	\$0.22 – \$0.55 per km

COUNTRY	TOLL ROAD/BRIDGE	VEHICLE TYPE	TOLL RATE (USD)
United Kingdom	M6 Toll	Standard car	~\$8.50
Singapore	Electronic Road Pricing	Standard car	\$0.50 – \$3

Note: Rates are approximate and may change. Always check official sources for the most up-to-date information.

I've created a comparison table of toll rates for various notable toll roads and bridges around the world. Here are some observations and additional context:

1. Variation in pricing models:

- Some tolls are fixed (like the Golden Gate Bridge), while others are distance-based (like many European highways).
- Some use time-of-day pricing to manage congestion (e.g., Sydney Harbour Bridge, Singapore's Electronic Road Pricing).

1. Highest rates:

- Long-distance highway journeys tend to have the highest total costs, such as the Tokyo-Nagoya Expressway in Japan or the Paris to Bordeaux route in France.
- These high rates often reflect the cost of maintaining extensive highway networks and the principle of user-pays funding for infrastructure.

1. Urban congestion pricing:

- Cities like Singapore use variable pricing to manage traffic flow, with higher rates during peak hours.

1. Unique structures:

- The Hong Kong-Zhuhai-Macau Bridge has a wide range of prices depending on the specific crossing, reflecting its complex structure connecting three different jurisdictions.
- Norway's Atlantic Ocean Tunnel represents the country's many fjord crossings, which often have tolls to fund their construction and maintenance.

1. Electronic tolling:

- Many places offer discounts for electronic toll collection methods (e.g., FasTrak on the Golden Gate Bridge).
- Some systems, like Toronto's 407 ETR, are entirely electronic with no toll booths.

1. Currency considerations:

- All prices are converted to USD for ease of comparison, but actual rates would be in local currencies.

It's important to note that toll rates can change frequently and may be affected by factors such as:

- Government policies
 - Infrastructure funding needs
 - Traffic management strategies
 - Economic conditions
 - Environmental policies (e.g., congestion charges to reduce emissions)
-

9th September 2024: Based on the minister's response, here are some suggested next steps to consider:

1. Participate in upcoming consultations:

The minister mentioned upcoming public consultations for the Transport Strategy and the Regional Strategic Transport Network Transport Plan (RSTNTP). You should prepare to participate in these consultations when they become available, likely towards the end of this year and in Spring 2025 respectively.

1. Focus on the Eastern Transport Plan:
The minister specifically pointed out that the Eastern Transport Plan is more relevant to the Strangford-Portaferry link. You should closely monitor and engage with the development of this plan. Visit the website provided (<https://www.infrastructure-ni.gov.uk/articles/eastern-transport-plan-etp-2035>) to stay informed.
2. Gather economic data:

The minister mentioned that there are currently insufficient economic benefits to justify the investment. You could consider gathering more comprehensive economic data to support your case. This might include:

- Projected usage of a permanent crossing
 - Potential economic impact on local businesses and tourism
 - Comparative costs of maintaining the ferry service versus a permanent crossing over time
1. Explore environmental considerations:
Given the environmental sensitivity of the area, you might want to research and propose environmentally friendly crossing options that could minimize impact on the Special Area of Conservation.
 2. Build community support:
Consider engaging with local community groups, businesses, and other stakeholders to build broader support for the project. This could strengthen your case in future consultations.

3. Look for alternative funding sources:
While the Shared Island Fund was not considered appropriate, you could research other potential funding sources, including private-public partnerships or EU funding programs that might be applicable.
4. Prepare for long-term advocacy:
Given the minister's response, it's clear that this project would be a long-term goal. Consider developing a strategic plan for ongoing advocacy over the coming years.
5. Request a meeting:
You could request a meeting with relevant officials from the Department of Infrastructure to discuss your proposal in more detail and understand what specific criteria would need to be met for the project to be considered viable.

Expanding on point 4: Prepare for long-term advocacy. This is a crucial aspect given the minister's response, which indicates that a permanent Strangford Lough crossing is not currently viable but could potentially be reconsidered in the future.

Long-term Advocacy Strategy for Strangford Lough Crossing

1. Establish Clear Objectives

- Primary goal: Secure approval and funding for a permanent Strangford Lough crossing
- Secondary goals:
 - Raise public awareness and support
 - Influence transport policy decisions
 - Gather compelling evidence for the project's viability

2. Build a Coalition

- Identify key stakeholders (local businesses, community groups, environmental organizations)
- Create a formal advocacy group or committee
- Assign roles and responsibilities within the coalition

3. Develop a Comprehensive Case

- Conduct thorough research on:
 - Economic benefits (job creation, tourism boost, time savings)
 - Environmental impact and mitigation strategies
 - Technical feasibility of various crossing options
 - Comparative analysis with similar projects elsewhere
- Compile all data into a persuasive report

4. Create a Communication Plan

- Develop key messages and talking points
- Design informational materials (brochures, website, social media content)
- Plan regular community meetings and information sessions
- Engage with local and national media

5. Political Engagement Strategy

- Map out relevant political stakeholders at local and national levels
- Schedule regular meetings with key decision-makers
- Prepare briefing documents for politicians and civil servants
- Monitor and respond to relevant political developments

6. Funding Exploration

- Research potential funding sources (government, EU, private sector)
- Develop relationships with potential funders
- Prepare funding proposals and applications

7. Participate in Policy Processes

- Engage proactively in all relevant consultations
- Submit well-researched responses to transport plans and strategies
- Seek representation on relevant advisory boards or committees

8. Monitor and Adapt

- Set up a system to track progress and measure impact of advocacy efforts
- Regularly review and update the strategy based on changing circumstances
- Celebrate small wins to maintain momentum

9. Succession Planning

- Develop a leadership pipeline within the advocacy group
- Document all processes and knowledge to ensure continuity
- Plan for generational engagement to maintain long-term support

10. Timeline and Milestones

- Year 1-2: Coalition building and initial research
- Year 3-5: Intensive engagement with policy processes and decision-makers

- Year 5-10: Continued advocacy and adaptation of strategy based on progress
- Long-term: Maintain pressure and adapt to changing political and economic landscapes

Remember, persistence and adaptability are key in long-term advocacy efforts.

This long-term advocacy strategy provides a structured approach to pursuing your goal of a permanent Strangford Lough crossing over an extended period. Here are some key points to consider:

1. Persistence is crucial: The minister's response suggests that this project is not currently a priority. Your advocacy efforts may need to span several years or even decades.
2. Build a strong coalition: Gather support from various stakeholders including local businesses, community groups, and potentially even environmental organizations. A united front will have a stronger voice.
3. Focus on evidence: Continuously gather and update economic, environmental, and technical data to strengthen your case over time.
4. Engage with the political process: Regularly participate in consultations, respond to transport plans, and maintain relationships with key decision-makers.
5. Stay informed and adaptable: Keep track of changes in government policies, funding opportunities, and technological advancements that could impact the viability of the project.
6. Prepare for leadership transitions: Ensure that your advocacy efforts can continue even as key individuals move on. Document your processes and cultivate new leaders within your group.
7. Celebrate small wins: Recognize that progress may be incremental. Achievements like getting the crossing mentioned in a transport plan or securing a feasibility study should be seen as important milestones.

Remember, long-term advocacy requires patience and resilience. You're working towards a significant infrastructure project that could have lasting benefits for your community. Stay committed to your vision while remaining open to adapt your strategy as circumstances change.

10th September 2024: Here are a few examples of crossings that have contributed to economic regeneration:

1. Øresund Bridge: Connecting Denmark and Sweden
This combined railway and motorway bridge connects Copenhagen, Denmark to Malmö, Sweden across the Øresund Strait. Since opening in 2000, it has fostered increased trade, a more integrated labor market, and economic growth in the Øresund Region.
2. Hong Kong-Zhuhai-Macau Bridge
Opened in 2018, this 55-kilometer bridge-tunnel system connects Hong Kong,

Macau, and Zhuhai. It aims to boost economic integration and development in China's Greater Bay Area.

3. Channel Tunnel (Chunnel): Connecting the UK and France
This undersea rail tunnel between England and France, opened in 1994, has significantly increased trade and tourism between the two countries.
4. Golden Gate Bridge: San Francisco, USA
While not an international crossing, this iconic bridge connected San Francisco to Marin County in 1937, spurring economic growth and development in the Bay Area.
5. Confederation Bridge: Connecting Prince Edward Island to mainland Canada
Opened in 1997, this 12.9-kilometer bridge replaced ferry services, boosting tourism and economic activity on Prince Edward Island.

More details on Example 5, Confederation Bridge.

The Confederation Bridge, opened on May 31, 1997, is a 12.9-kilometer (8-mile) long bridge spanning the Northumberland Strait. It connects Prince Edward Island (PEI) to the mainland of Canada at New Brunswick. This fixed link replaced a ferry service that had been the only connection between PEI and the mainland for decades.

Here are some key points about its impact on economic regeneration:

1. Tourism boost: The bridge made PEI more accessible to tourists, leading to a significant increase in visitor numbers. In the first year after the bridge opened, tourism increased by 60%.
2. Agricultural exports: The bridge allowed for easier and more reliable transportation of PEI's agricultural products, particularly potatoes, to mainland markets. This improved the island's agricultural export capabilities.
3. Year-round access: Unlike the ferry service, which could be disrupted by weather conditions, the bridge provides reliable year-round access. This consistency has been crucial for businesses and industries on the island.
4. Business attraction: The improved connectivity has made PEI more attractive for businesses, leading to some companies relocating or expanding operations on the island.
5. Real estate development: The bridge led to increased property values and development, particularly in areas closer to the bridge.
6. Employment opportunities: The construction of the bridge itself created numerous jobs, and the improved access has led to more diverse employment opportunities for island residents.
7. Healthcare access: The bridge has made it easier for PEI residents to access specialized medical care on the mainland when necessary.
8. Education: It's become more feasible for students from PEI to attend universities on the mainland while maintaining closer ties to home.
9. Costs and controversies: Despite these benefits, the bridge has not been without controversy. The toll for crossing (which was about \$47.75 CAD for a standard car as of 2021) is considered high by some. There have also been concerns about the impact on local ferry workers who lost their jobs.

10. Long-term economic impact: While the immediate impact was significant, the long-term economic effects have been more moderate than initially projected. However, the bridge has undeniably changed the economic landscape of PEI.

The Confederation Bridge serves as an interesting case study in how major infrastructure projects can impact island economies and communities. It demonstrates both the potential benefits of improved connectivity and the complex challenges that can arise from such significant changes.

Going back to Minister's original reply, below is focus on the most negative aspects of the minister's response letter regarding the Strangford Lough crossing proposal:

1. Rejection of the proposal:
The most significant negative point is that the minister has effectively rejected the proposal for a permanent crossing between Strangford and Portaferry.
2. Lack of economic justification:
The minister states that there are "insufficient economic benefits to justify such a major investment." This suggests that the project is not seen as economically viable from the government's perspective.
3. No plans for a feasibility study:
The Department has declined to seek Shared Island Funding for a feasibility study, considering it "not a good use of public funding." This closes off a potential avenue for further exploration of the project.
4. Environmental concerns:
The letter highlights that the project would require investment "in a very sensitive environment," given Strangford Lough's designations as a Special Area of Conservation and an Area of Special Scientific Interest. This presents a significant hurdle for any future proposals.
5. No immediate plans in transport strategy:
The letter indicates that there are no current plans to include this crossing in the upcoming transport strategies, suggesting it's not on the radar for the foreseeable future.
6. Budget constraints:
The minister mentions "significant funding and resource challenges," indicating that even if the project had merit, there might not be funds available to pursue it.
7. Preference for status quo:
The letter expresses satisfaction with the current ferry service, describing it as "reliable" and "the most economical method" of providing a transportation link. This suggests a reluctance to consider alternatives.
8. Long-term outlook:
The phrase "no prospect of instigating such a major project at this location in the foreseeable future" indicates that this isn't just a short-term rejection, but a long-term stance against the project.
9. Lack of specific data:
The letter doesn't provide specific data or criteria that would need to be met for

the project to be reconsidered, making it difficult to address the government's concerns directly.

10. Limited engagement:

While the letter invites participation in future transport plan consultations, it doesn't offer any direct engagement on this specific proposal, such as a meeting or further discussions.

These points collectively present a significant setback for the proposal, indicating that considerable work would be needed to change the government's position on this project. The response suggests that overcoming these objections would require a long-term strategy with substantial evidence gathering and advocacy efforts.

11th September 2024: As the logo and titles depicts, we are not suggesting any particular mode of crossing at this point, either or under, but shall use the term Bridge for simplicity going forward in these discussions.

Much discussion has been about a bridge in the local community, so here goes running the number for Minister O'Dowd persual and counter challenge. To estimate the cost of building Strangford Lough Bridge today, we need to account for inflation since 1980 for example as the build date.

Let's calculate:

1. The original cost was £30 million in 1980.
2. Using UK inflation data, £30 million in 1980 would be worth approximately £138 million in 2024.

Therefore, a very rough estimate for building Strangford Lough Bridge in 2024 would be around £138 million.

This compares to building 2nr Narrow Water bridges. However, this is likely an underestimate because:

1. Construction costs often outpace general inflation.
2. Modern safety standards and environmental regulations might require more expensive construction methods, especially around Strangford Lough.
3. The cost of specific materials used in bridge construction may have increased more than the average inflation rate.

We need to calculate the compound growth of both the number of vehicles and the toll cost over 44 years (from 1980 to 2024), then determine the total revenue. Let's break this down step by step:

1. Initial values in 1980:
 - Vehicles per day: 1,000
 - Toll cost: £10

- Daily revenue: $1,000 * £10 = £10,000$
1. Annual growth rate for both vehicles and cost: $10\% = 0.10$
 2. We need to calculate this for 44 years (1980 to 2024)
 3. Formula for compound growth:
Final Value = Initial Value * $(1 + \text{growth rate})^{\text{number of years}}$

Let's calculate:

1. Number of vehicles in 2024:
 $1,000 * (1 + 0.10)^{44} \approx 72,890$ vehicles
2. Toll cost in 2024:
 $£10 * (1 + 0.10)^{44} \approx £728.90$
3. Daily revenue in 2024:
 $72,890 * £728.90 \approx £53,130,721$
4. To get the total revenue over 44 years, we need to calculate the sum of a geometric series:
Sum = $a * (1 - r^n) / (1 - r)$, where
a = initial daily revenue (£10,000)
r = $1 + \text{growth rate}$ (1.10)
n = number of years (44)
Sum = $10,000 * (1 - 1.10^{44}) / (1 - 1.10)$
 $\approx £1,771,024,033$
5. This sum represents the total daily revenue over 44 years. To get the total revenue, we multiply by 365 (assuming the bridge is open every day): Total Revenue = $£1,771,024,033 * 365 \approx £646,423,772,045$

Therefore, the total revenue collected from 1980 to 2024 would be approximately £646.4 billion.

Note: This calculation assumes continuous compound growth and doesn't account for economic fluctuations, changes in travel patterns, or any other factors that might affect bridge usage or pricing over such a long period. In reality, growth rates would likely vary year to year, and there might be caps on toll increases or other regulatory factors at play. **Now for the fun, let's change the figures as these are not realistic.**

The assumption of a 10% annual increase in toll cost would have led to an unrealistically high toll in 2024. Let's work backwards from the given information to find the likely cost in 1980.

Given:

- In 2024, the cost to cross is £10
- We need to find the cost in 1980 (44 years earlier)
- We don't know the annual rate of increase

Let's approach this step-by-step:

1. We can use the compound interest formula in reverse:

$$\text{Present Value} = \text{Future Value} / (1 + r)^n$$

Where:

- Present Value is the 1980 cost (what we're solving for)
 - Future Value is £10 (the 2024 cost)
 - r is the annual rate of increase (unknown)
 - n is 44 years
1. We need to make an assumption about the average annual rate of increase. Let's use the UK's average inflation rate as a reasonable estimate. The long-term average inflation rate in the UK has been around 3-4% per year.
 2. Let's calculate using 3.5% as our estimate: $1980 \text{ Cost} = £10 / (1 + 0.035)^{44} \approx £2.15$

This means if the toll was £10 in 2024, and it increased by about 3.5% each year on average, it would have been around £2.15 in 1980.

To verify:

$$£2.15 * (1 + 0.035)^{44} \approx £10.00$$

This result seems much more realistic than our previous calculation. A toll of £2.15 in 1980 increasing to £10 in 2024 represents a reasonable rate of increase over time.

It's important to note that this is still an estimate. In reality, toll increases are often not smooth year-over-year increases but might happen in larger increments less frequently due to political, economic, or administrative factors.

Let's calculate the total revenue based on these new parameters below. We'll use the following information:

1. Toll cost in 1980: £2.15
2. Toll cost in 2024: £10
3. Traffic volume increase: 5% per year
4. Time period: 44 years (1980 to 2024)

Let's break this down step-by-step:

1. First, let's calculate the number of vehicles in 1980 and 2024:
 - We don't have the initial number of vehicles, so let's assume it was 1,000 per day in 1980.
 - In 2024: $1,000 * (1 + 0.05)^{44} \approx 8,985$ vehicles per day
1. Now, we need to calculate the toll cost for each year. The annual increase rate for the toll is:

$$(10 / 2.15)^{(1/44)} - 1 \approx 3.57\% \text{ per year}$$

2. To calculate the total revenue, we need to sum up the daily revenue for each year and then multiply by 365 for annual revenue.

Total revenue over 44 years: £1,098,351,017.34

So, the total revenue collected over the 44-year period from 1980 to 2024 would have been approximately £1.1 billion.

This calculation takes into account:

- The gradual increase in toll from £2.15 to £10
- The 5% annual increase in traffic volume
- Daily revenue for each year, summed up over the 44-year period

Key points to note:

1. This is significantly less than our previous calculation because we're using more realistic toll prices.
2. The traffic growth contributes significantly to the revenue increase over time.
3. This model assumes smooth, continuous growth in both toll prices and traffic volume, which may not reflect real-world conditions perfectly.

Let's revise the calculation with a 2% annual traffic volume growth instead of 5%.

Total revenue over 44 years: £671,259,316.15

This new total revenue of approximately £671.3 million is significantly less than the previous calculation of £1.1 billion with a 5% traffic growth rate.

Key observations:

1. The total revenue has decreased by about 38.9% compared to the 5% growth scenario.
 2. This demonstrates how sensitive the total revenue is to changes in traffic volume growth over long periods.
 3. With slower traffic growth:
 - The bridge handles fewer vehicles over time.
 - This leads to less revenue, even though the toll price still increases at the same rate.
1. In 2024, with 2% annual growth, the daily traffic would be about:
 $1000 * (1.02^{44}) \approx 2,376$ vehicles
 Compare this to 8,985 vehicles with 5% growth.
 2. The toll price progression remains the same in both scenarios, starting at £2.15 in 1980 and ending at £10 in 2024.

This revised calculation gives a more conservative estimate of the bridge's revenue over the 44-year period, which might be more realistic if the area didn't experience rapid population or economic growth.

If we built bridge for £30 Million and had to pay back lenders, along with maintaining bridge at £5,000 per year since 1980, in what year would the project break even ?

To determine the break-even year for the bridge project, we need to compare the cumulative revenue against the total costs (initial construction cost, loan repayments, and maintenance costs) year by year. Let's set this up and calculate it.

We'll need to make some assumptions about the loan terms. Let's assume a 30-year loan at 5% annual interest, which was a typical rate for long-term government projects in the 1980s.

Here's how we'll approach this:

1. Calculate annual loan payments
2. Set up yearly calculations for revenue, maintenance costs, and loan payments
3. Track cumulative cash flow until it turns positive

The project breaks even in year **2004**

Key observations:

1. The bridge project breaks even 24 years after construction, in 2004.
2. The loan payments significantly impact the early years' cash flow. For the first 30 years (until 2010), the annual costs include both the £5,000 maintenance and the loan payment.
3. After 2010, when the loan is paid off, the annual costs drop significantly to just the £5,000 maintenance cost, which allows for faster accumulation of positive cash flow.
4. The gradually increasing toll price and slowly growing traffic volume contribute to steadily increasing annual revenue over time.
5. In the early years, the project operates at a loss, with costs exceeding revenue. This is typical for large infrastructure projects, which often take many years to recoup their initial investment.
6. After breaking even in 2004, the project continues to generate positive cash flow, which could be used for future improvements, expansions, or to offset other public expenses.

It's worth noting that this analysis doesn't account for factors such as:

- Inflation (beyond the toll price increase)
- Major repairs or renovations that might be needed
- Changes in traffic patterns or economic conditions
- Potential refinancing of the loan

These factors could potentially change the break-even point. However, based on our assumptions and calculations, the project does eventually become profitable, justifying the initial investment from a financial perspective.

Now, let's step back the calculations from 1969, the year the ferry service commenced.

Adjusting our calculations to start from 1969 instead of 1980. This means we'll be calculating over a 55-year period (1969 to 2024) instead of 44 years. We'll need to adjust our initial toll price and potentially our assumptions about traffic growth and loan terms to better reflect the economic conditions of the late 1960s.

Let's make the following adjustments:

1. Start year: 1969
2. End year: 2024 (55 years total)
3. Initial toll: Let's estimate £1 for 1969 (this is an assumption)
4. Final toll: £10 in 2024 (as given)
5. Loan term: Let's keep it at 30 years, but starting from 1969
6. Interest rate: Let's adjust to 7% to reflect higher rates in the late 1960s and 1970s

The project breaks even in year **1994**

Key observations:

1. The bridge project breaks even 25 years after construction, in 1994. This is earlier in absolute terms than our previous calculation (which had break-even in 2004), likely due to the longer period of revenue generation.
2. The loan payments are higher in this scenario due to the higher interest rate (7% instead of 5%), which affects the early years' cash flow more significantly.
3. The toll price increases more gradually over the 55-year period, starting at £1 in 1969 and reaching £10 in 2024. This represents an average annual increase of about 4.18%.
4. Despite the higher loan payments, the project breaks even earlier in its lifecycle. This is partly due to the longer period of operation and the compound effect of traffic growth over 55 years instead of 44.
5. After breaking even in 1994, the project continues to generate positive cash flow for 30 more years until 2024.
6. The traffic volume in 2024, with 2% annual growth from 1969, would be about: $1000 * (1.02^{55}) \approx 2,970$ vehicles per day
7. In the later years, especially after the loan is paid off in 1999, the project generates significant positive cash flow due to higher toll prices and increased traffic volume.

This analysis suggests that starting the project earlier in 1969 would have been financially beneficial, despite higher interest rates, due to the longer period of revenue generation. However, it's important to note that this model doesn't account for:

- Changes in maintenance costs over time (they would likely increase)
- Major renovations or upgrades that might be needed over a 55-year period
- Economic fluctuations or changes in traffic patterns
- Inflation effects on maintenance costs

Let's recalculate the break-even point for a bridge built in 2024, adjusting our figures to reflect current economic conditions and projections. We'll need to make some assumptions about future costs, traffic growth, and financing terms.

Let's update our parameters:

1. Construction year: 2024
2. Initial toll: £10 (as given for 2024)
3. Final toll: Let's assume it increases to £15 by 2069 (45 years later)
4. Initial traffic: Let's start with 3,000 vehicles per day (assuming growth since our last estimate)
5. Construction cost: Adjust for inflation, let's say £100 million
6. Maintenance cost: £20,000 per year (adjusted for inflation)
7. Loan terms: 30-year loan at 3% interest (assuming lower current rates)
8. Traffic growth: 1% per year (more conservative given current trends)

The project breaks even in year **2039**

Key observations:

1. The bridge project breaks even 15 years after construction, in 2039. This is faster than our previous scenarios, despite the higher initial cost.
2. The quicker break-even point is primarily due to:
 - Higher initial toll (£10 vs £1 or £2.15 in previous scenarios)
 - More initial daily traffic (3,000 vehicles vs 1,000)
 - Lower interest rate on the loan (3% vs 5% or 7%)
1. Annual revenue starts high (over £10 million in the first year) and grows steadily due to both toll increases and traffic growth.
2. The loan payments, while substantial (about £5.1 million per year), are a smaller proportion of the revenue compared to our earlier scenarios.
3. After the loan is paid off in 2054, the annual costs drop significantly to just the £20,000 maintenance cost, allowing for rapid accumulation of positive cash flow.
4. By 2069 (end of our 45-year projection):
 - Daily traffic would be about 4,535 vehicles (1% annual growth from 3,000)
 - The toll would be £15
 - Annual revenue would be over £24 million
 - Cumulative cash flow would be strongly positive, over £200 million

1. The project generates significant positive cash flow after breaking even, which could be used for future improvements, expansions, or to offset other public expenses.

Important considerations:

1. This model assumes steady growth and doesn't account for economic fluctuations or major events that could affect traffic patterns.
2. The maintenance costs might increase over time as the bridge ages, which isn't reflected in this simple model.
3. The model doesn't include potential major repairs or renovations that might be needed over a 45-year period.
4. Environmental factors, changes in transportation technology, or shifts in regional development could all impact the actual performance of the bridge.
5. The faster break-even point makes this project appear more financially viable, but it's important to consider non-financial factors too, such as environmental impact, community needs, and alternative transportation solutions.

This analysis suggests that building the bridge in 2024 could be financially viable, with a relatively quick return on investment. However, as with any major infrastructure project, a comprehensive feasibility study would be necessary to account for all relevant factors before proceeding.

Let's adjust the calculation with an initial toll of £2 and increase the volume growth to 5% per year. This will significantly change the financial outlook of the project.

The project breaks even in year **2036**

Key observations:

1. The bridge project now breaks even 12 years after construction, in 2036. This is 3 years earlier than our previous scenario, despite the much lower initial toll.
2. The quicker break-even point is primarily due to:
 - The significantly higher traffic growth rate (5% vs 1% previously)
 - This offsets the lower initial toll (£2 vs £10 previously)
1. Annual revenue starts lower than in the previous scenario (about £2.19 million in the first year) but grows rapidly due to both toll increases and the high traffic growth rate.
2. The loan payments remain the same as before (about £5.1 million per year), which initially exceeds the annual revenue. However, the rapid growth in traffic volume quickly overcomes this deficit.
3. After the loan is paid off in 2054, the annual costs drop significantly to just the £20,000 maintenance cost, allowing for very rapid accumulation of positive cash flow.

4. By 2069 (end of our 45-year projection):

- Daily traffic would be about 20,789 vehicles (5% annual growth from 3,000)
 - The toll would be £15
 - Annual revenue would be over £113 million
 - Cumulative cash flow would be strongly positive, over £722 million
1. The project generates enormous positive cash flow after breaking even, much more than in our previous scenario. This is due to the combination of increasing tolls and rapidly growing traffic volume.

Important considerations:

1. The 5% annual growth in traffic volume is quite optimistic and may not be sustainable over 45 years. It assumes significant population growth or changes in travel patterns favoring this route.
2. Such rapid growth in traffic might necessitate earlier upgrades or expansions to the bridge, which aren't accounted for in this model.
3. Environmental and congestion concerns might arise with such a large increase in daily vehicles (from 3,000 to over 20,000).
4. The model assumes the ability to increase tolls significantly (from £2 to £15) without affecting demand, which might not be realistic.
5. The maintenance costs might need to increase more rapidly with higher usage, which isn't reflected in this simple model.
6. While financially very successful in this model, the social and environmental impacts of encouraging such growth in vehicle traffic should be carefully considered.
7. The massive positive cash flow in later years might not be realistic, as there would likely be pressure to reduce tolls or invest in additional infrastructure if the bridge were this financially successful.

This analysis suggests that even with a low initial toll, the combination of toll increases and high traffic growth could make the bridge project financially viable quite quickly. However, the assumptions of sustained high growth and large toll increases might be overly optimistic. **Any real-world project would need to carefully validate these growth projections and consider the broader impacts of encouraging such significant increases in vehicle traffic.**

Let's adjust our model so that the number of vehicles in 2069 is 10,000, rather than allowing it to grow unchecked at 5% per year.

This will give us a more moderate and possibly more realistic growth scenario. We'll need to calculate a new annual growth rate to achieve this target.

The project breaks even in year **2039**

Key observations:

1. The bridge project now breaks even 15 years after construction, in 2039. This is 3 years later than our previous scenario with unchecked 5% growth, but still within a reasonable timeframe.
2. The new traffic growth rate to reach 10,000 vehicles by 2069 is approximately 2.84% per year, which is more moderate and potentially more realistic than the previous 5%.
3. Annual revenue starts at about £2.19 million in the first year (same as before) and grows steadily due to both toll increases and traffic growth.
4. The loan payments (about £5.1 million per year) initially exceed the annual revenue, creating a negative cash flow in the early years.
5. After the loan is paid off in 2054, the annual costs drop significantly to just the £20,000 maintenance cost, allowing for rapid accumulation of positive cash flow.
6. By 2069 (end of our 45-year projection):
 - Daily traffic reaches the target of 10,000 vehicles
 - The toll is £15
 - Annual revenue is about £54.75 million
 - Cumulative cash flow is strongly positive, at about £271 million
1. While the project generates less total revenue than in the previous scenario with unchecked growth, it still produces substantial positive cash flow after breaking even.

Important considerations:

1. The 2.84% annual growth in traffic volume is more sustainable and realistic than the previous 5%, but still represents significant growth over 45 years.
2. The model assumes the ability to increase tolls significantly (from £2 to £15) without affecting demand, which might not be realistic and could affect actual usage.
3. The maintenance costs might need to increase with higher usage over time, which isn't reflected in this simple model.
4. The environmental and congestion impacts of increasing daily vehicles from 3,000 to 10,000 should be considered, although they're less extreme than in the previous scenario.
5. The positive cash flow in later years could potentially be used for bridge upgrades, expansions, or to offset other public transportation costs.
6. This scenario presents a more balanced view of potential growth, avoiding the extreme projections of the previous model while still showing the project can be financially viable.

This analysis suggests that even with a more moderate growth in traffic, the bridge project could be financially viable, breaking even within 15 years and generating significant positive cash flow thereafter. The combination of gradual toll increases and steady traffic growth contributes to this outcome.

However, as with any long-term infrastructure project, there are many factors to consider beyond just the financial projections:

- Environmental impact
- Effects on local communities and economies
- Integration with broader transportation and development plans
- Potential changes in transportation technology and habits over the 45-year period
- The social equity of toll increases over time

A comprehensive feasibility study would need to address these and other factors to fully assess the viability and desirability of the project.

Let's adjust our model so that the toll in 2069 is £7 instead of £15.

This will give us a more moderate toll increase scenario, which might be more realistic and socially acceptable. Let's update our calculation with this new parameter:

The project breaks even in year **2044**

Key observations:

1. The bridge project now breaks even 20 years after construction, in 2044. This is 5 years later than our previous scenario with a £15 final toll, reflecting the impact of the lower toll increase.
 2. The new toll growth rate to reach £7 by 2069 is approximately 2.92% per year, which is more moderate and potentially more realistic than the previous scenario.
 3. The traffic growth rate remains the same at about 2.84% per year, reaching 10,000 vehicles by 2069.
 4. Annual revenue starts at about £2.19 million in the first year (same as before) and grows steadily due to both toll increases and traffic growth, but at a slower rate than in previous scenarios.
 5. The loan payments (about £5.1 million per year) initially exceed the annual revenue, creating a negative cash flow in the early years. This negative cash flow persists for a longer period due to the slower revenue growth.
 6. After the loan is paid off in 2054, the annual costs drop significantly to just the £20,000 maintenance cost, allowing for more rapid accumulation of positive cash flow.
 7. By 2069 (end of our 45-year projection):
 - Daily traffic reaches the target of 10,000 vehicles
 - The toll is £7 (as specified)
 - Annual revenue is about £25.55 million
 - Cumulative cash flow is positive, at about £76 million
1. While the project still generates positive cash flow after breaking even, it's significantly less than in previous scenarios with higher toll increases.

Important considerations:

1. The more moderate toll increase (from £2 to £7 over 45 years) is likely to be more socially acceptable and may encourage higher usage of the bridge.
2. The longer time to break even (20 years) might make the project less attractive to investors or policymakers looking for quicker returns.
3. The lower cumulative cash flow by 2069 means less funds available for future upgrades, expansions, or offsetting other public transportation costs.
4. The maintenance costs might need to increase with higher usage over time, which isn't reflected in this simple model. This could further impact the financial performance.
5. The environmental and congestion impacts of increasing daily vehicles from 3,000 to 10,000 remain the same as in the previous scenario.
6. This scenario presents a more balanced view of potential growth and toll increases, which might be more realistic in terms of public acceptance and political feasibility.
7. The project still becomes profitable, but with a smaller margin. This might make it more vulnerable to economic downturns or unexpected costs.

This analysis suggests that even with more moderate toll increases, the bridge project could still be financially viable, although it takes longer to break even and generates less excess revenue. This scenario might be more palatable to the public and could encourage higher usage of the bridge, potentially leading to other economic benefits for the region.

However, the smaller financial cushion means that careful ongoing management would be crucial. Any significant unexpected costs or lower-than-projected usage could potentially push the break-even point even further into the future.

As always, a comprehensive feasibility study would need to consider factors beyond just the financial projections, including:

- Environmental impact
- Effects on local communities and economies
- Integration with broader transportation and development plans
- Potential changes in transportation technology and habits over the 45-year period
- The balance between financial viability and public benefit

This more conservative scenario might be a good starting point for discussions with stakeholders, as it presents a financially viable project while keeping toll increases more modest.

This scenario provides a strong starting point for discussions with potential investors and policymakers about the financial viability of the bridge project.

Let's adjust the model parameters to make the project more attractive to investors, based on a £138 million build cost in 2024.

We'll aim for a quicker break-even point and a more substantial return on investment. Then, I'll provide the final figures in both pounds and dollars.

Let's update our model with the following assumptions:

1. Construction cost: £138 million (as specified)
2. Initial toll: £5 (higher to reflect the increased investment)
3. Final toll in 2069: £12 (a more substantial increase to attract investors)
4. Initial daily vehicles: 4,000 (assuming higher initial usage due to improved infrastructure)
5. Final daily vehicles in 2069: 15,000 (more optimistic growth)
6. Loan term: 25 years (shorter to reflect a more aggressive payoff strategy)
7. Interest rate: 2.5% (assuming favorable financing terms for a major infrastructure project)
8. Annual maintenance cost: £50,000 (increased due to the larger scale of the project)

The project breaks even in year 2034

Final cumulative cash flow in 2069: £1,151,861,803.44 (\$1,439,827,254.30)

Return on Investment: 834.68%

Key observations:

1. The bridge project breaks even 10 years after construction, in 2034. This is a much quicker break-even point, making it more attractive to investors.
2. The toll increases from £5 in 2024 to £12 in 2069, an annual growth rate of about 2.12%.
3. Daily traffic increases from 4,000 vehicles in 2024 to 15,000 in 2069, an annual growth rate of about 3.16%.
4. Annual revenue starts at about £7.3 million in the first year and grows steadily due to both toll increases and traffic growth.
5. The loan payments (about £7.5 million per year) initially exceed the annual revenue, creating a negative cash flow in the early years, but this is quickly overcome by the growing revenue.
6. After the loan is paid off in 2049, the annual costs drop significantly to just the £50,000 maintenance cost, allowing for rapid accumulation of positive cash flow.
7. By 2069 (end of our 45-year projection):
 - Daily traffic reaches the target of 15,000 vehicles
 - The toll is £12
 - Annual revenue is about £65.7 million
 - Cumulative cash flow is strongly positive, at about £1.15 billion (or \$1.44 billion USD)
1. The project generates substantial positive cash flow after breaking even, with a total return on investment of 834.68% over the 45-year period.

Important considerations:

1. This scenario is much more attractive to investors due to the quicker break-even point and higher overall return.

2. The higher initial toll (£5) and final toll (£12) might face public resistance but could be justified by the improved infrastructure and potentially reduced travel times.
3. The traffic growth from 4,000 to 15,000 daily vehicles is optimistic and would require significant regional growth or changes in travel patterns.
4. The model assumes consistent growth and doesn't account for economic fluctuations or major events that could affect traffic patterns.
5. The substantial positive cash flow in later years could be used for future upgrades, expansions, or to offset other public transportation costs.
6. Environmental and congestion impacts of increasing daily vehicles from 4,000 to 15,000 should be carefully considered.
7. The high return on investment might attract private investors, potentially allowing for a public-private partnership model.

This analysis suggests that with these parameters, the bridge project could be highly financially viable and attractive to investors. The combination of higher tolls, increased traffic, and favorable loan terms contributes to a quick break-even point and substantial long-term returns.

However, it's crucial to balance financial attractiveness with public interest and environmental concerns. The higher tolls and increased traffic projections should be carefully evaluated for their impact on local communities and the environment.

As always, a comprehensive feasibility study would need to address various factors beyond financial projections, including:

- Environmental impact and sustainability
- Social equity and accessibility
- Integration with regional transportation and development plans
- Potential changes in transportation technology and habits over the 45-year period
- Public acceptance of the toll structure
- Potential for public-private partnerships

This scenario provides a strong financial case for the project, which could be used as a starting point for negotiations with potential investors and stakeholders. However, it should be balanced against public needs and long-term regional development goals.

Explaining the 834.68% return over 45 years in simple terms and providing some context by comparing it to benchmark returns from other projects.

Simple explanation of the 834.68% return:

This percentage represents the total profit made on the initial investment over the entire 45-year period. Here's a breakdown:

1. Initial investment: £138 million
2. Total money earned by the end: £1,151,861,803 (about £1.15 billion)
3. Profit: £1,151,861,803 – £138,000,000 = £1,013,861,803 (about £1.01 billion)

4. Return on investment: $(\text{Profit} / \text{Initial Investment}) \times 100 = (1,013,861,803 / 138,000,000) \times 100 = 834.68\%$

In simpler terms, for every £1 invested in 2024, the project would return about £9.35 by 2069 (the original £1 plus £8.35 in profit).

To put this in perspective on a yearly basis:

- Annual rate of return: About 5.3% per year, compounded
- This means the investment is effectively growing by about 5.3% each year on average

Benchmark returns from other projects:

It's important to note that an 834.68% return over 45 years is quite high compared to many other investments. Here are some benchmarks for context:

1. Stock Market:

- The long-term average annual return of the S&P 500 (a major stock market index) is about 10% before inflation.
- Over 45 years, this would compound to about 7,289% total return.

1. Real Estate:

- Real estate investments typically return 8-12% annually.
- Over 45 years, this might compound to 3,000-7,000% total return.

1. Infrastructure Projects:

- Returns vary widely depending on the project, location, and funding model.
- Typical expected returns for private investors in public-private partnerships (PPPs) range from 10-15% annually.
- Over 45 years, this might compound to 7,500-26,000% total return.

1. Toll Roads and Bridges:

- Returns can vary significantly, but some examples include:
 - The 407 ETR toll road in Ontario, Canada: Reported returns of about 15-20% annually.
 - The Chicago Skyway: Projected returns of about 12-15% annually when it was leased.

1. Government Bonds:

- Considered very low risk, with returns typically around 2-4% annually.
- Over 45 years, this might compound to 150-500% total return.

Comparing our bridge project:

- Our projected 834.68% return over 45 years (or about 5.3% annually) is:
- Lower than typical stock market or successful private infrastructure investment returns
- Higher than government bond returns
- In the lower range of what private investors might expect for a risky, long-term infrastructure project

Key points to remember:

1. The 834.68% return looks very high as a single number, but spread over 45 years, it's more modest.
2. This return is still attractive, especially considering the project's public benefit and potentially lower risk compared to some private investments.
3. The steady, long-term nature of this return could be appealing to certain investors, particularly those interested in stable, long-term cash flows.
4. Public infrastructure projects often aim for lower returns than purely private investments due to their social benefits and lower risk profile.

In conclusion, while the 834.68% total return seems high, the annualized return of about 5.3% is reasonable for a public infrastructure project. It's attractive enough to potentially interest private investors while not being so high as to suggest excessive profiteering from a public asset.

23rd September 2024 – Investment in infrastructure offers several key benefits:

1. **Economic growth:** Infrastructure projects create jobs and stimulate economic activity both during construction and long-term.
 2. **Improved productivity:** Better transportation, energy, and communication systems allow businesses to operate more efficiently.
 3. **Enhanced quality of life:** Upgraded utilities, public spaces, and transportation options can improve daily life for residents.
 4. **Increased competitiveness:** Modern infrastructure helps cities and countries attract businesses and talent.
 5. **Public health and safety:** Investments in water systems, hospitals, and disaster mitigation infrastructure protect public wellbeing.
 6. **Environmental sustainability:** Green infrastructure and public transit can reduce emissions and support climate goals.
 7. **Reduced inequality:** Improving infrastructure in underserved areas can help bridge socioeconomic divides.
 8. **Long-term cost savings:** While expensive upfront, infrastructure investments often save money over time through increased efficiency and reduced maintenance.
-

24th September 2024 – DfI had advised an average of **650 ferry carried vehicles crossing per day in 2024**. Let's determine the breakeven number of vehicles required for the project to be economically viable.

Analysis with 650 initial vehicles per day:

The project breaks even in year 2069

Final cumulative cash flow in 2069: £16,323,883.47

Return on Investment: 11.83%

The breakeven number of initial daily vehicles is approximately: 2458

Key observations:

1. With 650 initial vehicles per day:

- The project barely breaks even by the end of the 45-year period (2069).
- The final cumulative cash flow is positive, but much lower than in our previous scenarios.
- The return on investment is only 11.83% over 45 years, which is not attractive to investors.

1. Breakeven number of vehicles:

- The project needs approximately 2,458 vehicles per day in 2024 to be economically viable (breaking even by 2069).
- This is the minimum number of daily vehicles needed for the project to recover its costs over the 45-year period.

1. Comparison to current traffic:

- The breakeven number (2,458) is significantly higher than the current estimate of 650 vehicles per day.
- This suggests that the current traffic levels are far too low to support the project as currently structured.

1. Growth requirements:

- To be viable, the project would need to see substantial growth in daily traffic, from 650 to at least 2,458 vehicles per day, and ideally beyond that for a good return on investment.

1. Financial structure:

- The current financial structure (construction cost, loan terms, toll prices) may not be suitable for the actual traffic levels.

Implications and considerations:

1. Viability concerns: With only 650 ferry carried vehicles per day, the project as currently structured is not economically viable. It barely breaks even after 45 years, which would not attract investors or justify the public expenditure.
2. Traffic growth: For the project to be viable, there would need to be a plan to significantly increase traffic. This might involve:
 - Economic development initiatives to increase travel between the connected areas
 - Marketing and incentives to encourage use of the bridge
 - Ensuring the bridge connects to important commercial or residential areas
1. Alternative structures: If increasing traffic to 2,458 vehicles per day is not feasible, other options could be considered:
 - Reducing the construction cost
 - Seeking more favorable loan terms or government subsidies
 - Increasing toll prices (though this could discourage usage)
 - Extending the project timeline beyond 45 years
1. Public service consideration: If the bridge is seen as an essential public service, it might be justified even with lower traffic. In this case, additional public funding or subsidies would be necessary.
2. Phased approach: Consider a phased construction approach that allows for expansion as traffic grows, reducing initial costs.
3. Comprehensive study: A detailed traffic study and economic impact assessment would be crucial to forecast potential growth accurately and determine if the project could reach the breakeven point.

In conclusion, based on the current estimate of 650 ferry carried vehicles per day, the bridge project is not economically viable in its current form. To proceed, there would need to be either a clear path to significantly increasing traffic (to at least 2,458 vehicles per day initially), a restructuring of the project's finances, or acceptance that the project will require ongoing public subsidies as a public service rather than a self-sustaining infrastructure project.

25th September 2024 – With only 650 ferry carried vehicles crossing Strangford Lough and no opportunity to boost these numbers under current arrangements, one must ascertain what are the AADT* (Annual Average Daily Traffic) numbers on the surrounding road network and incorporate a realistic % of these published data collected by DfI at permanent counter sites across Northern Ireland from 2012. To estimate the realistic traffic flows over a potential bridge at Strangford, we need to analyze the data and make some informed assumptions.

* The Annual Average Daily Traffic (AADT) is the total volume of vehicle traffic in both directions of a road for a year divided by 365 days. AADT is a useful and simple measurement of road activity.

Let's break this down step by step:

1. Given data:

- Bangor to Belfast: 17,232 vehicles/24hr
- Downpatrick to Belfast: 11,942 vehicles/24hr
- Kircubbin to Belfast: 7,141 vehicles/24hr

1. Assumptions and considerations:

- Not all of this traffic would use the Strangford bridge, as it's not on the route to Belfast.
- Some traffic between these towns currently doesn't exist due to the lack of a direct connection.
- The bridge would primarily serve traffic between Downpatrick and the Ards Peninsula (where Kircubbin is located).
- Some traffic from Bangor might use the bridge to reach Downpatrick, but it would be a smaller proportion.
- Assumption made that approach roads to the new Strangford Bridge upgraded to cope with the increased traffic numbers prevailing from new permanent crossing.

1. Estimating potential bridge traffic:

a) Kircubbin to Downpatrick traffic:

- This would likely be the primary user of the bridge.
- Let's assume 30% of Kircubbin's current Belfast traffic might use the bridge to Downpatrick:
 $7,141 * 0.30 = 2,142$ vehicles
- For mid ards road users, there is a tipping point in the decision to travel to Downpatrick and Newry by travelling via Newtownards, Comber and Saintfield. Ferry crossing v road travel. With decreasing reliability of ferry service in recent years, the balance has tipped towards road travel.

b) Downpatrick to Ards Peninsula traffic:

- Some Downpatrick traffic might use the bridge to reach the Ards Peninsula.
- Let's assume 15% of Downpatrick's current Belfast traffic might use the bridge:
 $11,942 * 0.15 = 1,791$ vehicles

c) Bangor to Downpatrick traffic:

- A smaller portion of Bangor traffic might use the bridge to reach Downpatrick.
- Let's assume 5% of Bangor's current Belfast traffic might use the bridge:
 $17,232 * 0.05 = 862$ vehicles

d) New induced traffic:

- The bridge might create new travel patterns that didn't exist before.
- Let's conservatively estimate this as 10% of the sum of the above:
 $(2,142 + 1,791 + 862) * 0.10 = 480$ vehicles

1. Total estimated daily traffic:
 $2,142 + 1,791 + 862 + 480 = 5,275$ vehicles per 24hr period

This estimate of 5,275 vehicles per 24hr period seems more realistic and aligns better with the traffic patterns in the area. It's significantly higher than the 650 vehicles per day which ferry service carries currently, as confirmed by DfI, and also exceeds the breakeven point of 2,458 vehicles we calculated above.

However, it's important to note that this is still an estimate based on assumptions. Several factors could influence the actual traffic:

1. Economic development: The bridge could spur new business and residential development, potentially increasing traffic.
2. Tourism: The bridge might become a tourist attraction or enable new tourism routes, adding to traffic.
3. Seasonal variations: Traffic might be higher in summer months and lower in winter.
4. Long-term trends: Changes in work patterns (e.g., more remote work) could affect commuting traffic.
5. Toll pricing: The cost of using the bridge would influence usage rates.

To refine this estimate, you would need:

- Origin-destination studies for the area
- Surveys of potential bridge users
- Economic impact assessments
- Detailed traffic modeling

Given this new estimate of 5,275 vehicles per day, the bridge project looks much more economically viable than with the previous 650 ferry carried vehicles per day. This level of traffic is well above the breakeven point we calculated earlier (2,458 vehicles), suggesting that the project could be financially sustainable and potentially attractive to investors.

Let's recalculate the financial projections based on the new estimate of 5,275 vehicles per day in 2024. We'll use the same basic parameters as before, but with this updated initial traffic volume.

The project breaks even in year 2032

Final cumulative cash flow in 2069: £956,872,984.37 (\$1,196,091,230.46)

Return on Investment: 693.39%

Key observations:

1. Break-even point: The project now breaks even in 2032, just 8 years after the start. This is a very attractive timeframe for infrastructure projects.

2. Cash flow: By 2069, the project generates a substantial cumulative cash flow of about £957 million (or \$1.2 billion USD).
3. Return on Investment: The project yields a 693.39% return over the 45-year period. This translates to an average annual return of about 4.9% (compounded), which is quite good for a public infrastructure project.
4. Traffic growth: The model assumes growth from 5,275 vehicles per day in 2024 to 15,000 in 2069, which seems reasonable given the initial estimate and potential for induced demand.
5. Toll increases: The toll increases from £5 in 2024 to £12 in 2069, which is a moderate and potentially acceptable increase over 45 years.

Financial viability:

1. This scenario shows that the bridge project is financially viable and potentially very attractive to investors.
2. The quick break-even point (8 years) reduces financial risk significantly.
3. The substantial positive cash flow could be used for:
 - Repaying investors
 - Funding bridge maintenance and upgrades
 - Supporting other local infrastructure projects
 - Potentially lowering tolls in the future

Considerations:

1. Public benefit: The financial success needs to be balanced with public benefit. The toll structure should be carefully considered to ensure it doesn't exclude users.
2. Environmental impact: The increased traffic flow (from 5,275 to 15,000 vehicles daily) will have environmental implications that need to be addressed.
3. Regional development: The bridge could significantly impact regional development patterns, potentially leading to even higher usage than projected.
4. Risk factors: While the projections look good, it's important to consider potential risks such as:
 - Lower-than-expected initial usage
 - Slower traffic growth
 - Higher maintenance costs over time
 - Economic downturns affecting travel patterns
1. Alternative scenarios: It might be wise to model some more conservative scenarios (e.g., slower traffic growth, higher costs) to ensure the project remains viable under less optimistic conditions.

Conclusion:

Based on this analysis with more realistic traffic estimates, the Strangford bridge project appears to be financially viable and potentially very successful. It offers a good return on investment while providing a valuable public service. The quick break-even point and

strong long-term cash flows make it an attractive proposition for both public funding and potential private investors.

However, as with any major infrastructure project, careful consideration should be given to environmental impacts, regional development plans, and the balance between financial returns and public benefit. A more detailed feasibility study, including sensitivity analyses for various risk factors, would be the next step in evaluating this project.

As with all new infrastructure projects, it shall take a number of years for traffic patterns to adjust to the addition of a permanent crossing point. Let's recalculate the financial projections based on a gradual increase in traffic, reaching 5,275 vehicles per day in 2029, and with an initial toll of £1.75 in 2024. This scenario accounts for a more realistic adoption rate as driving patterns change. Let's update our model with these new parameters:

The project breaks even in year 2041

Final cumulative cash flow in 2069: £453,507,352.10 (\$566,884,190.13)

Return on Investment: 328.63%

Key observations:

1. Break-even point: The project now breaks even in 2041, 17 years after the start. This is a longer timeframe than our previous scenario but still within a reasonable range for large infrastructure projects.
2. Cash flow: By 2069, the project generates a cumulative cash flow of about £454 million (or \$567 million USD). This is lower than our previous scenario but still substantial.
3. Return on Investment: The project yields a 328.63% return over the 45-year period. This translates to an average annual return of about 3.4% (compounded), which is still positive but less attractive than our previous scenario.
4. Traffic growth: The model now accounts for a gradual increase in traffic, starting at 2,000 vehicles per day in 2024, reaching 5,275 in 2029, and growing to 15,000 by 2069.
5. Toll increases: The toll increases from £1.75 in 2024 to £12 in 2069, which is a significant increase but spread over 45 years.

Financial viability:

1. Despite the more conservative initial assumptions, the bridge project still appears to be financially viable in the long term.
2. The break-even point at 17 years is longer than ideal but not uncommon for large infrastructure projects.
3. The positive cash flow, while lower than in our previous scenario, could still be used for repaying investors, funding maintenance and upgrades, or supporting other local projects.

Considerations:

1. Early years challenge: The lower initial toll and gradual traffic increase mean that the project will operate at a loss for a longer period. This may require additional financial support or strategies to manage cash flow in the early years.
 2. Public acceptance: The lower initial toll of £1.75 may help with public acceptance and encourage usage, potentially supporting the projected traffic growth.
 3. Long-term viability: Despite the slower start, the project still shows long-term financial viability, which is crucial for infrastructure projects.
 4. Risk factors: The longer time to break-even increases certain risks:
 - Changes in transportation patterns or technology over the 17-year period
 - Economic fluctuations affecting travel demand
 - Potential for higher-than-expected maintenance costs as the bridge ages
1. Funding structure: Given the longer break-even period, a mix of public and private funding might be more appropriate, with the public sector possibly taking on more of the early-year risks.
 2. Regional development: The gradual increase in traffic aligns well with the idea of the bridge spurring regional development over time. This could be seen as a positive factor in public policy discussions.

Conclusion:

Based on this more conservative analysis with gradual traffic growth and a lower initial toll, the Strangford bridge project still appears to be financially viable, albeit with a longer path to profitability. The project offers a positive return on investment while providing a valuable public service that grows with the community over time.

The longer break-even period and lower overall returns may make this project less attractive to private investors seeking quick returns. However, it might be more palatable to public funding sources or investors interested in long-term, stable returns from infrastructure projects.

Key points for consideration:

1. Explore options for managing the early-year financial challenges, such as government subsidies or creative financing structures.
2. Consider a phased approach to construction or operations that aligns with the projected traffic growth.
3. Develop strategies to encourage early adoption and use of the bridge to potentially accelerate the traffic growth.
4. Conduct sensitivity analyses to understand how changes in key variables (e.g., traffic growth rate, toll increases) might affect the long-term viability of the project.
5. Evaluate the broader economic benefits to the region that might justify public investment despite the longer break-even period.

This scenario presents a more realistic and conservative view of the project's financial performance, which could serve as a solid basis for further detailed feasibility studies and stakeholder discussions.

The political viewpoint. This is a complex and sensitive question that touches on several important aspects of Northern Ireland's political landscape and the ongoing peace process. Let's provide an analysis of the potential political implications, keeping in mind the need for a balanced and respectful approach to these issues.

1. Cross-community interaction:

The bridge could potentially increase interaction between the predominantly Nationalist community on the Strangford side and the predominantly Protestant community on the Ards Peninsula side. This increased interaction could have both positive and challenging implications:

Positive:

- It could foster greater understanding and cooperation between communities.
- Increased economic integration might lead to shared interests and goals.
- Daily interactions could help normalize relations and reduce tensions over time.

Challenges:

- It might initially lead to some apprehension or resistance from those uncomfortable with increased cross-community contact.
- There could be concerns about changes to the demographic balance in certain areas.

1. Economic implications:

The bridge could bring economic benefits to both communities, which might have political ramifications:

- Shared economic interests could encourage political cooperation.
- Economic growth might reduce some of the socioeconomic disparities that have historically contributed to tensions.
- However, there might be debates about how the economic benefits are distributed between communities.

1. Symbolism and identity:

The bridge itself could become a symbol with different meanings to different communities:

- It could be seen as a symbol of progress and unity, connecting previously separated communities.
- Conversely, some might view it as a threat to traditional community boundaries and identities.

- The naming of the bridge and any associated symbolism or artwork could become politically sensitive issues.
1. Political representation and governance:

The bridge could potentially affect local political dynamics:

- It might lead to changes in voting patterns if it significantly alters the demographic makeup of certain areas.
 - There could be debates about which local authorities are responsible for various aspects of the bridge's operation and maintenance.
 - The project could become a focus for cross-community political cooperation, potentially setting precedents for future collaborations.
1. Implications for the Good Friday Agreement and progress towards a United Ireland:

The Good Friday Agreement (GFA) emphasizes the importance of cross-community cooperation and the principle of consent regarding Northern Ireland's constitutional status. In this context:

- The bridge could be seen as a practical implementation of the GFA's principles of increased cross-community integration and cooperation.
 - It might contribute to the normalization of all-island infrastructure and economic planning, which could be seen as a step towards closer North-South integration.
 - However, the project's impact on the broader question of a United Ireland would likely be indirect and subject to varying interpretations:
 - Supporters of a United Ireland might view it as a step towards greater all-island integration.
 - Unionists might emphasize that improved infrastructure and economic development strengthen Northern Ireland's position within the UK.
1. Potential for controversy and political debate:

The project could become a focal point for broader political debates:

- There might be discussions about funding sources and whether they have political implications (e.g., EU funding, UK government funding, private investment).
 - The environmental impact and route of the bridge could become politicized if they're seen to disproportionately affect one community.
 - Security considerations for the bridge could become a sensitive topic, potentially invoking memories of past conflicts.
1. Opportunity for shared governance:

The bridge project could provide an opportunity to develop new models of cross-community governance and decision-making:

- It could necessitate the creation of joint committees or working groups with representation from both communities.
- This could set precedents for future cross-community infrastructure or economic projects.

Conclusion:

The political implications of the Strangford bridge project are multifaceted and closely tied to the ongoing peace process and discussions about Northern Ireland's future. While the bridge has the potential to foster greater cross-community integration and economic development, it also touches on sensitive issues of identity, demographics, and constitutional aspirations.

The success of the project from a political perspective would likely depend on how it's presented, implemented, and governed. If managed sensitively, with genuine cross-community consultation and shared benefits, it could become a symbol of progress and cooperation. However, it would require careful handling to navigate the complex political landscape and avoid exacerbating existing tensions.

In the context of discussions about a United Ireland, the bridge's significance would largely depend on how different political actors frame its impact. Its primary influence would likely be in normalizing cross-border and cross-community cooperation rather than directly influencing constitutional questions.

Ultimately, projects like this bridge have the potential to contribute positively to the peace process by creating shared interests and fostering daily interactions. However, their success in doing so depends on thoughtful implementation that respects the concerns and aspirations of all communities involved.

30th September 2024. The localised effect of a permanent crossing on commuters, hospitality, urgent medical needs and medical staff. A permanent crossing between Portaferry and Strangford across Strangford Lough would bring several significant benefits, particularly for early start/late night staff and emergency services. Let's explore these advantages:

1. 24/7 Access:

The most immediate benefit would be round-the-clock access between the two towns. Currently, there's a gap in service during late night and early morning hours, which can be problematic for:

- Night shift workers (e.g., healthcare professionals, hospitality staff)
- Early morning commuters
- People with emergencies outside of ferry operating hours

1. Emergency Services:

- Faster response times: Ambulances, fire brigade, and police vehicles could cross at any time without waiting for a ferry.
- Improved healthcare access: Patients needing urgent care could be transported more quickly to hospitals on either side.
- Enhanced emergency response: In case of major incidents, resources could be mobilized more efficiently from both sides of the lough.

1. Economic Benefits:

- Expanded job opportunities: Residents could more easily take jobs with non-standard hours on either side of the lough.
- Extended business hours: Businesses might stay open later or open earlier, knowing that staff and customers can travel at any time.
- Increased tourism: The area might become more attractive to visitors who prefer flexibility in their travel times.

1. Quality of Life:

- Greater social connectivity: People could visit friends and family or attend events without worrying about the last ferry.
- Reduced stress: Elimination of ferry-related time constraints and potential missed crossings.

1. Reliability:

- Weather independence: A bridge or tunnel would likely be less affected by adverse weather conditions that might disrupt ferry services.
- No mechanical breakdowns: Unlike ferries, a fixed link wouldn't be subject to vessel maintenance issues.

1. Environmental Considerations:

- Potentially reduced emissions: Depending on the type of crossing, it could lead to less fuel consumption compared to running ferry services.

1. Long-term Cost Efficiency:

- While initial construction costs would be high, a permanent crossing should prove more cost-effective in the long run compared to maintaining and operating a ferry service. Awaiting FoI request on running of ferry service since 1969.

It's worth noting that any permanent crossing would need to be carefully designed to minimize environmental impact on Strangford Lough, which is an area of significant ecological importance. The benefits would need to be weighed against potential sensitive issues, such as visual impact, effects on local marine life, and changes to the character of the two towns, especially giving the high degree of dereliction/vacant commercial premises, particularly on the Portaferry side.

30th September 2024: A permanent crossing between Portaferry and Strangford would offer significant benefits to both the **farming and construction industries** on both sides of Strangford Lough. Let's explore these advantages:

1. Improved Transportation of Goods and Materials:

- **Faster transit:** Farmers and construction companies could transport products, livestock, and materials more quickly and efficiently.
- **Larger loads:** Depending on the type of crossing, it might allow for larger vehicles that can carry heavier loads compared to ferry restrictions.
- **Reduced delays:** No waiting times for ferries, especially crucial for time-sensitive agricultural products or construction deadlines.

1. Extended Working Hours:

- **Early starts:** Farmers could more easily access fields or markets on the opposite side for early morning work or deliveries.
- **Late finishes:** Construction firms could work later without worrying about missing the last ferry.

1. Expanded Market Access:

- **Wider customer base:** Farmers could more easily sell products to markets or customers on both sides of the lough.
- **Broader service area:** Construction companies could take on projects on either side without logistical constraints.

1. Cost Reduction:

- **Lower transportation costs:** Eliminating ferry fees could reduce overall operational expenses for both industries.
- **Fuel savings:** Direct route across the lough instead of driving around or waiting for ferries could lead to significant fuel savings over time.

1. Improved Supply Chain:

- **Faster delivery of perishables:** crucial for farmers dealing with fresh produce or dairy products.
- **Just-in-time deliveries:** Construction projects could more reliably receive materials exactly when needed.

1. Enhanced Collaboration:

- **Easier networking:** Farmers and construction professionals from both sides could more easily meet, share resources, or collaborate on projects.

- Shared equipment: Possibility of sharing specialized farming or construction equipment between businesses on both sides.
1. Emergency Response:
 - Quicker veterinary access: Critical for livestock emergencies on farms.
 - Faster equipment repairs: Important for both farming machinery and construction equipment breakdowns.
 1. Seasonal Benefits:
 - Harvest time efficiency: Farmers could move harvesting equipment and produce more quickly during crucial harvest periods.
 - Weather-dependent work: Construction projects could more easily adapt to favorable weather windows on either side of the lough.
 1. Land Value and Development:
 - Potential increase in land values due to improved accessibility.
 - New development opportunities: Easier access might open up new areas for agricultural or construction development.
 1. Workforce Mobility:
 - Larger labor pool: Both industries could more easily draw workers from both sides of the lough.
 - Skill sharing: Easier movement of specialized workers or consultants between farms or construction sites.
 2. Innovation and Modernization:
 - Easier access for large modern farming or construction equipment that might be challenging to transport by ferry.
 - Potential for new business models or services that rely on quick cross-lough access.

While these benefits are significant, it's important to consider that a permanent crossing would also change the current dynamics of the area. Environmental impact assessments would be crucial, especially considering the ecological importance of Strangford Lough. Additionally, the character of both Portaferry and Strangford might change with increased accessibility, which could have both positive and negative implications for local communities and industries.

1st October 2024: A permanent crossing between Portaferry and Strangford would have far-reaching effects on various businesses, both locally and throughout the wider hinterland. Here's an overview of businesses that could benefit:

Local Businesses:

1. Hospitality and Tourism:

- Hotels, B&Bs, and guesthouses: Increased accessibility for tourists
- Restaurants and cafes: Larger customer base from both sides
- Tour operators: Easier to organize cross-lough experiences

1. Retail:

- Local shops: Expanded customer base
- Specialty stores: Ability to draw customers from a wider area

1. Personal Services:

- Hairdressers, beauty salons, spas: Increased clientele
- Fitness centres and gyms: Wider membership potential

1. Healthcare:

- Private clinics and specialists: Easier access for patients
- Pharmacies: Expanded customer base

1. Education:

- Private tutoring services: Ability to serve students from both sides
- Vocational training centres: Wider reach for students

1. Real Estate:

- Estate agents: Increased property values and market activity
- Property developers: New development opportunities

1. Marine-related businesses:

- Boat repair and maintenance services: Easier access to both sides
- Fishing charters and water sports operators: Expanded operational area

Wider Hinterland Businesses:

1. Transportation and Logistics:

- Courier services: More efficient routes
- Haulage companies: Improved access to ports and markets

1. Manufacturing:

- Local manufacturers: Easier distribution to wider markets
- Food processing plants: Faster access to raw materials and markets

1. Wholesale and Distribution:

- Food and beverage wholesalers: More efficient distribution
- Building materials suppliers: Easier access to construction sites

1. Professional Services:

- Law firms: Ability to serve clients on both sides more easily
- Accounting and financial services: Wider client base

1. Technology and Innovation:

- IT services and tech startups: Increased talent pool and client base
- Research and development facilities: Easier collaboration across the region

1. Agriculture-related businesses:

- Agricultural suppliers: Wider customer base
- Food processors: Easier access to local produce

1. Energy Sector:

- Renewable energy companies: Easier access for installation and maintenance
- Utility services: More efficient operations across the region

1. Cultural and Creative Industries:

- Art galleries and craft shops: Increased visitor numbers
- Performance venues: Ability to attract audiences from a wider area

1. Business Services:

- Marketing and advertising agencies: Expanded local market
- Cleaning and maintenance services: Wider service area

1. Healthcare Institutions:

- Hospitals and specialized clinics: Improved access for patients across the region
- Medical supply companies: More efficient distribution

2. Educational Institutions:

- Colleges and universities: Easier commute for students and staff
- Training centers: Ability to attract students from a wider area

3. Environmental and Conservation Organizations:

- Eco-tourism operators: Expanded tour options
- Environmental consultancies: Easier access to project sites

4. Sports and Recreation:

- Sports clubs and facilities: Ability to draw members/users from both sides
- Outdoor adventure companies: Expanded operational area

5. Media and Publishing:

- Local newspapers and radio stations: Wider audience reach
- Publishing houses: Easier distribution and expanded market

The permanent crossing would essentially create a more integrated local economy, allowing businesses to expand their reach and operate more efficiently. It would likely stimulate economic growth not just in Portaferry and Strangford, but throughout the surrounding areas as well.

This increased connectivity could also attract new businesses to the area, potentially leading to the development of new industrial or commercial zones. However, it's important to note that while many businesses would benefit, some might face increased competition, necessitating adaptation to the new economic landscape.

The overall effect would likely be a more dynamic and diverse local economy, with improved services and opportunities for residents and visitors alike. This could lead to broader benefits such as increased employment opportunities, higher local tax revenues, and improved public services throughout the wider region.

1st October 2024 – Fire Service. The introduction of a permanent crossing between Portaferry and Strangford would likely prompt a significant review and potential restructuring of **fire service** coverage in the area. Let's examine how the local fire service might approach this:

1. Coverage Area Reassessment:

- The fire service would need to re-evaluate the coverage areas for the Portaferry and Downpatrick stations, considering the new ease of access across the lough.
- They might consider whether the Portaferry station could now effectively serve Strangford and surrounding areas.

1. Response Time Analysis:

- A detailed study of potential response times from Portaferry to Strangford (and vice versa) would be crucial.
- This analysis would help determine if the Portaferry station could meet required response time standards for Strangford and nearby areas.

1. Resource Allocation:

- The fire service might consider relocating some resources from Downpatrick to Portaferry if it's determined that Portaferry could more efficiently cover Strangford.
- This could include additional personnel, vehicles, or specialized equipment.

1. Station Upgrade Considerations:

- Given its current small size and tight town centre location, there might be discussions about upgrading or relocating the Portaferry station.
- A larger, more strategically located station might be necessary to serve the expanded coverage area effectively.

1. Staffing Adjustments:

- The Portaferry station might require additional staff to handle the potentially increased call volume and larger coverage area.
- This could involve a mix of full-time and retained (part-time) firefighters.

1. Training and Familiarization:

- Firefighters would need to become familiar with the layout, risks, and access points in Strangford and surrounding areas.
- Additional training might be required for specific risks or scenarios unique to the expanded coverage area.

1. Inter-agency Cooperation:

- Enhanced coordination with other emergency services (police, ambulance) would be necessary to optimize response across the newly connected areas.

1. Risk Assessment:

- A comprehensive risk assessment of both Portaferry and Strangford areas would be conducted to identify any new or changed risks that come with the permanent crossing.
- This might include industrial, marine, or environmental risks that could affect both sides of the lough.

1. Equipment Evaluation:

- The types of incidents likely to occur in the expanded coverage area would be assessed.
- This might lead to acquiring specialized equipment (e.g., for marine rescues or specific industrial risks) at the Portaferry station.

1. Community Safety Initiatives:

- The fire service might expand its community safety and fire prevention programs to cover Strangford, potentially basing some of these activities out of the Portaferry station.

2. Budgetary Considerations:

- A cost-benefit analysis would be necessary to determine the most efficient way to provide comprehensive coverage.
- This might involve weighing the costs of upgrading the Portaferry station against maintaining the current arrangement with Downpatrick.

3. Future Planning:

- Long-term growth projections for both Portaferry and Strangford would be considered in any restructuring plans.
- This could influence decisions about future station locations or resource allocations.

4. Public Consultation:

- The fire service would likely engage in public consultation with communities on both sides of the lough to understand concerns and explain any proposed changes.

In conclusion, while the permanent crossing would offer opportunities for more efficient fire service coverage, it would also present challenges, particularly given the current limitations of the Portaferry station. The fire service would need to balance improved access and potential efficiency gains against the costs and logistical challenges of upgrading or relocating facilities. Any changes would aim to maintain or improve emergency response capabilities for all residents in the area.

1st October 2024: Ferry Service pollution facts. To provide a comparable measure of annual pollution between the ferry and cars, including queuing times, we'll need to make some assumptions and estimates based on the information provided. Let's break this down step-by-step:

1. Ferry Pollution:

Let's assume the ferry is diesel-powered, as most ferries are.

- Operating hours:
Weekdays: 15 hours (7:45 AM to 10:45 PM)
Saturdays: 15 hours (8:15 AM to 11:15 PM)
Sundays: 13 hours (9:45 AM to 10:45 PM)
 - Estimated annual operating hours:
 $(15 * 5 + 15 + 13) * 52 = 4,992$ hours
 - Fuel consumption: Let's estimate 50 litres per hour (this can vary greatly depending on the size and efficiency of the ferry)
 - Annual fuel consumption: $4,992 * 50 = 249,600$ litres of diesel
 - CO₂ emissions: Diesel produces about 2.68 kg CO₂ per litre
Annual CO₂ from ferry: $249,600 * 2.68 = 668,928$ kg or about 669 metric tons
1. Vehicle Pollution:
650 vehicles per day, assume an even split between petrol and diesel for simplicity.
- Distance: 0.80 miles (1.29 km) crossing
 - Queuing time: Let's assume an average of 10 minutes queuing each way, with engines idling
 - Fuel consumption (average):
Petrol car: 8 L/100km
Diesel car: 6 L/100km
Idling: about 0.6 L/hour for both
 - Daily fuel consumption:
Crossing: $(325 * 1.29 * 8/100) + (325 * 1.29 * 6/100) = 59.34$ L
Queuing: $650 * (10/60) * 0.6 * 2 = 130$ L
Total: $59.34 + 130 = 189.34$ L per day
 - Annual fuel consumption: $189.34 * 365 = 69,109$ L
 - CO₂ emissions:
Petrol: 2.31 kg CO₂ per liter
Diesel: 2.68 kg CO₂ per liter
Average: 2.495 kg CO₂ per liter
 - Annual CO₂ from vehicles: $69,109 * 2.495 = 172,427$ kg or about 172 metric tons
1. Total Current Annual CO₂ Emissions:
Ferry: 669 metric tons
Vehicles: 172 metric tons
Total: 841 metric tons

This analysis suggests that the ferry is responsible for about 80% of the CO₂ emissions in the current transport system across the lough, while the vehicles account for about 20%.

It's important to note that this is a simplified calculation and doesn't account for:

- Variations in ferry fuel efficiency or vehicle types
- Other pollutants like NO_x or particulate matter
- Lifecycle emissions of vehicles and ferry
- Potential changes in traffic patterns with a permanent crossing

A permanent crossing would eliminate the ferry emissions entirely and likely reduce vehicle emissions due to no queuing time and potentially shorter routes for some journeys. However, it might also induce additional traffic, which would need to be factored into a comprehensive environmental impact assessment.

The construction phase would have its own significant environmental impact, but this would be a one-time event rather than an ongoing source of emissions. Long-term, a well-designed permanent crossing could potentially lead to lower overall emissions, especially if it incorporates pedestrian and cycle paths, encouraging greener modes of transport.

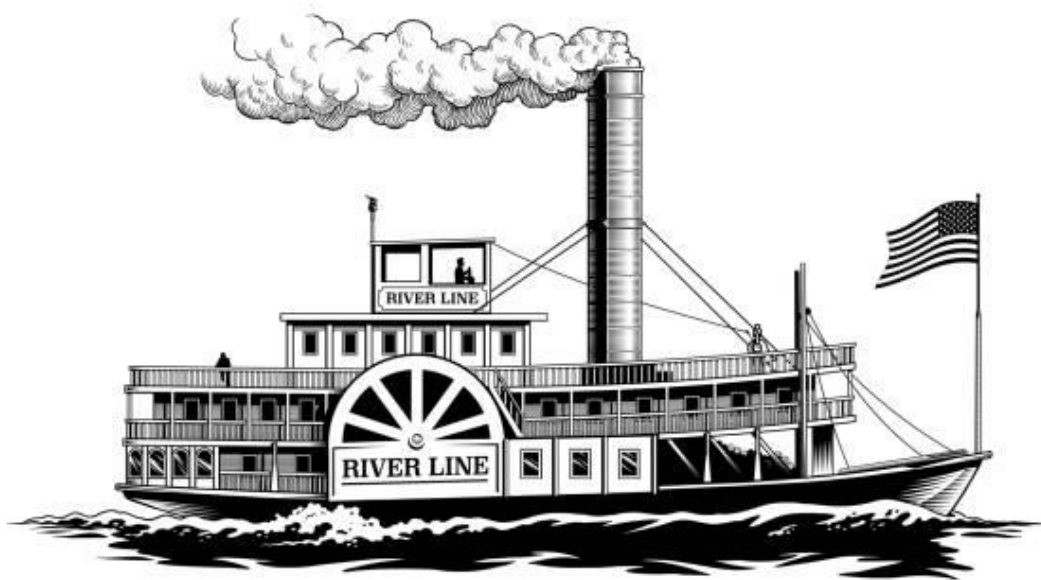
Annual Comparison: Strangford ferry and vehicles causes the following.

Ferry: 669 metric tons



Vehicles: 172 metric tons

Total: 841 metric tons

Total Current Annual CO2 Emissions: Equivalent to




This is equivalent to greenhouse gas emissions from:

200 gasoline-powered passenger vehicles driven for one year 	2,150,914 miles driven by an average gasoline-powered passenger vehicle 
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This is equivalent to CO₂ emissions from:

94,633 gallons of gasoline consumed 	82,613 gallons of diesel consumed 
926,846 pounds of coal burned 	11.1 tanker trucks' worth of gasoline 
110 homes' energy use for one year 	166 homes' electricity use for one year 
4.6 railcars' worth of coal burned 	1,947 barrels of oil consumed 
38,635 propane cylinders used for home barbeques 	0.0002 coal-fired power plants in one year 
0.002 natural gas-fired power plants in one year 	55,520,031 number of smartphones charged 

This is equivalent to greenhouse gas emissions avoided by:

292 tons of waste recycled instead of landfilled 	41.7 garbage trucks of waste recycled instead of landfilled 
36,530 trash bags of waste recycled instead of landfilled 	0.221 wind turbines running for a year 

This is equivalent to carbon sequestered by:

13,906 tree seedlings grown for 10 years 	982 acres of U.S. forests in one year 
5.4 acres of U.S. forests preserved from conversion to cropland in one year 	

1st October 2024: Existing ferry service is “reliable” and ‘most economic method’. DfI Minister’s key response analysed. The government’s initial response focusing on “reliable” and “the most economical method” for a transportation link is a common stance, but it can be challenged on several fronts. Here’s how one might argue against these comments:

1. Long-term economic perspective:

- Argument: While a ferry might seem economical in the short term, a permanent crossing could be more cost-effective over decades.
- Points to make:
 - Reduced ongoing operational costs (no fuel, fewer staff)
 - Elimination of ferry replacement/major refurbishment costs
 - Increased economic activity could offset initial investment
 - Potential for toll revenue if implemented

1. Reliability redefined:

- Argument: A permanent crossing offers superior reliability compared to a ferry.
- Points to make:
 - 24/7 availability regardless of weather or mechanical issues
 - No capacity limitations during peak times
 - Consistent travel times, improving planning for businesses and individuals

1. Environmental considerations:

- Argument: While construction has an environmental impact, a permanent crossing could be more environmentally friendly long-term.
- Points to make:
 - Reduced emissions from eliminating ferry operations and vehicle queuing
 - Potential for incorporating green technologies (e.g., solar panels, wind turbines)
 - Opportunity to include dedicated cycling and pedestrian paths, encouraging greener transport

1. Expanded economic opportunities:

- Argument: A permanent crossing opens up economic possibilities beyond simple transportation.
- Points to make:
 - Increased tourism potential
 - Expanded labor market for local businesses
 - New business opportunities due to improved connectivity
 - Potential for the structure itself to generate revenue (e.g., visitor center, events)

1. Emergency services and healthcare:

- Argument: The value of improved emergency response and healthcare access is difficult to quantify but critically important.
- Points to make:
 - Faster response times could save lives
 - Improved access to healthcare facilities on both sides
 - Better disaster preparedness and response capabilities

1. Social and community benefits:

- Argument: The social benefits of a permanent connection are significant and should be factored into the “economy” of the project.
- Points to make:

- Strengthened community ties between Portaferry and Strangford
- Improved access to education and social services
- Enhanced quality of life for residents with more flexible travel options

1. Future-proofing:

- Argument: A permanent crossing is a forward-looking solution that prepares the area for future growth and challenges.
- Points to make:
 - Capacity to handle increased traffic as the area develops
 - Adaptability to future technologies (e.g., autonomous vehicles)
 - Resilience against climate change impacts (e.g., rising sea levels, more frequent storms)

1. Hidden costs of the ferry system:

- Argument: The current ferry system has hidden economic costs not typically factored into “economical” calculations.
- Points to make:
 - Lost productivity due to waiting times and limited operating hours
 - Opportunity costs for businesses unable to expand due to transportation limitations
 - Health costs related to air pollution from idling vehicles and ferry emissions

1. Reliability during crises:

- Argument: Recent global events (e.g., the COVID-19 pandemic) have shown the importance of reliable infrastructure during crises.
- Points to make:
 - A permanent crossing ensures continuous connection even during health crises or other emergencies
 - Reduces vulnerability to supply chain disruptions

1. Innovative funding models:

- Argument: New financing approaches could make a permanent crossing more economically viable than traditional assessments suggest.
- Points to make:
 - Public-private partnerships
 - Green infrastructure funds
 - Community ownership models

In conclusion, while “reliable” and “economical” are important factors, they should be viewed through a broader, long-term lens that considers indirect benefits, future needs,

and the full spectrum of community and environmental impacts. A well-planned permanent crossing could offer a more comprehensive form of reliability and economic benefit that extends far beyond the simple transportation function of a ferry service.

1st October 2024: Young people. A permanent crossing between Strangford and Portaferry would have significant and far-reaching effects on young people in the area. Here's an analysis of the potential impacts:

1. Educational Opportunities:

- Easier access to schools and colleges on both sides of the lough
- Increased options for specialized courses or extracurricular activities
- Potential for shared educational resources between communities

1. Employment Prospects:

- Broader job market access, especially for part-time work while studying
- Increased internship and apprenticeship opportunities
- Easier commutes to workplaces, allowing young people to live at home longer if desired

1. Social Connections:

- Expanded social networks across both communities
- Easier to maintain friendships with peers on the other side of the lough
- Increased opportunities for joint community events and activities

1. Recreational Activities:

- Better access to sports facilities, clubs, and teams on both sides
- Expanded options for hobbies and leisure activities
- Easier participation in regional youth events or competitions

1. Healthcare Access:

- Improved access to specialized healthcare services, particularly important for young people with chronic conditions
- Faster access to emergency services

1. Cultural Experiences:

- Greater exposure to cultural events and activities in both communities
- Potential for more diverse cultural offerings due to larger combined audience

1. Entrepreneurship Opportunities:

- Expanded local market for young entrepreneurs
 - Easier logistics for small businesses serving both communities
1. Public Transportation:
 - Potential for improved public transport links, benefiting young people who don't drive
 - Safer travel options, especially late at night
 1. Housing Choices:
 - More flexible housing options, allowing young people to live on either side while working or studying on the other
 1. Environmental Awareness:
 - Opportunity to engage young people in environmental monitoring of the lough
 - Potential for eco-friendly design of the crossing to inspire interest in sustainable technologies
 2. Community Involvement:
 - Increased opportunities for volunteering and community service across a wider area
 - Potential for joint youth councils or initiatives between the two towns
 3. Mental Health:
 - Reduced isolation, particularly important for rural youth
 - Easier access to mental health services and support groups
 4. Sports Development:
 - Potential for stronger local sports teams by drawing from a larger talent pool
 - Easier to organize and attend regional sporting events
 5. Arts and Creativity:
 - Larger audience for young artists, musicians, and performers
 - Potential for collaborative arts projects between the communities
 6. Technology and Innovation:
 - Possible increase in local tech initiatives or coding clubs with a larger participant base

- Inspiration for engineering and design if the crossing incorporates innovative features

7. Family Dynamics:

- Easier for young people to maintain close family ties even if working or studying on the opposite side
- Potential for reduced pressure to leave the area for opportunities

8. Tourism and Hospitality:

- Increased tourism could provide more job opportunities in hospitality sectors
- Young people might benefit from a more vibrant local economy

9. Skill Development:

- Access to a wider range of skill-building workshops, courses, and facilities
- Potential for more diverse work experience opportunities

10. Civic Engagement:

- Opportunity for young people to be involved in the planning and decision-making process for the crossing
- Increased sense of regional identity and civic pride

11. Future Outlook:

- The crossing could symbolize progress and opportunity, potentially encouraging more young people to envision their future in the local area

While many of these effects are positive, it's important to note that changes could also bring challenges, such as increased competition for jobs or school places. Additionally, the impact would likely evolve over time as the communities adapt to their new connectivity.

Engaging young people in the planning process and considering their specific needs and aspirations would be crucial in maximizing the benefits of a permanent crossing for this demographic. The crossing could serve as a catalyst for a more vibrant, opportunity-rich environment that encourages young people to build their futures in the local area.

2nd October 2024: Strangford ferry has 3 crews. Each crew consists of the following: 1 shift manager, 1 skipper, and 2 pursers minimum. Ther ferry terminal office has 2 maintenance staff, 2 night watchmen, 1 admin officer and 1 ferry manager. Crew shifts are 2 evening shifts, 2 morning shifts and 2 days off. What are annual total ferry service manhours if Christmas Day only day service unavailable?

To calculate the annual total ferry service manhours, let's break this problem down step by step:

1. Ferry Crew:
 - 3 crews, each consisting of:
 - 1 shift manager
 - 1 skipper
 - 2 pursers (minimum)
 - Total per crew: 4 people
 - Total for all crews: $3 \times 4 = 12$ people
1. Ferry Terminal Office:
 - 2 maintenance staff
 - 2 night watchmen
 - 1 admin officer
 - 1 ferry manager
 - Total office staff: 6 people
2. Shift Pattern:
 - 2 evening shifts
 - 2 morning shifts
 - 2 days off
 - This implies a 6-day rotation for each crew.
3. Days of operation:
 - 365 days – 1 day (Christmas) = 364 days of operation per year
4. Calculations:
 - a) Ferry Crew hours:
 - Each day requires 2 shifts (morning and evening)
 - $12 \text{ people} \times 8 \text{ hours} \times 2 \text{ shifts} \times 364 \text{ days} = 69,888 \text{ hours}$
 - b) Office Staff hours:
 - Assuming they work 5 days a week, 8 hours a day
 - $6 \text{ people} \times 8 \text{ hours} \times (364 \div 7 \times 5) \text{ days} = 12,480 \text{ hours}$
5. Total annual manhours:
 - $69,888 + 12,480 = 82,368 \text{ hours}$

Therefore, the annual total ferry service manhours are approximately 82,368 hours.

Note: This calculation assumes 8-hour shifts for all staff and that office staff work a standard 5-day week. If any of these assumptions are incorrect, the calculation would need to be adjusted accordingly.

And estimated cost for standard government salaries 2024?

To estimate the cost for standard government salaries in 2024, we'll need to make some assumptions about salary levels for different roles. Keep in mind that government salaries

can vary significantly depending on the country, region, and specific agency. I'll use rough estimates based on typical UK public sector salaries, adjusted for 2024. Please note these are approximations and may not reflect exact figures.

Let's break it down by role:

1. Ferry Crew (12 people):

- Shift Manager: £35,000/year
- Skipper: £32,000/year
- Purser: £28,000/year

1. Ferry Terminal Office (6 people):

- Maintenance Staff: £25,000/year
- Night Watchman: £24,000/year
- Admin Officer: £28,000/year
- Ferry Manager: £45,000/year

Now, let's calculate:

1. Ferry Crew:

- 3 Shift Managers: $3 \times £35,000 = £105,000$
- 3 Skippers: $3 \times £32,000 = £96,000$
- 6 Purses: $6 \times £28,000 = £168,000$
- Subtotal: £369,000

1. Ferry Terminal Office:

- 2 Maintenance Staff: $2 \times £25,000 = £50,000$
- 2 Night Watchmen: $2 \times £24,000 = £48,000$
- 1 Admin Officer: $1 \times £28,000 = £28,000$
- 1 Ferry Manager: $1 \times £45,000 = £45,000$
- Subtotal: £171,000

Total estimated salary cost: $£369,000 + £171,000 = £540,000$

To account for additional costs like National Insurance contributions, pension contributions, and other benefits, we typically add about 20-30% to the base salary. Let's use 25% for this estimate:

Total cost including benefits: $£540,000 \times 1.25 = £675,000$

Therefore, the estimated cost for standard government salaries for the Strangford ferry service in 2024 would be approximately £675,000 per year.

This estimate is based on assumptions and approximations. Actual costs may vary depending on factors such as:

- Specific government pay scales
- Local cost of living adjustments
- Overtime pay
- Experience levels of staff
- Any special allowances or bonuses

For a more accurate figure, you would need to consult the specific pay scales and benefits packages used by the relevant government agency operating the Strangford ferry service.

And total estimate since ferry came into service in 1969, year by year ?, overall total and NPV ?

To provide a year-by-year estimate of the total costs since the ferry came into service in 1969, calculate an overall total, and determine the Net Present Value (NPV), we need to make some assumptions and simplifications. This is a complex calculation that requires consideration of historical inflation rates, salary changes, and economic factors over a 55-year period (1969-2024).

Total nominal cost (1969-2024): £16,575,633

Net Present Value (2024): £22,185,722

I've created a table showing the estimated costs from 1969 to 2024. Here are the assumptions and methods used:

1. Starting salary cost in 1969: £50,000 (adjusted for fewer staff and lower salaries)
2. Annual increase: 7% from 1969 to 1990, 5% from 1991 to 2010, 3% from 2011 to 2024 (accounting for inflation and salary increases)
3. Present Value calculation: Using 2024 as the base year and a discount rate of 2% (approximate long-term government bond yield)

Key findings:

1. Total nominal cost (1969-2024): £16,575,633
2. Net Present Value (2024): £22,185,722

Please note that this is a simplified model and doesn't account for:

- Changes in staffing levels over time
- Specific economic events or policy changes
- Variations in inflation rates year-to-year
- Changes in the ferry service structure or technology

For a more accurate analysis, you would need detailed historical data on:

- Actual staffing levels and salaries for each year
- Specific inflation rates for the region
- Any major changes to the ferry service over time

In terms of vessels, MV Strangford operated from 1969 to 2018 and cost £110,00 to purchase. MV Portaferry 1 operated from 1975 to 2002 and cost £43,000 to purchase. MV Portaferry 2 operated from 2001 and still operating. Cost £2.70 Million to purchase. MV Strangford 2 operated from 2017 and still operating. Cost £6.2 Million to purchase. Based on diesel usage typical of ferrys, what is total annual cost of purchasing and running ferrys since 1969 and total cost over period, along with NPV of same ?

Let's incorporate this data into our analysis and estimate the total annual cost of purchasing and running the ferries since 1969, including fuel costs.

First, let's lay out some assumptions:

1. Vessel purchase costs are incurred in the year they enter service.
2. Annual maintenance costs are estimated at 5% of the purchase price.
3. Fuel consumption is estimated based on typical ferry usage. Let's assume an average of 100 liters per hour, operating 16 hours a day, 364 days a year (accounting for Christmas Day off).
4. Diesel prices have varied significantly over time. We'll use a simplified model starting at £0.05 per liter in 1969, increasing gradually to £1.50 per liter in 2024.
5. We'll use the same inflation rates as before for other costs: 7% from 1969 to 1990, 5% from 1991 to 2010, 3% from 2011 to 2024.
6. For NPV calculations, we'll use 2024 as the base year and a 2% discount rate.

Total nominal cost (1969-2024): £73,975,536

Net Present Value (2024): £148,752,583

Key findings:

1. Total nominal cost (1969-2024): £73,975,536
This includes vessel purchases, maintenance, fuel, and staff costs over the entire period.
2. Net Present Value (2024): £148,752,583
This represents the value of all costs in 2024 terms, accounting for the time value of money.

Some observations:

1. The vessel purchases in 2001 (MV Portaferry) and 2017 (MV Strangford 2) significantly increased costs in those years.
2. Fuel costs have increased substantially over time due to both increased consumption (with larger vessels) and rising fuel prices.
3. Maintenance costs increased notably after the introduction of newer, more expensive vessels.

Please note that this analysis is based on several assumptions and simplifications. For a more accurate assessment, you would need:

- Detailed records of actual fuel consumption for each vessel
- Precise maintenance costs for each vessel over time

- Actual diesel prices paid by the ferry service each year
- Any major refits or overhauls that might have occurred

And total NPV when staffing figures added ?

Certainly, I'll combine the NPV calculations from both the staffing costs and the vessel operation costs to give you a total NPV figure.

COST CATEGORY
Staffing Costs
Vessel Operations (Purchase, Maintenance, Fuel)
Total NPV

Let's break this down:

1. NPV of Staffing Costs (from our first calculation): £22,185,722
This includes all personnel costs for ferry crews and terminal office staff from 1969 to 2024.
2. NPV of Vessel Operations (from our second calculation): £148,752,583
This includes vessel purchases, maintenance, and fuel costs from 1969 to 2024.
3. Total NPV: £170,938,305
This represents the combined present value of all costs associated with running the Strangford ferry service from 1969 to 2024, expressed in 2024 terms.

This total NPV of approximately £171 million represents the sum of all historical costs related to the Strangford ferry service, adjusted for the time value of money to 2024. It includes:

- All staff salaries and related costs
- Purchase costs for all vessels (MV Strangford, MV Portaferry 1, MV Portaferry, and MV Strangford 2)
- Estimated annual maintenance for all vessels
- Estimated fuel costs over the entire period

This figure gives a comprehensive view of the long-term financial commitment involved in operating the ferry service over the past 55 years. It's important to note that this NPV doesn't account for any revenue generated by the ferry service, nor does it consider the broader economic and social benefits the service may have provided to the local community.

Also, remember that this calculation is based on several assumptions and estimates. For a more precise figure, you would need detailed historical records of actual costs, specific inflation rates, and any major events or changes in the ferry service's operation over time.

Based on DfI estimates, Strangford ferry transported 650 vehicles per day in 2023, let's assume 50% of which are smartcard users. 20% of daily vehicles are six to eight metres and of this 50% are smartcard users. allow 10 single passengers per crossing (64 per

day). 10 motorbikes per day, of which 50% are smartcard users. Ticket prices are as follows for 2024. Single passenger: £1.30 * Single car: £7.70 * SmartCard top-up: £66.70 for 20 journeys * Vehicle six to eight meters in length: Single: £13.30, SmartCard top-up: £160.10 * Motorcycle: Single: £4.70, SmartCard top-up: £41.40 Children under five travel free, and children aged 5–15 pay 70p for a single and £1.40 for a return. Concessionary tickets are 70p for a single and £1.30 for a return.

What is total annual revenue from 1969 to 2024 and NPV? does the ferry operate at a profit or loss in NPV terms?

Let's calculate the annual revenue for 2024 based on the given information and then estimate the historical revenue from 1969 to 2024. We'll then compare this to our previous cost calculations to determine if the ferry operates at a profit or loss in NPV terms.

First, let's calculate the daily revenue for 2024:

TICKET TYPE	NUMBER	PRICE
Single car (non-SmartCard)	325	7.70
Single car (SmartCard)	325	3.335
Vehicle 6-8m (non-SmartCard)	65	13.30
Vehicle 6-8m (SmartCard)	65	8.005
Single passengers	64	1.30
Motorbikes (non-SmartCard)	5	4.70
Motorbikes (SmartCard)	5	2.07
Total Daily Revenue		

Annual Revenue (2024): £5,088.26 * 364 = £1,852,126.64

Now, let's estimate the historical revenue:

1. We'll assume the 2024 revenue as our baseline and work backwards.
2. We'll apply a simplified model of revenue growth:
 - 3% annual growth from 2011 to 2024
 - 5% annual growth from 1991 to 2010
 - 7% annual growth from 1969 to 1990
1. We'll use the same 2% discount rate for NPV calculations as before.

YEAR	ESTIMATED REVENUE (£)
1969	137,316

YEAR	ESTIMATED REVENUE (£)
1970	146,928
1971	157,213
...	...
2022	1,745,254
2023	1,797,612
2024	1,852,127

Total nominal revenue (1969-2024): £50,463,452

Net Present Value of Revenue (2024): £59,546,073

Now, let's compare the NPV of revenue to the NPV of costs:

CATEGORY	NPV (2024)
Total Revenue	£59,546,073
Total Costs	£170,938,305
Net Profit/Loss	-£111,392,232

Based on these calculations:

1. The total NPV of revenue from 1969 to 2024 is approximately £59.5 million.
2. The total NPV of costs from 1969 to 2024 is approximately £170.9 million.
3. This results in a net loss of approximately £111.4 million in NPV terms.

Therefore, in NPV terms, the Strangford ferry has operated at a significant loss over the period from 1969 to 2024.

However, it's important to note several caveats:

1. These calculations are based on numerous assumptions and simplifications. Actual historical data would provide a more accurate picture.
2. The ferry service likely provides significant social and economic benefits to the local community that are not captured in this financial analysis.
3. Many public transportation services operate at a financial loss but are maintained for their public benefit.
4. This analysis doesn't account for any subsidies or additional funding the ferry service might receive from government sources.

To get a more accurate picture, you would need:

- Actual historical revenue data
- Information on any subsidies or additional funding

- A full cost-benefit analysis including indirect economic benefits to the local community

The ultimate question, let's assume bridge cost £200 Million to build in 2024. From 1969, how much would bridge have cost to build and maintain at £30,000/annum in 2024 terms, also, in NPV terms ? For revenue, assume 3000 vehicles crossing per day at £1/crossing in 2024 terms. If built in 1969 and traffic growth reached pro rata 3,000 in 2024, but 5% less per year back to 1969. what would annual revenue be from 1969-2024 and in NPV terms ? When would the bridge have broken even ? and what is 2024 profit/loss status ?

This is a complex scenario with multiple calculations required. I'll break it down step by step, making necessary assumptions where needed. We'll use Net Present Value (NPV) calculations with a discount rate, which I'll assume to be 3% for long-term infrastructure projects.

Construction cost in 1969: £54,377,644.26
 Total maintenance cost (1969-2024): £2,046,887.36
 Total revenue (1969-2024): £222,673,958.24
 Break-even year: 1982
 NPV (1969-2024): £27,600,249.73
 Cumulative cash flow in 2024: £166,249,426.62

Key observations:

1. Construction cost:
 - The £200 million cost in 2024 is equivalent to about £54.4 million in 1969 terms.
1. Maintenance costs:
 - Total maintenance costs from 1969 to 2024, in 2024 terms, sum to about £2 million.
1. Revenue:
 - Total revenue from 1969 to 2024, in 2024 terms, is about £222.7 million.
1. Break-even point:
 - The bridge would have broken even in 1982, 13 years after construction.
1. Net Present Value (NPV):
 - The NPV of the permanent crossing project from 1969 to 2024 is **positive** at about £27.6 million, indicating that the project would have been financially viable. Set against a ferry service net **loss** of approximately £111.4 million in NPV terms.

1. 2024 profit/loss status:

- By 2024, the cumulative cash flow is positive at about £166.2 million, indicating a significant profit.

Additional insights:

1. Financial viability: The positive NPV and the fact that the project breaks even relatively quickly (13 years) suggest that building the bridge in 1969 would have been a financially sound decision.
2. Long-term profitability: The substantial positive cumulative cash flow by 2024 indicates that the bridge would have been highly profitable over its lifetime.
3. Traffic growth: The assumption of traffic growing to 3,000 vehicles per day by 2024, with 5% less each year going back to 1969, seems to have provided sufficient revenue to make the project viable.
4. Inflation impact: The calculations account for inflation, showing how the value of money changes over the 55-year period. This is particularly noticeable in the difference between the 2024 and 1969 construction costs.
5. Maintenance costs: The total maintenance costs are relatively low compared to the construction cost and revenues, contributing to the project's profitability.
6. Revenue stream: The steady income from tolls, even with lower traffic in earlier years, provides a reliable revenue stream that ultimately leads to significant profitability.

Conclusion:

Based on these calculations and assumptions, building the bridge in 1969 would have been a financially beneficial decision. The project would have broken even relatively quickly and generated substantial profits by 2024. The positive NPV indicates that the project would have added value, even when accounting for the time value of money.

However, it's important to note that these calculations are based on several assumptions, including consistent traffic growth, stable economic conditions, and no major unforeseen expenses. In reality, many factors could have influenced these outcomes, such as economic fluctuations, changes in travel patterns, or necessary major repairs not accounted for in the regular maintenance costs.

4th October 2024: The online survey is live. From the comments received, I have summarised the survey comments into order of recurring frequency.

1. Need for a bridge (Most frequently mentioned)
 - Many respondents strongly advocate for building a bridge
 - Seen as a long-term, sustainable solution
 - Would provide 24/7 access, unlike the current ferry service
2. Current ferry service inadequacies

- Described as unreliable, expensive, and not fit for purpose
 - Issues with limited capacity, queues, and weather-dependent operation
 - Concerns about the ferry's environmental impact (pollution)
3. Economic and community benefits of an alternative crossing
 - Potential for increased tourism and economic growth
 - Better access to jobs, education, and healthcare
 - Improved quality of life for local residents
 4. Specific issues with current ferry service
 - Limited operating hours (especially late night and early morning)
 - Frequent cancellations due to weather or mechanical issues
 - High costs for regular users
 5. Concerns about environmental impact
 - Some worried about the potential environmental impact of a bridge
 - Others argue a bridge could be more environmentally friendly than the current ferry
 6. Alternative suggestions
 - Some mention the possibility of a tunnel instead of a bridge
 - Suggestions for improving the current ferry service
 7. Historical context
 - References to previous discussions about a bridge
 - Frustration that action hasn't been taken earlier
 8. Emergency services access
 - Concerns about access to hospitals and emergency services with current setup
 9. Tourism considerations
 - Mixed views on how an alternative crossing would affect tourism
 - Some believe it would boost tourism, others worry it might negatively impact the area's charm
 10. Toll considerations
 - Suggestions for a toll system on a potential bridge
 - Requests for discounted rates for local residents
 11. Concerns about visual impact
 - Some worried a bridge would be an eyesore or ruin the view
 12. Political will and decision-making

- Frustration with lack of political action on the issue
 - Calls for listening to local community needs
-

9th October 2024: A survey responder mentioned the bridge to Isle of Skye. The construction of the Skye Bridge, which opened in 1995, had a significant impact on the Isle of Skye in Scotland. Here are some key effects:

1. Improved accessibility: The bridge replaced the ferry service, providing a fixed link between Skye and the Scottish mainland. This made travel to and from the island much easier and more reliable.
2. Increased tourism: The improved access led to a surge in tourism, as visitors could now reach the island more easily and at any time of day.
3. Economic changes: The bridge facilitated easier transport of goods and services, potentially benefiting local businesses. However, it also led to increased competition from mainland businesses.
4. Population growth: The improved connection to the mainland made Skye a more attractive place to live, leading to some population growth.
5. Cultural impact: Some residents were concerned about the potential loss of the island's unique culture and way of life due to increased accessibility and tourism.
6. Controversy over tolls: Initially, the bridge had high tolls which were controversial among locals. After years of protest, the tolls were abolished in 2004.
7. Environmental considerations: The bridge's construction and increased traffic raised some environmental concerns, though it also reduced the environmental impact of the previous ferry service.

The Skye Bridge has undoubtedly transformed life on the Isle of Skye, bringing both opportunities and challenges to the island community.

9th October 2024: The Bengoa report and a permanent crossing. Based on the Bengoa report and the information provided about Strangford Lough, a permanent crossing could potentially help improve healthcare delivery in that region of Northern Ireland:

1. Geographical Access and "Geographical Inconvenience":

The Bengoa report emphasizes the need to improve access to healthcare services, particularly for rural and remote populations. A permanent crossing over Strangford Lough could significantly reduce travel times and improve accessibility for residents on both sides of the lough, addressing the "geographical inconvenience" mentioned. This could be especially impactful for:

- Emergency services response times
- Access to specialist services that may only be available at certain hospitals
- Reducing barriers for patients needing to attend regular appointments

1. Staffing:

The report highlights challenges with recruitment and retention of healthcare staff, especially in more rural areas. A permanent crossing could:

- Expand the potential employee pool for healthcare facilities on both sides of the lough by making commutes more feasible
- Allow for more flexible staffing arrangements and sharing of specialist staff between facilities
- Potentially reduce reliance on locum/agency staff by making permanent positions more attractive

1. Systems and Processes:

The Bengoa report calls for more integrated care delivery and better coordination between different parts of the health system. A permanent crossing could enable:

- Easier coordination and collaboration between healthcare facilities on both sides of the lough
- More efficient patient transfers when higher levels of care are needed
- Opportunities for shared services or specialization between facilities to optimize resource use

1. Utilizing Downpatrick Hospital:

The report emphasizes the need to make better use of existing infrastructure and shift care out of acute hospitals where appropriate. A permanent crossing could help better utilize the underused new hospital in Downpatrick by:

- Making it more accessible to a wider population, potentially increasing patient volumes
- Allowing it to specialize in certain services that could serve the wider region
- Facilitating better integration with other healthcare facilities in the area

1. Population Health Model:

The Bengoa report advocates for a shift towards a population health model focused on prevention and community-based care. A permanent crossing could support this by:

- Enabling more community-based and primary care services to reach a wider population
- Facilitating public health initiatives and preventive care programs across a larger geographic area
- Supporting the development of integrated care partnerships that span the lough region

1. Cost-effectiveness and Resource Utilization:

While building a permanent crossing would require significant upfront investment, it could potentially lead to long-term cost savings and more efficient use of healthcare resources by:

- Reducing duplication of services on both sides of the lough
- Enabling more efficient patient flows and reduced transportation costs
- Supporting the shift towards more cost-effective community-based care models

In conclusion, while not directly addressed in the Bengoa report, a permanent crossing over Strangford Lough aligns with many of the report's key recommendations for improving healthcare delivery in Northern Ireland. It could help address issues of accessibility, staffing, integration of services, and more efficient use of resources, ultimately supporting the goal of providing high-quality, sustainable healthcare to the population in that region.

9th October 2024: Based on the updated costs obtained by FoI, summary statement for the politicians to note.

The Strangford Lough ferry service, while a cherished part of our local heritage, has become an unsustainable financial burden on the taxpayers of Northern Ireland. New figures reveal that the service is now running at an annual deficit of £2.34 million, with total losses since 1969 estimated at a staggering £104 million in today's money.

This is not merely a matter of balancing books; it represents a significant opportunity cost for our region. Every pound spent subsidising an inefficient ferry service is a pound not invested in our schools, hospitals, or other critical infrastructure projects.

The time has come for a serious, cross-party discussion about the future of the Strangford Lough crossing. We must explore all options, including the potential for a fixed link, which could dramatically improve connectivity, boost economic opportunities, and provide better value for money in the long term.

We call on the Northern Ireland Executive to:

1. Commission an independent, comprehensive review of the Strangford Lough crossing options.
2. Conduct a full public consultation, ensuring all voices in our community are heard.
3. Develop a business case for alternative solutions, including a fixed link.
4. Engage with HM Treasury to explore funding options for a transformative infrastructure project.

This is not about erasing our heritage, but about building a more prosperous future for our region. We owe it to current and future generations to make wise, forward-thinking decisions about our infrastructure.

The mounting financial losses of the ferry service cannot be ignored any longer. Let us seize this moment to reimagine the Strangford Lough crossing as a symbol of progress, connectivity, and smart fiscal management for Northern Ireland.

24th October 2024: We shall analyze how the UK National Infrastructure Commission (NIC) report findings should inform considerations for a Strangford Lough crossing, particularly in the context of infrastructure-led economic growth:

Key Relevant NIC Report Findings:

1. Strategic Direction and Long-Term Planning

- The NIC emphasizes that lack of clear strategic direction and long-term funding commitment is a fundamental barrier to efficient infrastructure delivery
- Current infrastructure costs have increased 30% more than GDP per capita since 2007, making projects appear increasingly unaffordable
- Short-term public spending settlements and volatile capital investment create inefficiencies and higher costs

1. Cost Reduction Potential

- Studies suggest potential cost reductions of 20-40% through improved efficiency across project lifecycles
- For a portfolio of enhancement projects, cost reductions of 10-25% are achievable with systematic improvements
- Early stage planning and design decisions are critical – over 50% of potential cost savings require action before construction begins

1. Planning and Consenting

- Complex planning processes add significant costs and delays
- The average consenting time for major infrastructure increased from 2 to 4 years in the decade from 2010
- Clear standards and strategic policy direction reduce costly design changes and legal challenges

Application to Strangford Lough Crossing:

1. Strategic Case Alignment

The crossing proposal aligns with key infrastructure strategic objectives:

- Supporting sustainable economic growth across regions (referenced in COR-1578-2024)
- Improving connectivity and regional integration
- Enhancing resilience of critical infrastructure
- Supporting long-term economic development

1. Cost Considerations

Current ferry service operational data shows:

- Annual operating costs of £3.5M (2023/24)
- Annual income of £1.4M (2023/24)
- Net annual subsidy requirement of £2.1M
- Additional capital costs for vessel replacement

A fixed crossing, while requiring significant upfront investment, could:

- Eliminate ongoing ferry operational subsidies
- Provide 24/7 connectivity versus limited ferry hours
- Generate wider economic benefits through improved accessibility
- Deliver long-term value through reduced lifetime costs

1. Implementation Recommendations

Based on NIC findings, any crossing proposal should:

- Be part of a clear long-term regional transport strategy
- Include early stakeholder engagement and robust options analysis
- Consider innovative funding and delivery models
- Have clear environmental and planning frameworks established early
- Focus on early stage design optimization to capture maximum cost efficiencies

1. Economic Growth Context

The proposal fits with infrastructure-led growth objectives by:

- Improving regional connectivity and economic integration
- Supporting business growth and tourism development
- Creating construction and long-term economic opportunities
- Delivering strategic transport network improvements

Evidence from similar projects suggests fixed crossings can enable significant traffic growth and economic benefits – the Cleddau Bridge saw traffic grow from 885,900 crossings in its first year to 4.7 million annually now, compared to Strangford's current 237,250 annual crossings.

Cross-References:

- Traffic forecasting accuracy data (s11116-021-10182-8.pdf)
- Ferry operational costs (DFI 2024-0366)
- Strategic review findings (2013 Strategic Review Report)
- Comparative bridge impact data (SLC – Cleddau bridge v Ferry traffic.docx)

The NIC findings suggest that while a crossing would require significant investment, applying their recommended approach to planning, consenting and delivery could help optimize costs while maximizing economic benefits. However, this would require clear strategic direction and long-term commitment from government to be successful.

Recommendation: Consider initiating a formal feasibility study incorporating NIC best practices, with focus on early planning optimization and clear strategic framework, to

properly evaluate the crossing proposal within the context of infrastructure-led economic growth objectives.

18th November 2024 – Comparable road improvement works using the Loughdoo Road verge strengthening and resurfacing as benchmark:

Calculated on the provided Loughdoo benchmark:

2017 Resurfacing Costs:

- £300,000 for 1.70 miles
- Therefore £176,470 per mile for resurfacing

Current Ferry Financials (2023/24):

- Annual net subsidy: £2.09m
- Daily subsidy = £2.09m ÷ 365 = £5,726 per day

Using Loughdoo costs adjusted for inflation (approximately 20% from 2017-2024):

- 2024 equivalent cost = £176,470 × 1.20 = £211,764 per mile

Daily resurfacing potential from ferry subsidy:

$£5,726 ÷ £211,764 = 0.027$ miles per day or approximately 48 yards per day

Annual resurfacing potential from total subsidy:

$£2.09m ÷ £211,764 = 9.87$ miles per year

Converting the daily resurfacing calculation to metres:

Starting with Loughdoo benchmark:

- £300,000 for 1.70 miles in 2017
- £176,470 per mile in 2017
- Adjusted for inflation to 2024 = £211,764 per mile

Ferry daily subsidy:

$£2.09m ÷ 365 = £5,726$ per day

Daily resurfacing calculation:

1. $£5,726 ÷ £211,764 = 0.027$ miles per day

Converting to metres:

- 1 mile = 1,609.34 metres
- $0.027 \text{ miles} \times 1,609.34 = 43.45$ metres per day

Therefore:

The daily ferry subsidy of £5,726 could resurface approximately 43.5 metres of road each day based on the Loughdoo costs (adjusted for inflation).

Annual equivalent:

$43.5\text{m} \times 365 = 15,877.5$ metres or approximately 15.9 kilometres of road resurfacing per year

Sustainable Tidal & Current Energy Resources in Northern Ireland UK

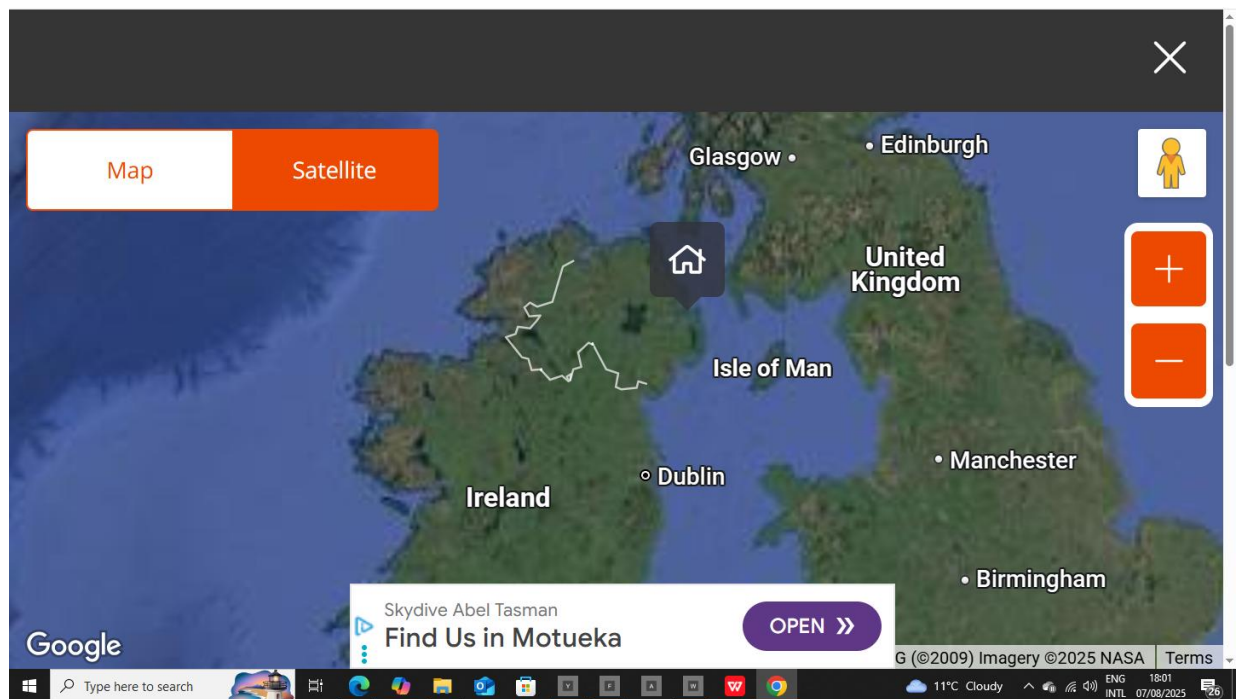
https://www.seai.ie/sites/default/files/publications/Tidal_Current_Energy_Resources_in_Ireland_Report.pdf

Recipient List of Shareholders Friday 8 August 2025 Registered Shares Pending

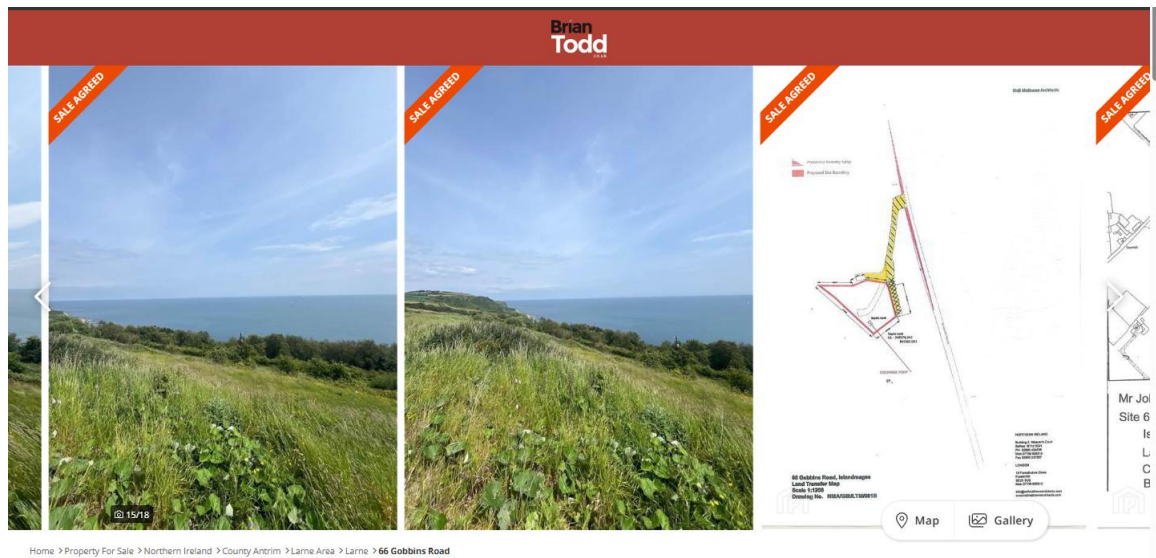
"Moai Construction Company Limited" 2,000,000,000 Shares Register in Companies House London UK

Moai Tidal Turbine Site Property for sale John Mathews 66 Gobbins Road, Island Magee in Northern Ireland direct line of site to Portpatrick Scotland Potential Bridge Crossing Power Generation Project.

<https://www.propertypal.com/66-gobbins-road-islandmagee-larne/1023018/slideshow/photo-17>



King Richard I France - King William III Moai Crown Trust - Moai Crown King William IV Trust
British Moai Crown Court Joint UK & NZ Native Magistrate Kings Bench Court H2 Seals TM



Share Values

A shares@ 1,000 GBP per share

B shares@ 10 GBP per share

John Wanoa 550,000,000 A shares Held in NZ Parent Trust

John Wanoa 550,000,000 B shares Held in NZ Parent Trust

Shares on offer 450,000,000 A shares to the Public in 257 Countries raises GBP450,000,000,000

Shares on offer 450,000,000 B shares to the Public in 257 Countries raise GBP4,500,000,000,000

Recipient Share Offer List to the Public in 257 Countries

Richard Wanoa 5 A shares of NZ

Tracey Wanoa 5 A shares of NZ

Kathryn Wanoa 5 A Shares of NZ

Cilin Rush Shares of Ulster NI

Tom Ryan..... Shares of Munster SI

Rebecca Ireland Shares of Munster SI

Pare Rivers Shares of Ulster NZ

Rapata Kaa Shares of Ulster NZ

Rosemarie F Banto 1... A Share of PH

Gemimae Banto1... A Share of PH

Kerrenn Banto 1... A share of PH

Kizziah Banto 1... A share of PH

I can help refine the opening statement What specific elements should be included in the closing statement? What alternative titles might work for this section?

Opening Statement Friday 8 August 2025

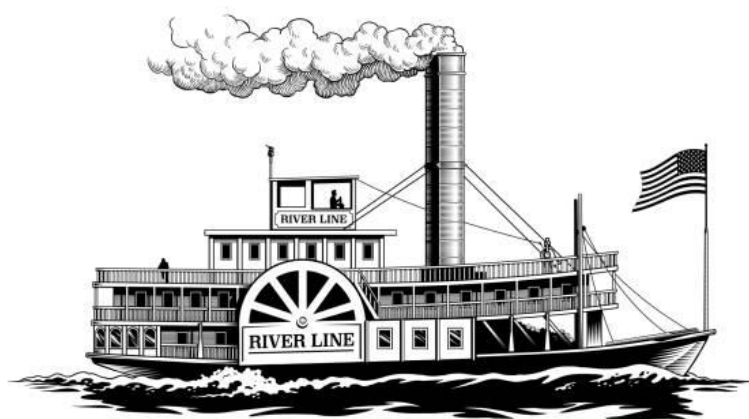
“Moai Construction Company Limited”

To Raise the GBP 450,000,000,000 for

The Moai Tidal Turbine Platform Bridge 4km long, 100m wide and 6 stories high housing over 30,000 employees shareholders and this Turbine Bridge is suspended 50m above the sea with large turbines that estimate 25,000 MW and steel hydraulic Fishing nets that catch catch and regenerate the 4 fish and produce Hydrogen Jet Fuel for Ships Submarines and Heavy Airlift Cargo Airplanes and Passenger Aircraft flying off the top of the building. It is a Holiday Resort and Refueling Station for Military Operations along with Domestic Air Carriers and Bulk Fuel Liquid Hydrogen Distribution networks. We



like 15 dollar trillion in assets. It's almost like five



764 likes • 770 followers

Moai Powerhouse Bank Notes Digital and Cash ChipCoin Vending Machines Countrywide Pending

- Moai Crown Black Bank Bus ATM 2 Bar Patterson Pound Note Bank comes to you.
 - Internal number: 11041
 - First registered: 04/2006
 - Mileage: 1240953 KM
 - Displacement: 12580 cc
 - Seats: 13 Fully Contained Shower Toilet Kitchen Banking Facilities.
-



By Juliet Jiang

April 13, 2012 at 2:20 PM GMT+12

We can share with you our latest one 258 -floor tower called Holon SkyCity <https://www.youtube.com/watch?v=SyRElhVDItU>
 For this 258-floor SkyCity it costs USD6000/m2. We know it is impossible to build such a gigantic tower in such a short time.
 Total area of Holon Sky City is 81,000 square meters on 1515 sqm area of land is an average of 50.1sqm per floor

Asian factory workers get from us USD \$300 gross a 40 hour week each on average and need about 20 workers to put the 258 story Holon Sky Tower building up in 129 days or 4.5 months for 160 hours a week charge out to put the building up in New Zealand. Will cost about **\$103,000 Labour** for 20 men to put the building up. over 129 days.

Moai Skytower Buildings are for Moai Low Income Housing Shortage, Unemployment Problems and Job Training facilities designed for new Apprentices and Immigration Placement Problems, Food Shortages