

Gaffney  
Cline

Midstream/Downstream Expertise



## About GaffneyCline

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GaffneyCline is a global consultancy that has been offering technical, commercial, and strategic advice to the energy sector since 1962. GaffneyCline's reputation demonstrates that its advice, along with its insight, is high-quality, impartial, technically-based, and commercially-astute. While recognised as one of the upstream sector's leading Reserves consultants, in reality GaffneyCline offers a full range of upstream, midstream and downstream technical and commercial consultancy services. This capability enables us to assess individual projects, an asset set, or whole companies 'in the round' along the full hydrocarbons value chain. GaffneyCline's services range from seismic interpretation, static and dynamic reservoir modelling, field development planning and field engineering, through to market/pricing analysis, hydrocarbon commercialisation, facility audit, mergers and acquisition due diligence, economic appraisals, project finance and expert witness. The company is also actively engaged in supporting clients to assess possible impacts to their businesses, solutions and potential new opportunities related with the energy transition, to help ensure they maintain a robust presence within the energy sector in the coming years. To leverage local-region insight and ensure the provision of uninterrupted support to our clients, GaffneyCline operates worldwide from three main offices in London, Houston and Singapore, and from regional offices located in Buenos Aires, Sydney and Dubai.

## GaffneyCline's Midstream/Downstream Capabilities

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GaffneyCline's experienced midstream & downstream professionals serve a wide range of clients, from national/international energy companies, petrochemical companies and energy ministries, through to entrepreneurial technology companies, banks, international financial organizations, and law firms.

The scope of assignments undertaken is very diverse and reflective of both GaffneyCline's experience base and the breadth of the mid/downstream hydrocarbons sector. This also includes the provision of support to clients seeking to navigate the energy transition and position themselves successfully within the hydrocarbons sector's future landscape. Typical aspects of the mid/downstream sector where GaffneyCline provides support include the following:

- **Market and Pricing Analysis** – customized appraisals that consider local and regional dynamics in tandem with global supply and demand drivers. GaffneyCline's bespoke market studies are based on our knowledge of existing markets and long-term views on supply and demand. These studies cover alternatives for feedstock supply or product sales, understanding whether products will be used in the local market or exported, along with the development of price scenarios for feedstock and products at the facility gate.
- **Hydrocarbon Commercialization** – analysis of and advice on the best options for monetization and the movement of product to market.
- **Project Development and Investment Advice** – analysis of market, technology and technical issues related to a project, including the selection of the best product mix and feedstock choice. We help with selection of the best process configuration, provide advice on sales and purchase contracts, assess optimal staffing levels and management systems to be put in place, develop estimates of capital and operating expenditure, and carry out economic modeling to better understand project attractiveness.
- **Plant/Facility Audit** – technical assessment of facilities from engineering and operational best practice perspectives.
- **Feasibility Studies** – development of studies appropriate to a project's maturity, from pre-feasibility through to bankable feasibility studies, including the provision of assistance during project implementation, and support to ensure that best practices are in place to optimise a plant after commissioning.



- Lender Due Diligence – analysis of projects for lenders to provide comfort that everything is in place to deliver project expectations and to ‘red flag’ any threats to the success of the project. Support also includes monitoring of the project during its execution phase, to keep lenders up to date with progress and to highlight any new threats that arise driven by project execution issues or changes in the market environment.
- Mergers & Acquisitions – technical, commercial and strategic due diligence for clients looking to purchase assets along the mid/downstream hydrocarbons value chain, including crude oil refineries, petrochemical plants, processing facilities, pipelines and storage. Our technical due diligence covers an understanding of the asset and provides comparison with competition and an assessment of strengths, weaknesses and future threats. Where relevant/feasible, we also carry out an assessment of the integrity of the asset and the processes in place to maintain the asset. This, coupled with our market knowledge and feedstock/product price scenarios, allows us to build-up an economic model of the facility, incorporating the expected gross margin along with operating and capital cost requirements.
- Strategic Advice – work with national oil companies/energy ministries and individual companies on a range of assignments focused on policy development and market positioning. Work ranges from single assets through to whole-of-sector appraisals, encompassing aspects including: hydrocarbon utilization strategies; investment plan development; identification and evaluation of specific assets; analysis of industry benchmarks and trends; bespoke cash flow model development; analysis and advice on financing; institutional capacity development; market competition considerations; and law/regulatory/contractual frameworks.
- Expert Witness Testimony – this includes provision of written reports, testimony at arbitrations, and other services.

# Our Experience

## Energy Transition – Application of Thermal Solar Panels

GaffneyCline assessed the potential market for the introduction of thermal solar panels within the hydrocarbons sector of a petroleum-producing country. Work focused on identifying applications for the provision of process heat in the country's upstream, refining and petrochemical facilities. Possible opportunities were prioritised, based on operating temperature/pressure regimes, synergy with existing operations, estimates of thermal heat load and resultant panel market potential. For the high-graded opportunities, an assessment was made of likely system integration capital and operating costs as part of an appraisal of economic performance and payback. The potential addressable market was assessed together with the analysis of payback sensitivities. Estimates of CO<sub>2</sub> reduction potential were also made, along with recommendations on the most appropriate business model for the successful introduction of panels into the target country.

## Crude Oil Refining – Second-hand Refinery Units Due Diligence

GaffneyCline carried out initial due diligence of plans to install a number of second-hand refining assets at an existing refining site. The reconstructed assets were to be used to upgrade the existing refinery's ability to produce on-specification diesel, as well as to reduce the amount of fuel oil being produced. Amongst other things, GaffneyCline provided opinion on: whether the assets were suitable to achieve the existing refinery's goals; the refinery's ability to implement the project as proposed; the condition of the second-hand refining assets; and the contractual/commercial arrangements being proposed for incorporation and operation of the second-hand assets.

## Downstream Project Commercialisation – Advisory Expertise

GaffneyCline was engaged by the Petroleum Contracts and Licensing Directorate (PCLD) of Iraq's Ministry of Oil to assist in the development and negotiation of downstream commercialization projects, including the world-scale Southern Iraq Integrated Project (upstream gas development coupled with power generation) and the Nasiriyah Integrated Project – a project to develop a 4+ billion-barrel field in conjunction with a new-build 300,000 BOPD refinery. GaffneyCline was tasked with a wide range of technical and managerial responsibilities, from preparing data packages and communications with prospective bidders, to assisting PCLD in determining appropriate contractual terms, award criteria and bidding procedures.

## Pipeline Assessment – Refined Products

On behalf of an independent oil company, GaffneyCline provided an assessment of the viability of a potential new refined product pipeline from the Caspian to the Black Sea. The study included a critical review of the potential sources of refined product supplies and the target markets for the products.

## Facility Review – Methanol Plant

To support debt financing, GaffneyCline provided a detailed engineering and financial review of a methanol plant being constructed in Africa. GaffneyCline conducted a detailed assessment of the facility's design, EPC plans, operations and maintenance plan, transportation, storage and distribution, pro-forma financials, and permits and licenses. Subsequently, GaffneyCline was appointed as the lender's supervisor to monitor the progress of the project.

## Monetization Strategy – Gas-to-Liquids

GaffneyCline assessed the feasibility of developing small-scale GTL facilities as part of efforts to develop an African country's domestic natural gas market. In addition to investigating the development concepts for already-proposed projects, the economic performance of a potential facility was analysed to assess the range of delivered gas prices required for the GTL plant to achieve an acceptable post-tax rate of return, under a range of scenarios for realised GTL diesel prices.

## Feasibility Study – LPG Infrastructure

GaffneyCline undertook a technical and commercial feasibility study for the establishment of LPG manufacturing and export facilities in a target region of the Middle East. The work addressed gas availability and composition, synergy with existing plants, and contractual obligations. Additionally, cash flow models were developed to examine various investment options relating to the phasing of building the LPG plants, and the use of pipelines to supply domestic markets.



# Our Experience

## Due Diligence/Evaluation – Refining Assets

GaffneyCline provided an independent opinion of the attractiveness of three European refineries in relation to a potential asset acquisition. The evaluation involved an assessment of current and future fixed costs and envisaged capital expenditure. GaffneyCline provided an opinion on the operating philosophy, maintenance systems and management team structure and competencies. Site visits were undertaken to all refineries to support assessments. A review of likely future product pricing and refining margins was also undertaken.

## Facilities Audit – Investigation of EPC Contractor Work

GaffneyCline was engaged to review the work carried out by the EPC contractors responsible for the respective development of a major new-build petrochemical plant and a commercial-scale natural gas conversion project. In addition to assessing whether the respective contractors had built what they were contracted to provide, GaffneyCline considered whether the contractors had designed and built what was needed to satisfy international and local standards of engineering design, safety and environmental protection. Consideration was also given to the technology that had been utilized, and whether an appropriate technological approach had been adopted for each process plant, in line with the standards applicable to each facility being constructed. Detailed assessments were made of the equipment, spare parts, documentation, procedures and manuals procured, installed and provided by each contractor in the context of what was contractually expected. Areas where it was felt a contractor may have fallen short in its performance were flagged to GaffneyCline's client, to act as the basis for discussions aimed at closing out the issues raised.

## Refinery Market Study – Refined Product Demand & Pricing

In relation to plans for a new refinery, GaffneyCline carried out a study to assess the market for refined products in East Africa over a 20-year period. Individual country assessments were made to project potential demand for a number of refined products, taking into account the relationships between macroeconomic parameters and energy demand, the dynamics of fuel choice and supply, and country energy policies. The refinery's potential supply advantage was assessed by comparing the expected supply cost to each market location for products imported via the Indian Ocean (the primary source of currently-consumed products) with the cost of moving products from the proposed refinery to the same locations. Within this, average supply costs were developed for each product by considering likely transportation routes and potential modes of transport (i.e. pipeline, road, rail). Resultant import parity-based netback prices to the proposed refinery were established for each refined product to each market location and used to prioritise the disposition of each product. Price profiles for each year of the period under review were then established for each product to be produced by the refinery for use by the client in their assessment of refinery economics. An estimate was also made of the potential value of host country crude oil production to be used as feedstock to the proposed refinery.



## Strategic Advice – Crude Oil Production Value Maximization

GaffneyCline was engaged by a NOC in a long-term project providing strategic advice regarding the value maximization of a major international crude oil. GaffneyCline's work involved an assessment and comparison of various value maximization projects, such as construction of, or acquisition of, refining and/or petrochemical assets. GaffneyCline developed high-level demand assessments for numerous refined products in addition to producing price projections for refined products including LPG, naphtha, gasoline, kerosene, jet, gasoil, fuel oil for bunkers and inland consumption.

## Expert Witness Services – Refinery Arbitration

GaffneyCline provided expert witness services in relation to arbitration between a private investor and a host government before the International Centre for the Settlement of Investment Disputes. GaffneyCline provided two expert witness reports covering aspects including the product market, a competitor analysis, an assessment of the refinery's economics and an assessment of suitable crude oils. A site visit to the refinery in question was also conducted. In addition, GaffneyCline provided expert testimony at the arbitration hearing.





For more information about GaffneyCline's integrated services, please contact your regional GaffneyCline office.

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