Jemena Electricity Networks (Vic) Ltd

JEN - RIN - Support - Customer Connections Forecast Methodology - 20250131

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Owning Functional Area

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Abbreviations

Abbreviation	Expanded Name
ACIF	Australian Construction Industry Forum
AER	Australian Energy Regulator
CB	Business Supply > 10kVA
CD	Dual & Multiple Occupancy
CH	Medium Density Housing URD/PURD
CIC	Customer initiated capital
CL	Public Lighting
CM	Service Wire Overhead and Underground
COWP	Capital and operational work plan
CPI	Consumer price index
CR	Capital rectification/recoverable works
CS	Low Density & Small Business Supplies < 10kVA
JEN	Jemena Electricity Networks
MAT	Maintenance Activity Type
NAMP	Network Asset Management Plan
NER	National Electricity Rules
RIN	Regulatory information notice
TNSP	Transmission network service provider
URD	Underground Residential Distribution
VEDCoP	Victorian Electricity Distribution Code of Practice

Overview

Jemena Electricity Networks (JEN) is responsible for planning and developing its distribution network, as well as planning and directing the augmentation of its connection points with the shared transmission network, owned and maintained by the relevant transmission network service provider (TNSP).

JEN is also responsible for providing connection services and supply to customers and generators, asset relocation services including undergrounding, public lighting services and distribution services to other distributors. These distribution services are referred to as either direct control services or negotiated distribution services, and are classified by the Australian Energy Regulator (AER) in accordance with the National Electricity Rules (NER). Capital investments of these services are commonly referred to as customer connections capital or customer initiated capital (CIC). The terms are used interchangeably.

A number of regulatory instruments define JEN's obligations to provide direct control services and negotiated distribution services to customers. The regulatory instruments that set JEN's obligations to offer direct control services and negotiated distribution services to customers include JEN's Electricity Distribution Licence, Victorian Electricity Distribution Code of Practice (VEDCoP) and National Electricity Rules (NER).

1.1 Background

Historically, customer connections accounted for an average of 40% of the JEN total network capital expenditure. Therefore, it is important to accurately forecast the capital investment required over the next 5 years (or 7 years as required).

Initiation of the customer connections investment is driven by customers and is outside the direct control of JEN. Customer initiated projects are made up of a large number and a broad range of project types. Projects are ranging in values from several hundred dollars to several million dollars. The lifecycle of these projects ranges from weeks to several years depending on its capital value.

1.2 Forecast approach

Consistent with the capital expenditure objectives set out in Clause 6.5.7 (a) of the NER, this methodology is aimed at providing a consistent, transparent and auditable approach underpinning the forecast capital expenditure that is required to meet the expected demand for customer connections.

JEN derives its forecast capital expenditure using its consultant's and Australian Construction Industry Forum (ACIF) growth forecasts, which is consistent with the expected level of economic development activities in the Melbourne metropolitan area.

2. Introduction

Jemena Electricity Networks (JEN) is responsible for planning and developing its distribution network, as well as planning and directing the augmentation of its connection points with the shared transmission network, owned and maintained by the relevant transmission network service provider (TNSP).

JEN is also responsible for providing connection services and supply to customers and generators, asset relocation services including undergrounding, public lighting services, distribution services to other distributors and other excluded services. These distribution services are referred to as either direct control services or negotiated distribution services, and are classified by the Australian Energy Regulator (AER) in accordance with Clauses 6.2.1(a) and 6.12.1 (1) of the National Electricity Rules (NER). Direct control services are further split into Standard Control Services and Alternative Control Services. Capital investments of these services are commonly referred to as customer connections capital or customer initiated capital (CIC). The terms are used interchangeably.

Historically, customer connections capital accounted for an average of 40% of the JEN total network capital expenditure, approaching 50% in FY23-24. Therefore, it is important to accurately forecast the capital investment required over the next 5 years (or 7 years as required).

Initiation of the customer connections investment is driven by customers and is outside the direct control of JEN. The level of customer investment on the JEN network appears to be correlated with the level of economic development activities (e.g. building construction activity, subdivision development, asset relocations, major customer growth, and infrastructure projects) in the Melbourne metropolitan area and as such JEN derives its forecast capital expenditure using its consultant's and Australian Construction Industry Forum (ACIF) growth forecasts relevant to the area that includes JEN's service area.

Customer initiated projects are made up of a large number and a broad range of project types. Projects are ranging in values from several hundred dollars to several million dollars. The lifecycle of these projects ranges from weeks to several years depending on its capital value.

JEN customer connections capital forecasts are grouped into the following activities, consistent with the activity-based financial reporting in SAP.

- CB Business Supply > 10kVA;
- CD Dual & Multiple Occupancy;
- CH Medium Density Housing URD;
- CL Public Lighting;
- CM Service Wire Overhead and Underground;
- CR Capital Rectification/Recoverable Works; and
- CS Low Density & Small Business Supplies < 10kVA

This document serves as an internal procedure that defines the methodologies, inputs and assumptions that must be followed when forecasting the level of investment that is required to meet the expected demand for customer connections.

2.1 Document Objective

This document's objective is to ensure the consistent, transparent and auditable approach underpinning the customer connections capital forecast that can be reviewed and improved over time. To achieve this, the document serves as a high-level, internal procedure that defines the:

- methodology for forecasting capital expenditure for each of the connection services,
- input data for applying this methodology, and

- sources of data when preparing the inputs and assumptions.

2.1.1 Exclusions

The broader aspects of customer connections forecast are not covered by this procedure, including:

- customer connections revenue forecasting,
- economic forecasting,
- cost estimating,
- unit price escalation forecasting, and
- JEN's governance processes.

2.2 Requirements for applying customer connections capital forecast methodology

When carrying out the customer connections capital forecast:

- Staff responsible for forecasting must apply the methodology and assumptions as outlined in this document,
- Any customer connections capital forecast for inclusion in JEN's plans, such as Network Asset Management Plan (NAMP) and annual Capital and Operational Work Plan (COWP), must be validated against this methodology,
- Input data and assumptions must be reviewed prior to developing forecast that underpin a regulatory proposal to the Australian Energy Regulator (AER).

2.3 Document Review

This document, including the underlying methods, inputs and assumptions, must be reviewed for suitability at least every two years, or less if circumstances require. The review should at the least cover:

- consideration of customer and regulator' expectations,
- recent changes to the planning approach that may affect the assumptions,
- process performance i.e. comparison of forecast against actual expenditure – the rolling 12-month forecast should be within 10% of the actual expenditure,
- changes to the sources of input, and
- changes in legal and regulatory requirements.

3. Regulatory Obligations and Forecast Approach

3.1 Relevant Regulatory Instruments and Obligations

A number of regulatory instruments define JEN's obligations to provide direct control services and negotiated distribution services to customers. Important points relevant to these services include the following:

- JEN's Electricity Distribution Licence, the Victorian Electricity Distribution Code of Practice (VEDCoP) and National Electricity Rules (NER) are the regulatory instruments that set JEN's obligations to offer direct control services and negotiated distribution services to customers.
- JEN's Electricity Distribution Licence (Chapters 6 to 12) sets the obligations for JEN to offer connection services and supply to customers and embedded generators, asset relocation services including undergrounding, public lighting services, distribution services to other distributors and other excluded services.
- The AER determines the classification of services for JEN for each regulatory control period, in accordance with clause 6.2.1(a) and 6.12.1 (1) of the NER.
- The NER (Chapter 5 – Part B – Network Connection and Access, and Chapter 5A – Electricity connection for retail customers) sets the framework for connection to the JEN network.
- Clause 6.5.7 (a) of the NER also outlines the four capital expenditure objectives. The first two capital expenditure objectives that are relevant to the customer connections capital forecast include:

  "*A building block proposal must include the total forecast capital expenditure for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to do each of the following (the capital expenditure objectives):*

  (1) meet or manage the expected demand for standard control services over that period;

  (2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;

  …"

- The VEDCoP (Chapter 3 – Connection of Supply) requires JEN to use best endeavours to energise the customer's supply address and sets out various obligations in relation to connection of supply in line with the NER Chapters 5 and 5A.

3.2 Customer connections capital forecast approach

JEN regularly reviews its customer connections capital forecast methodology to ensure a consistent, transparent and auditable approach underpinning the capital forecast.

Consistent with the capital expenditure objectives set out in Clause 6.5.7 (a) of the NER, this methodology is aimed at providing a consistent, transparent and auditable approach underpinning the forecast capital expenditure that is required to meet the expected demand for customer connections.

JEN derives its forecast capital expenditure using its consultant's and ACIF growth forecasts, consistent with the expected level of economic activities in the Melbourne metropolitan area.

4. Customer Connections Activities and Services Classification

In the current and next regulatory period (2021-25 and 2026-31), each group of customer connection activity is assigned to a regulatory service classification. See Table 4-1 for details.

Table 4-1: Customer connections activities and services classification (2026-31)

Service Code	Description	Service classification
CB	Business Supply > 10kVA	Direct control service (standard control service)
CD	Dual & Multiple Occupancy	Direct control service (standard control service)
CH	Medium Density Housing URD	Direct control service (standard control service)
CL	Public Lighting	Negotiated services
CM	Service Wire Overhead and Underground	Direct control service (alternative control service)
CR	Capital Rectification/Recoverable Works	Direct control service (standard control service)
CS	Low Density & Small Business Supplies < 10kVA	Direct control service (standard control service)

Notes

- *This document does not cover the connections capital expenditure forecast for 'Meters, Time Switches and Services – New', and Embedded Generation.*

A brief description of each service and what it covers is provided below.

4.1 CB Business Supply > 10kVA

This activity covers all capital works associated with the provision of new or increased supply to all projects that require (High Voltage, distribution substation, and major Low Voltage) network augmentation and negotiated using the Industrial/Commercial extension procedures, using low, medium and high density network methods.

4.2 CD Dual and Multiple Occupancy

This activity covers all capital works associated with the provision of additional supply points to existing lots from roadside mains including any minor upgrading of the roadside Low Voltage mains and installation of service cables and pits.

4.3 CH Medium Density Housing URD

This activity covers all capital works associated with High Voltage and Low Voltage underground and partial underground works, service pits and kiosks to provide supply to new medium density residential subdivisions, neighbourhood extensions both specific and general as well as minor Low Voltage extensions in medium density areas, supplied by extending or upgrading the network system.

4.4 CL Public Lighting

This activity covers all capital works associated with the provision of new or upgraded public lights including both major road schemes and minor road schemes. The new public lighting generally includes the lighting installation in the medium density housing URD projects. The actual costs are fully funded by the party requesting the work.

4.5 CM Service Wire Overhead and Underground

This activity allows for new underground and overhead service connections.

4.6 CR Capital Rectification/Recoverable Works

This activity covers all capital works carried out for customers or other authorities in which actual costs are externally financed and for which the prime purpose is to satisfy a requirement other than new or increased supply. It includes network asset relocations associated with public infrastructure projects. It also includes minor pole relocations that have been requested by customers or developers. The amount of work required varies annually, depending on the volume of customer requests. In addition, it also covers capital rectification works where damages have been caused by unknown third parties.

This activity continues to be covered by this document despite it has been classified as replacement expenditure (Repex) from 2016. This remains a customer initiated activity.

4.7 CS Low Density/Small Business Supplies < 10kVA

This activity covers all capital works associated with the provision of new or increased overhead or underground supply to low density (typically rural) subdivisions and single/small group extensions.

5. Existing Process and Future Improvement

5.1 General

It is envisaged that this document will continue to be developed and improved over time as experience and knowledge is accumulated. The current systems and processes may be modified for improvement as required.

5.2 Description of processes

The methodology used for customer connections capital forecasting is divided into three phases, as listed below.

- Phase 1: Data Analysis
- Phase 2: Growth Factors Selection
- Phase 3: Forecast and Reporting

5.2.1 Phase 1: Data Analysis

The purpose of this phase is to establish an appropriate baseline on which the forecast is based on.

The capital expenditure forecast in relation to customer connection is first compiled and grouped by 7 service codes (as listed in Table 4-1).

To ensure a prudent capital forecast, all major one-off projects are excluded from the base year capital amounts. For example, Data Centre projects which amount to $30m in FY23-24 are excluded.

5.2.2 Phase 2: Growth Factors Selection

Once the baseline financial data is determined, the appropriate growth factors need to be established.

JEN undertakes economic growth review as part of the forecasting process. JEN sources its growth forecast from the following:

- [redacted], providing forecasts on JEN's customer numbers and energy; and
- ACIF, providing forecast on capital expenditure by sector in Melbourne and Victoria.

To derive the growth rate applicable to residential related activities, JEN uses the rate of change in the growth of residential customer ([redacted] forecast). For non-residential related activities, JEN adopts the capital expenditure growth in the relevant sectors presented in ACIF report. The basis for growth applicable to each service code is shown in Table 5-1 below.

Table 5-1 Growth Factor by Services

Service code	Description	Growth Basis
CB	Business Supply > 10kVA	ACIF, relevant non-residential sectors: Industrial; Other Commercial; Miscellaneous.
CD	Dual & Multiple Occupancy	[redacted], rate of change in residential customer growth

Service code	Description	Growth Basis
CH	Medium Density Housing URD/PURD	[redacted], rate of change in residential customer growth In addition, a special one-off growth factor is applied to account for impact specifically relevant to Medium Density Housing. The growth is due to the following factors: the increasing uptake of Electric Vehicle; and the effect of electrification of residential households. The Victorian government has started to phase out new gas connections for new residential dwellings from 1 Jan 2024.
CL	Public Lighting	[redacted], rate of change in residential customer growth
CM	Service Wire Overhead and Underground	[redacted], rate of change in residential customer growth
CR	Capital Rectification/Recoverable Works	ACIF, relevant engineering sectors: Roads, Bridges Railways Harbours
CS	Low Density & Small Business Supplies < 10kVA	ACIF, relevant non-residential sectors: Industrial; Other Commercial; Miscellaneous.

Price Escalation (labour or material) for each service is not included in this capital expenditure forecast. It would be addressed at a higher level in JEN's capital expenditure forecasting model.

5.2.3 Phase 3: Forecast and Reporting

JEN carries out its CIC forecast in two parts:

1. Baseline forecast;

This is produced by applying the relevant growth rates (as discussed in section 5.2.2) to the 'base year' expenditure.

The 'base year' expenditure is generated using the average of three years historical baseline capital expenditure (see section 5.2.1).

For CH (Medium Density Housing URD/PURD), an additional factor of 3.81% has been added in FY2024-25 in addition to the growth rate as described in Table 5-1. This is a one-off factor to account for the impact of electrification, such as the gas electrification policy instigated by the Victorian government and increasing home charging of Electric Vehicle.

A study has been conducted on a sample of 14 medium density housing projects.

- Different design-and-build options (to cater for electrification) are created for these 14 projects;
- The cost of all options are then calculated; and

- The most cost effective option (recommended) increases the capital expenditure of these 14 projects by 3.81%.

2. Major projects;

One-off major projects with high probability of proceeding are added in the year(s) they are expected to take place. The forecast for these projects is individually calculated.

Apart from these known probable projects, there are also possible major projects that are yet unknown (Future Major Customers Projects). JEN forecasts an aggregate amount for Future Major Customers Projects using a unit rate approach.

This approach generates forecast by multiplying the relevant unit rates with the applicable incremental loads (MVA).

The unit rates for data centre (DC) and non-DC major projects are separately derived, as shown below.

Unit Rate (DC) = Total capex (known DC)/Total incremental load (known DC); and

Unit Rate (non-DC) = Total capex (known non-DC)/Total incremental load (known non DC)

Notes:

- total capex refers to the total forecast capex of all known major projects for the entire regulatory period (FY25/26 – FY30/31);
- total incremental load refers to the total incremental load (MVA) as at 31 December 2033.

The forecast incremental load of future connections is based on the average incremental load of known customer load over a 10-year period. We apply this forecast from 2028. We forecast that future load will increase as known connections fall away (given the forecasting horizon of known connections).

We also adjust this forecast based on our general expectation around how these connections will change. For major customers we expect connections to be similar to what has been observed in the past. For data centres, we expect those connections will reduce over the period as the boom in data centre investment moderates.

The total CIC forecast is also presented in several ways:

- Baseline forecast is carried out at the higher level of two letter service code (e.g. CB for business supply). It is then further broken down to three letter service codes; e.g. CBE (business supply, LV extension), CBH (business supply, HV customer) etc.
- The allocation of baseline forecast from two letter service code to three letter service code is based on historical actual cost split.
  - For residential and related categories, a longer-term cost pattern (6 years average historical cost split) is used. This is due to the relatively stable expenditure pattern for these categories.
  - For non-residential categories (i.e. CB and CR) which have a much more volatile expenditure pattern, the historical cost split of the most recent 2 years is used. This is to better reflect the more recent business environment.

5.2.4 Unit Cost

As JEN's connection forecast is made at the MAT code level, no separate forecast on connection unit cost by customer type has been undertaken.

However, the outcome of a unit cost-based forecast would be consistent with the capital forecast generated using methodology as detailed in this paper.

Note: Unit cost-based forecast = unit cost $_{(customer\ type)}$ x volume $_{(customer\ type)}$ x applicable growth rate

5.3 Forecasting process flowchart

The flowchart of the forecasting model is set out below in Figure 5-1.

Figure 5-1 Forecasting process flowchart

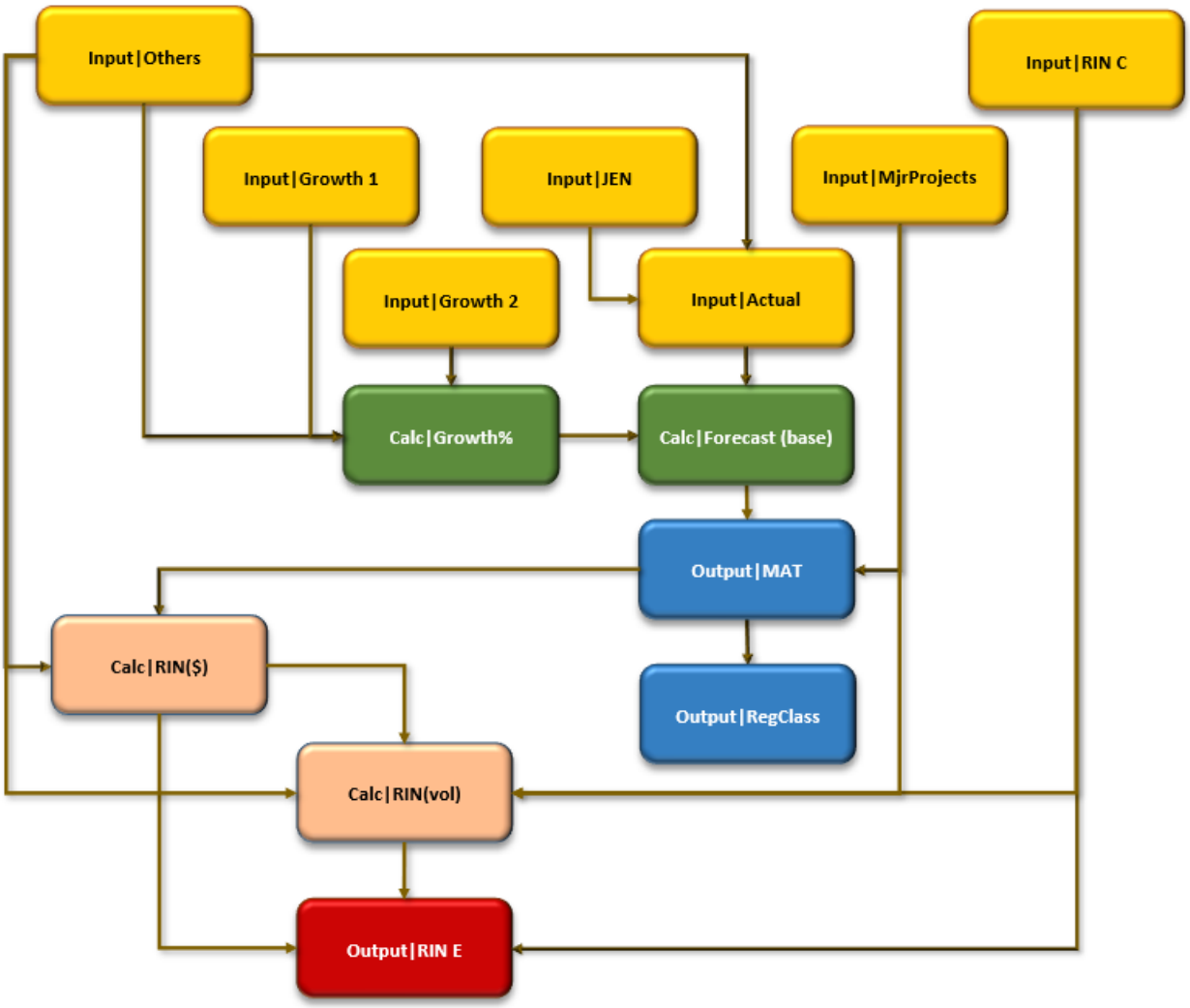

Table 5-2 Forecasting Model Worksheets Descriptions

Forecasting Model worksheets	Descriptions
Input|Mjr Projects	Capturing: • actual historical cost of major projects to facilitate data analysis (Section 5.2.1); and • individually calculated major project forecasts (Section 5.2.3)
Input|Actual	Historical capex data by MAT code by Financial Year to faciliate data analysis (Section 5.2.1).
Input|RIN C	Historical capex data by RIN C* format to faciliate data analysis (Section 5.2.1). ** RIN C is JEN's internal abbreviation for Annual Category Analysis RIN*
Input|JEN	CPI data for Nominal$/Real$ and Real$/Real$ conversion
Input|Growth 1	Forecast growth from [redacted] (as described in Section 5.2.2)
Input|Growth 2	Forecast growth from ACIF (formerly Construction Forecasting Council) as set out in Section 5.2.2.
Input|Others	Other inputs, e.g. Calender Year to Financial Year conversion factor, ratio of New Connection over Total Connection etc.
Calc|Growth%	Compile growth rates and present growth scenarios (Section 5.2.2).
Calc|Forecast (base)	Baseline forecast only (growth rate x previous year capex) as outlined in Section 5.2.3.
Output|MAT	Present connection capex forecast by MAT code
Output|RegClass	Present connection capex forecast by regulatory categories
Output|Graph	Graphic presentation of connection capex forecast
Calc|RIN (vol)	Calculation of connection volume in RIN E* format ** RIN E is JEN's internal abbreviation for Reset RIN - workbook 1*
Calc|RIN ($)	Allocation of connection capex forecast in RIN E format (Table 2.5.2)
Output|RIN E	Present connection capex forecast in RIN E format

Appendix A
Consultant's Forecast

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A1. Consultant's Forecast

As mentioned earlier in the document, JEN uses residential customer number forecast provided by a consultant ([redacted]) for its CIC forecast methodology.

Financial Year (ending 30 June)	Residential Customer No.
2016	301,855
2017	308,451
2018	316,178
2019	323,297
2020	329,526
2021	335,502
2022	340,379
2023	344,741
2024	349,773
2025	355,574
2026	361,376
2027	367,052
2028	372,569
2029	378,070
2030	383,572
2031	389,073

Appendix B
ACIF Report (June 2024)

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B1. AICF Report (June 2024)

Data source: ACIF forecast customised dashboard (ACIF, June 2024)

Select all | Deselect all

Units in $ million

Units in $ million

Type	Sector	Region	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
Non residential	Other commercial	Melbourne	1142	1128	1098	1016	958	936	923	915	918	923
Non residential	Industrial	Melbourne	3070	3144	3302	3369	3316	3169	3051	2970	2922	2895
Non residential	Miscellaneous	Melbourne	503	539	617	654	685	716	738	770	797	817

Select all | Deselect all

Units in $ million

Units in $ million

Type	Sector	Region	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
Engineering	Roads	VIC	7629	7374	7163	6827	6501	6251	6073	5940	5835	5756
Engineering	Bridges, railways, harbours	VIC	5555	5721	5829	5771	5580	5406	5250	5123	5021	4928