

Refurbishment and integration challenges

Condition of existing facilities

- The condition of existing facilities, and the extent of refurbishment required, is often not fully known until the contractor starts stripping back the existing plant
- Structural issues with the existing plant may not be immediately identifiable, and may impact the commercial or technical viability of a project

Contamination and unforeseen site conditions

- Brownfield sites are often subject to contamination, the removal or remediation of which can be costly, particularly where the removal of the substance or material is subject to regulatory requirements (for example, asbestos)
- Brownfield sites can be more difficult to survey geotechnically, particularly where new plants have different load requirements and/or layouts

Certainty of pricing

- Generally difficult to price on a fixed lump-sum basis
- Reimbursable pricing structures have little cost certainty for owners, and can be difficult and time-intensive to manage

Performance guarantees

- Contractors are unlikely to provide robust performance guarantees where a new plant is combined with or reliant on parts of an existing plant that have not been refurbished

Technology licensing

- If a retrofit is only partial, then adjustments to the original process plant and/or combination of the original process plant with new technologies and/or low-carbon power sources may also breach technology license arrangements

Operational challenges

- Issues around operations team delaying and/or disrupting the construction contractor (and vice versa)
- Delays in construction may directly cause additional downtime to the plant, losing revenue and impacting offtake arrangements
- Insurance issues around carrying out construction works during the operations phase of the project life cycle

Utilities and ancillary infrastructure

- New technologies may require the addition or removal of connection points, consumption capacities or ancillary infrastructure, for example, if a metal plant is moving from coking coal-fired furnaces to electric arc furnaces
- Changes to utilities and ancillary infrastructure are likely to require the consent of government regulators, and may be restricted by wider physical constraints, such as a lack of local grid capacity to accommodate energy-intensive electrified solutions

Financing

- Cost and time uncertainty, and risks related to performance guarantees, mean that refurbishment projects are difficult to finance off-balance sheet
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