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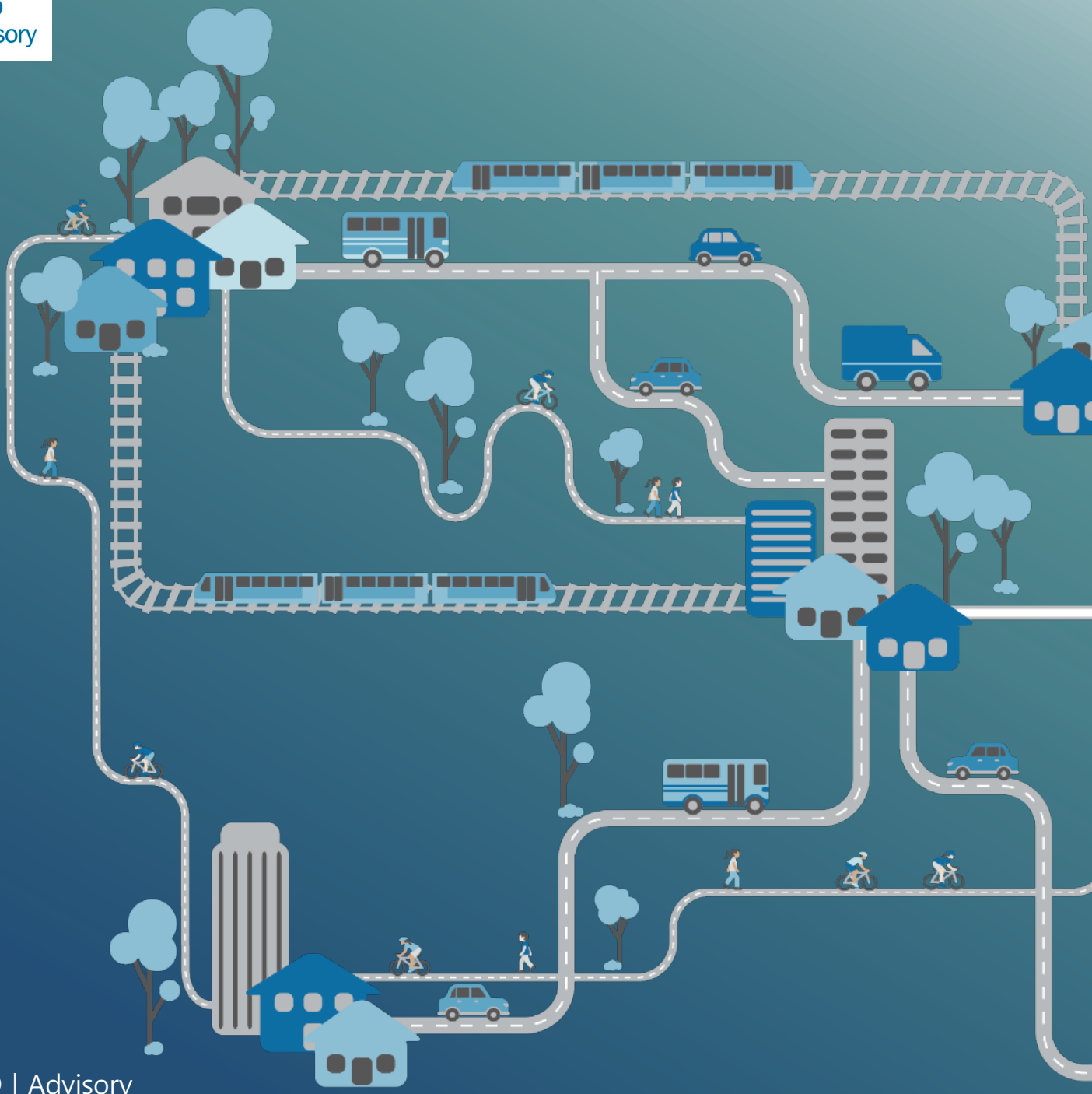

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Enfield Intermodal Freight Transportation 2020 Report

NSW Ports

November 2020

GHD

Figures

Appendices

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1. Executive Summary

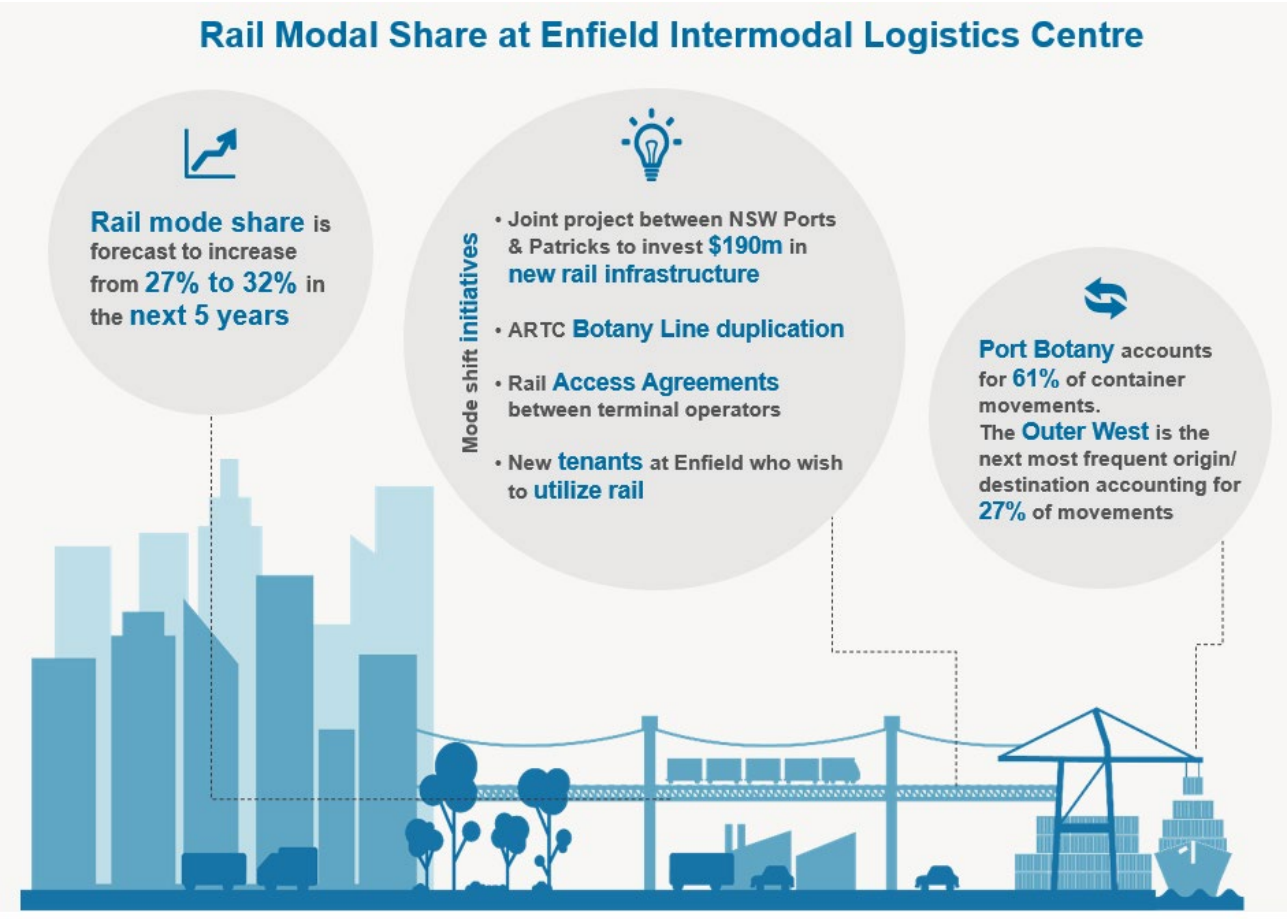
This independent Intermodal Freight Transportation Report was developed by GHD Advisory for NSW Ports in accordance with Department of Planning and Environment (DPE) requirements. The purpose of the report is to detail how NSW Ports is working to increase the modal share of rail at its Intermodal Logistics Centre (ILC) at Enfield.

The GHD team has adopted an approach that follows the specific requirements of the ILC's Planning Approval Conditions 2.2A and 2.2B of Major Project Approval 05_0147, in conjunction with NSW Ports. In addition to this, the GHD team has also built this report in line with the clear intent of the approval conditions and the below key considerations:

- A transparent, straight forward, and repeatable reporting process
- Input data that is viable, practically available, and not overly onerous
- To provide clear outputs showing current volume throughput, mode share, and representative container origins and destinations.
- Forecasting future anticipated modal shares based on known trade growth, and mode shift opportunities.

This reporting framework consist of two key components, being;

1. This report, which outlines the general report content and framework
2. An Excel based reporting tool that is populated with data with the purpose of illustrating the reporting process and output (dashboard) framework.



2. Introduction

2.1 Purpose of the report

This independently drafted Intermodal Freight Transportation Report was created by GHD Advisory for NSW Ports as required by the Department of Planning and Environment (DPE). The primary purpose of this report is to satisfy the reporting obligations as defined in Planning Approval Conditions 2.2A and 2.2B of Major Project Approval 05_0147.

The report aims to satisfy the planning requirements set-out by DPE including:

- The number of twenty-foot equivalent (TEU) shipping containers despatched and received during this period;
- Modal splits of container volumes (in TEUs) provided by the warehouse operators and/or the intermodal operators, moved in/out of the project by:
  - Rail-to-truck/truck-to-rail, and
  - Truck-to-truck;
- Representative vehicle origins and destinations, based on data from the warehouse operators and/or intermodal operators;
- Review of recorded actual traffic generation against the traffic model referred in, and the findings of, the report titled *Traffic Impact Assessment Enfield Intermodal Logistics Centre; Cosgrove Road, Enfield MOD 14*
- A constraints and opportunities analysis to assist with identifying measures to increase the modal split of container movements via rail-to-truck/truck-to-rail; and
- A future forecast outlining expected TEU volume despatched and received on rail; demonstrating how NSW Ports is using opportunities identified above, subject to the constraints identified, to assist the switching the main mode of transport for container TEUs to rail.

2.2 Background

The ILC site is located at Strathfield South, approximately 15 km by road from the Sydney CBD and 18 km by rail from Port Botany. The site covers an area of around 60 ha extending approximately from the intersection of the Hume Highway and Roberts Road in the north to the intersection of Punchbowl Road and Cosgrove Road in the south. Operational components include:

- Loading and unloading of containers onto trains and trucks;
- Road and rail freight operations;
- Packing and unpacking of containers and short-term storage of cargo in warehouse areas;
- Full and empty container storage
- Diesel storage and refuelling;
- Operation and maintenance of the ILC site by NSW Ports, including Heritage values and the Southern Ecological Area.

Congestion in Sydney and the Greater Metropolitan Area has created significant challenges for the management of the freight task, which are further exacerbated by the growth in population and urban development. Network capacity on both the road and rail networks has impacts on the future of travel distances, supply chains, community resistance and economic developments.

More importantly, ports and their access to corridors is under threat as a result of urban encroachment. Synergising the two is a challenge, however, solutions such as 24-hour operations, separation of passenger tasks and freight during peak times, planning of presents and enabling higher productivity vehicles are helping to overcome these issues.

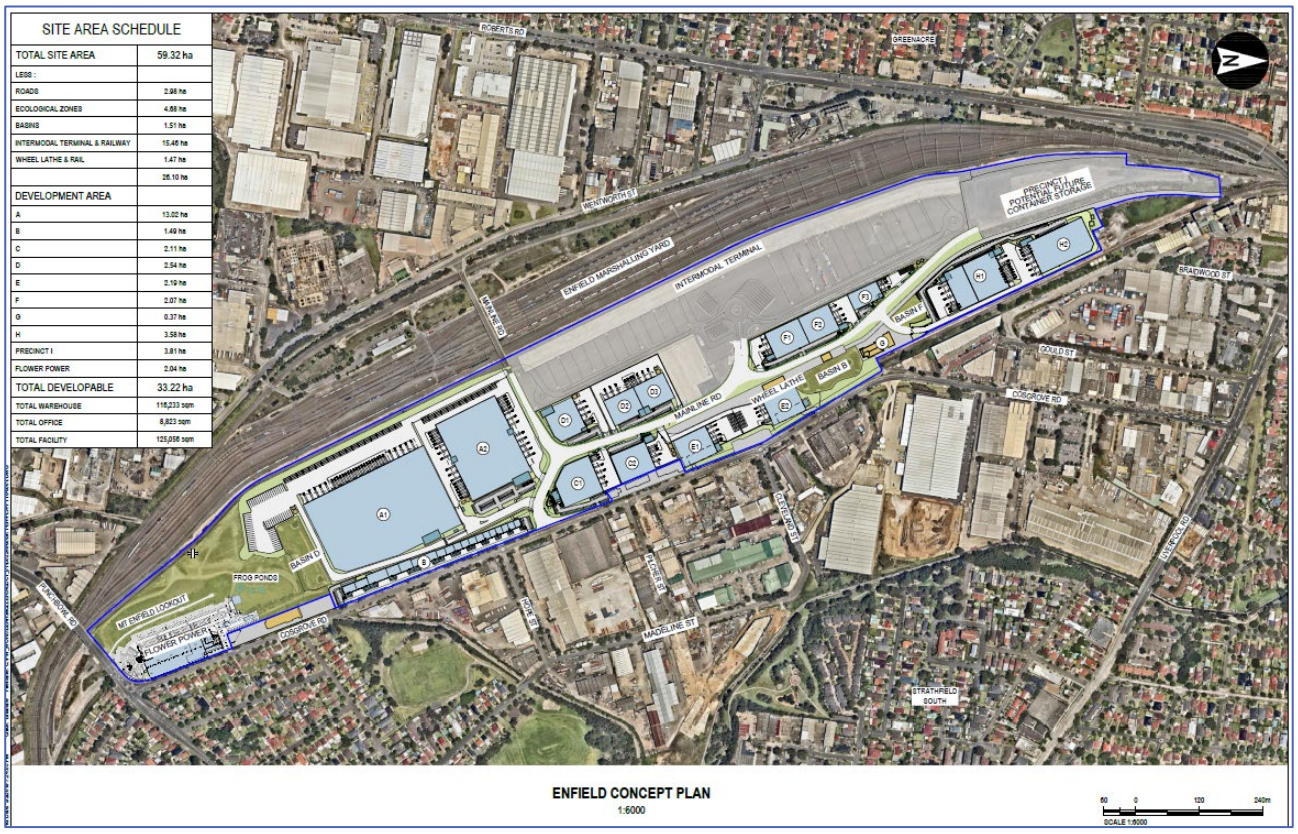


Figure 1: Enfield Concept Plan (NSW Ports)

2.3 Rail Mode Shift Objectives

With the ever-increasing congestion on Sydney's roads and the push for larger and heavier trucks, it can be seen that there are continual challenges in terms of capacity and efficiency within the NSW transportation networks. As a result of this, the Government is looking to shift more freight traffic onto rail. It is essential that that intermodal terminals are used to facilitate the increase of rail mode share in order to manage the remarkable increases in import container trade, as well as general interstate freight requirements. As much as 85% of import and export containers either originate in or are in transit to locations within a 40 kilometre radius of Port Botany, only approximately 18% of these container movements occur by rail. The remainder are transported via the road network due to lower costs and inefficiencies within the rail network. It is evident that the existing intermodal infrastructure in the Sydney area is inadequate in its capacity to meet the growing demand caused by the aforementioned import and export container movements. It is essential that these constraints are alleviated as it will lead to direct benefits to amenity, the environment and regional economies.

The NSW Freight and Ports Strategy has indicated that managing congestion, noise and emission impacts of freight transport is a strategic objective. Moving freight by rail is more environmentally friendly in comparison to the use of trucks, on average trains are four times more fuel efficient than trucks. Therefore, the ability to substitute truck use with trains through the use of an intermodal facility would contribute positively to the intended outcomes. Freight movement by road is both impacted by and a contributor to road congestion, particularly in the Port Botany region. Although rail is not exempt from this issue, increasing the efficiency between the two modes would help to alleviate the mounting pressure being placed on infrastructure while increasing the flexibility, efficiency, productivity and capacity of the networks.

2.4 NSW Ports Initiatives

The Enfield and Cooks River intermodal terminals are an essential part of the port supply chain for NSW as they form inland extensions of Port Botany where containers are moved by rail between the Port and the inland terminals. Enfield ILC is a critical rail receival and dissemination hub in central-west Sydney, which connects to a dedicated freight line to/from Port Botany. Enfield ILC enables a metropolitan freight mode shift to rail and a viable road alternative. Critically this facility is open access and under the stewardship of NSW Ports, it creates the opportunity for importers and exporters large and small to utilise rail.

NSW Ports has clear rail mode share growth targets that have been developed through its 5 and 30 Year Development Plans. The NSW Ports 30 Year Master Plan projects that truck volumes at Port Botany may increase from 3,900 to between 6,300 and 6,900 trucks per day in 2045. This potential growth in truck volumes will be managed through a gradual increase in rail mode share to 40 per cent and various other truck productivity and utilisation (back loading) initiatives.

NSW Ports and The NSW Government have made, and are planning to make, numerous investments in infrastructure that will enable further rail mode shifts. Such initiatives include:

- Port Botany Freight Line Duplication
- South Sydney Freight Line
- On Dock Rail Investments at Port Botany
- Moorebank Logistics Park
- Establishment of the Cargo Movement Coordination Centre (CMCC)
- Establishment of the Port Botany Rail Optimisation Group (PBROG)

2.5 Planning Requirements

The Enfield Intermodal Logistic Centre (ILC) (MP 05_0147) was granted Project Approval on 5 September 2007. The approved project includes an intermodal terminal (IMT), warehousing, empty container storage area, light industrial / commercial area fronting Cosgrove Road and a road bridge over new marshalling yards providing access to Wentworth Street. It also consists of construction and operation of the ILC with capacity to accept a maximum throughput of 300,000 twenty-foot equivalent units (TEUs) per annum.

Modification 14 (MOD 14) to the Enfield ILC Approval was lodged with DPE in March 2018 and sought the following amendments:

- Amended warehouse precincts and layouts.
- Increase in combined warehouse and light industrial gross floor area (GFA) by approximately 15,340 m^2 to 125,630 m^2, including conversion of approximately 33,600m^2 of the 40,989m^2 GFA of approved light industrial/commercial uses to warehousing and distribution uses, and reduction of light industrial/commercial GFA from 40,989m^2 to 7,384m^2.
- Increase in the number of warehouses from seven to thirteen.
- Increase in combined car parking facilities and loading bays by 304 to 816.
- Increase in height of warehouses from 12m to 13.7m.
- Removal of the restriction on use of warehousing, other than Precinct A and D.
- Allowing truck-to-truck freight movements in Precincts C, E, F and H.
- Extension of operating hours to 24/7 in Precinct E and over the entire footprint of warehouse C1.
- Demolition and earthworks, including importation of 52,425m^3 of fill.

Generally, the area of the Enfield ILC that MOD 14 applied to is the 'warehouse and industrial precincts', labelled A to H in **Figure 2**.

MOD 14 was subsequently approved on 28 August 2018. As a result of MOD 14, the following conditions relating to intermodal operations were included in the Enfield ILC conditions of approval:

Extract:

Intermodal operations

2.2A The proponent is to provide an Intermodal Freight Transportation Report, prepared by an independent qualified person(s) approved by the Planning Secretary.

The purpose of the Intermodal Freight Transportation Report is to detail how the Proponent is working to increase the modal share of rail, and is to include the following:

a) the number of twenty-foot equivalent shipping containers despatched and received during the period;

b) modal splits of container volumes (in TEUs), provided by the warehouse operators and/or the intermodal operators, moved in/out of the project by: i. rail-to-truck/truck-to-rail, and ii. truck-to-truck;

c) representative vehicle origins and destinations, based on data from the warehouse operators and/or the intermodal operators;

d) review of recorded actual traffic generation against the traffic model referred in, and the findings of, the report titled Traffic Impact Assessment Enfield Intermodal Logistics Centre; Cosgrove Road, Enfield MOD 14 Ref: 0440r03v5 (Ason Group, 26 February 2018);

e) a constraints and opportunities analysis to assist with identifying measures to increasing the modal split of container movements via rail to-truck/truck-to-rail; and

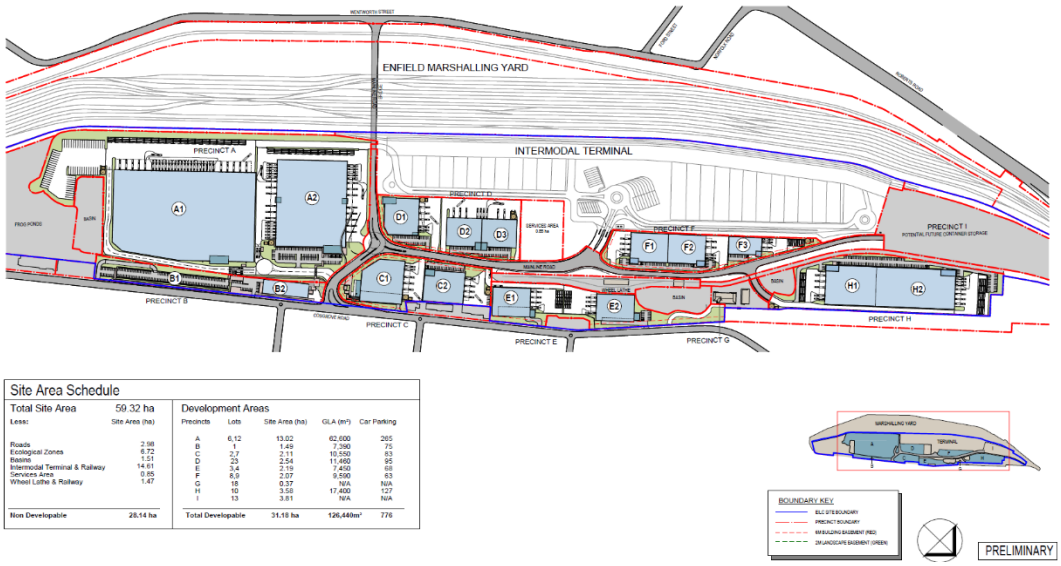
f) a future forecast outlining expected TEU volume despatched and received on rail, demonstrating how the Proponent is using the opportunities identified above, subject to the constraints identified, to assist with switching the main mode of transport for container TEUs to rail.

The report is to be submitted throughout operation of the project, with the first report to be submitted one year after the commencement of operation of the first warehouse/s permitted as part of the approval of MP 05_0147 MOD 14, unless otherwise agreed by the Planning Secretary. Subsequent reports will be completed and submitted to the Planning Secretary on a two-yearly basis, or as otherwise agreed.

2.2B A framework for recording and reporting on the data required for the report required under condition 2.2A is to be prepared by an independent qualified person(s) approved by the Planning Secretary, and submitted to the Planning Secretary for approval three months prior to the commencement of operation of any warehouse permitted as part of the approval of MP 05_0147 MOD 14.

The Proponent shall prepare the report required under condition 2.2A in accordance with the framework for recording and reporting approved by the Planning Secretary under this condition from time to time.

Figure 2 Enfield Precinct Plan



3. Report Framework and Methodology

GHD have developed a reporting framework that fulfils the requirements of DPE as it provides enhanced visibility of current freight flows and modal shift trends attributable to the Enfield ILC. This section outlines how the framework meets DPE requirements and the process that has been followed in creating the report.

3.1 Meeting DPE Requirements

Below is a summary table that matches each requirement stated in the Mod 14 planning approval condition 2.2A of the with the relevant reporting output.

	DPE Requirement	Report Output
1	The number of twenty-foot-equivalent shipping container units dispatched and received during the period	Actual TEU data will be gathered from ILC tenants that will be aggregated to show a clear monthly shipping container receival and delivery profile by Import/Export and Full/Empty.
2	Modal Splits of container volumes (in TEU) provided by warehouse and intermodal operators, moved in/out of the project by rail-to-truck, truck-to-rail and truck-to-truck.	Container data will be gathered by TEU In/Out movements for road and rail modes. This will show the split of road in, road out, rail in, rail out movements.
3	Representative vehicle origin and destination based on data from warehouse and intermodal operators.	The report will use tenant-supplied origin/destination volume splits to give a representation of vehicle origins and destinations including, Port Botany, metropolitan, regional and interstate movements. Tenants will also be asked to report on internal (intra-terminal) movements that represent the elimination of otherwise necessary external road moves through co-location.
4	Review of recorded actual traffic generation against the traffic model referred to in the Feb 2108 Ason Group TIA[1]	This report uses tenant TEU data to extrapolate truck volumes based on established truck utilisation metrics. These truck flows will then be compared to forecast truck flows in the 2018 Ason TIA. NSW Ports would look to use the methodology outlined in the Traffic Impact Assessment with the appropriate adaptations that would be required for it to be applicable to this project.
5	A constraints and opportunity analysis to assist with identifying measures to increase rail mode share.	The report will include a section detailing constraints and opportunities to increase rail mode share as identified by NSW Ports, GHD, DPE, TfNSW and other relevant entities.
6	A forecast of expected TEU volume despatched and received on rail demonstrating how opportunities and constraints will assist in increasing the rail mode share.	The report will provide a five year mode shift forecast that will take into consideration trade (market) growth and the effect of mode shift opportunities and constraints.

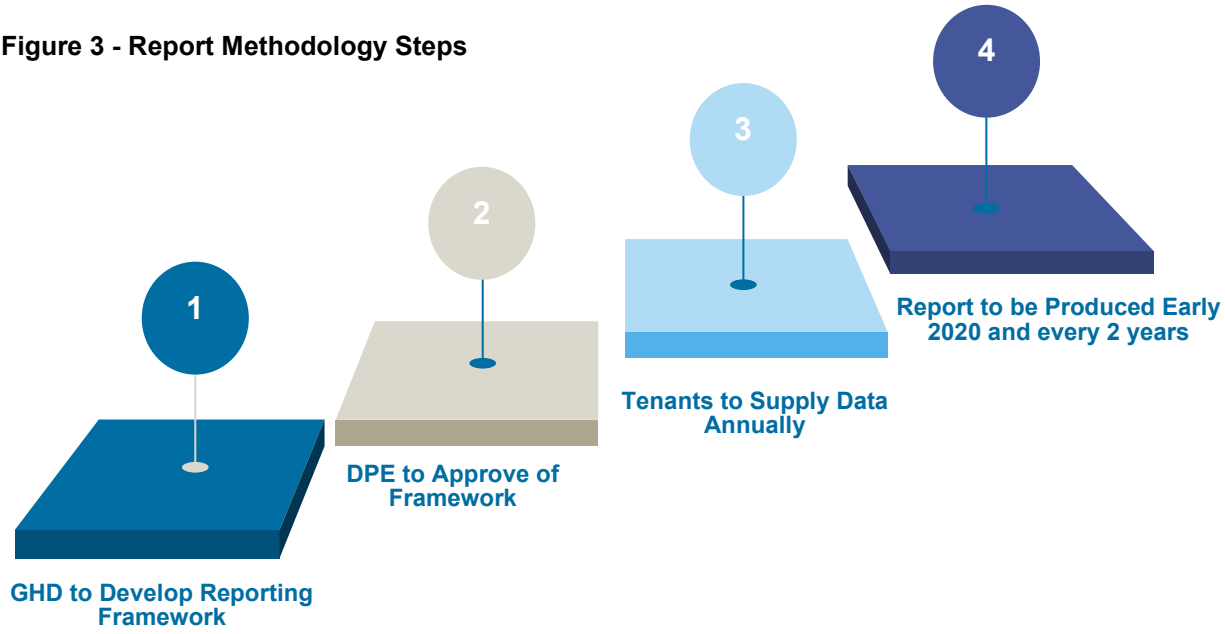
[1] Traffic Impact Assessment, Enfield Intermodal Logistics Centre; Cosgrove Road, Enfield MOD 14, Feb 2018

3.2 Reporting Methodology

GHD has followed an agreed reporting framework and methodology that fulfils requirements as requested by DPE. In addition, the framework considers the need to deliver a transparent, straight forward and repeatable reporting process which utilises input data that is viable, practically available, and not overly onerous to gather.

3.2.1 Tenant Input Data

Figure 3 - Report Methodology Steps



As shown in **Appendix A** tenants will supply the following on an annual basis:

- Monthly In/Out TEU Volumes by:
  - Import
  - Export
  - Full Containers
  - Empty Containers
- Annual Representative Origin and Destination volume ratio's (including internal movements)

3.2.2 Forecast Methodology

There are two forecasting requirements;

2.2A point 'f' requires that a forecast of expected TEU mode shift is completed, and; 2.2A point 'd' requires a review of recorded actual traffic generation against the traffic model referred to in the Feb 2018 Ason Group TIA is to be conducted.

3.2.3 TEU & Mode Shift Forecast

A forecast of expected TEU volume despatched and received on rail demonstrating how opportunities and constraints will assist in increasing the rail mode share. The report will provide a 5 year mode shift forecast that will take into consideration trade (market) growth and the effect of mode shift opportunities and constraints.

The GHD reporting tool aggregates tenant TEU data to minimise commercial sensitivity and uses truck utilisation assumptions informed by known comparators to extrapolate a monthly truck volume profile. Reporting will be collected annually however it will be represented in monthly granularity to show for seasonality.

3.2.4 Traffic Forecast

As required by condition 2.2A a review of recorded actual traffic generation against the traffic model referred to in the Feb 2108 Ason Group TIA is to be conducted.

In regard to the forecasting methodology, NSW Ports would look to use the methodology outlined in the Traffic Impact Assessment with the appropriate adaptations that would be required for it to be applicable to this project. This methodology has been selected on the basis that it is designed to determine traffic volumes. Actual data will be collected as appropriate on an ongoing basis with the purpose of satisfying the planning requirements set out in Section 2.2A Part D.

Predefined formulas have been used for the basis of forecasting volumes within Enfield in accordance with existing planning requirements, NSW Ports would expect to utilise this agreed methodology for the purpose of this report. An independent party would be engaged by NSW Ports for the purpose of collecting the required data for a periodic survey.

3.2.4.1 Recording avoided truck trips through co-location

The methodology allows for the recording of internal inter-terminal movements that had the warehouse operator been located off-site (external to Enfield) these moves would represent a truck move on public roads2. This is called triangulation, which occurs when a container can be unpacked and then packed again on-site without the need for a public road move. This is possible due to the co-location of importers, exporters and intermodal operations.

3.3 Data integrity

Data will be provided by Enfield ILC tenants and operators to GHD (or any other approved independent reporting entity) via NSW Ports. NSW Ports will need to maintain an email audit trail of data being provided by tenants and operators to GHD as an independent report entity. Data sources may be verified by GHD by way of contacting a number of tenants to check data capture methodology and output. Data is to be provided annually. Appendix A & B show data inputs and outputs.

[2] On-site triangulation reduces road trips as importers can uplift empty containers on-site and exporters can dehire on site saving an external road network journey. In addition, importers and exporters can triangulate (An unpacked import container being packed on-site for export)

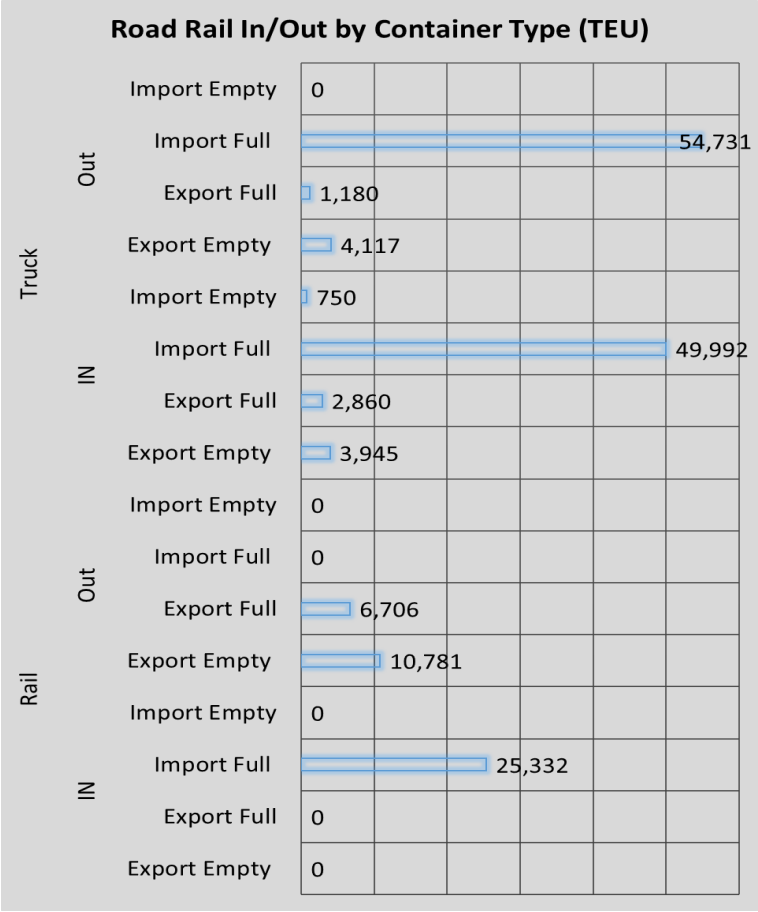
4. Container Flows and Mode Share

4.1 Modal splits and freight activity

The current Port Botany container volume is estimated to total approximately 2.5 million TEU this financial year (FY20)[3]. It is expected that yearly container volumes could grow to as much as 7.5 million TEU by 2045. Current figures indicate that there is still room for improvement in terms of road-rail distribution of goods. The FY20 rail mode share was 18%[4].NSW Ports' goal is 3 million TEU (40%) per year transported by rail by 2045. Bulk commodities, such as coal and grain, are typically moved by rail and small volumes are moved by road. Therefore, mode share is mostly determined by the type of commodity, tonnage being moved, distance and accessibility between its origin and destination.

Figure 4 and Figure 5 show that the majority of container movements at Enfield occur by road. The most frequent movements are full imports by road (in and out). Trucks account for approximately 73% of the total TEU volume through Enfield.

Figure 4 Container Movement by Type



[3] NSW Ports Monthy Trade Report Jun 2020

[4] "Use of Rail Freight at Port Botany" – TfNSW Freight Performance Dashboard

Figure 5 Container Movement by Mode

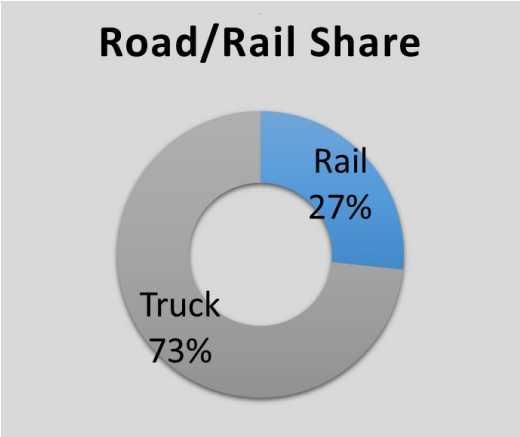
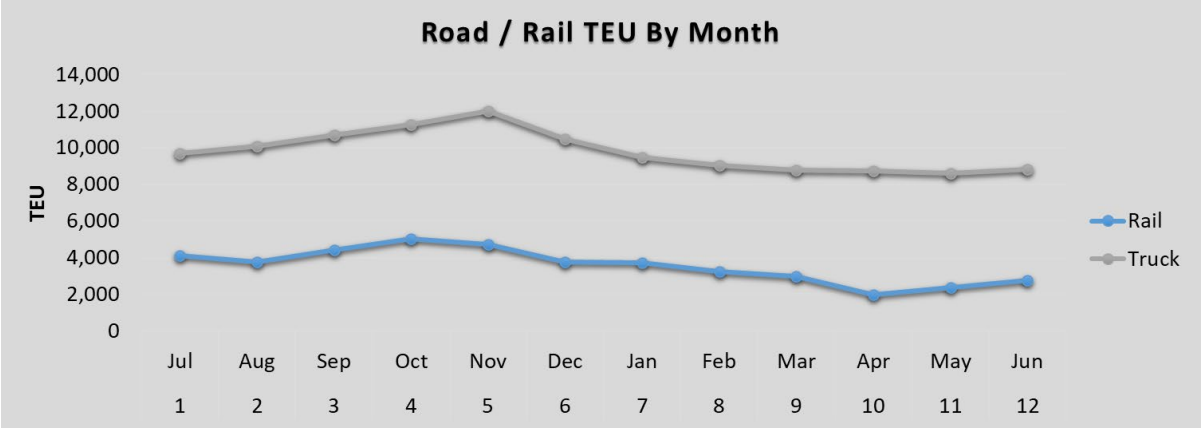


Figure 6 shows that the volume of TEU is mostly steady throughout the year with a peak in truck TEU in November with 12,000 TEU transported. Rail remains approximately 3,000-5,000 TEU throughout the year with a low in April of just below 2,000 TEU. Road transports on average 10,000 TEU per month.

Figure 6 Road and Rail TEU by Month



4.2 Representative origin destinations – Enfield ILC

4.2.1 Road & Rail Network Context

The Enfield site is bound by the Hume Highway/Liverpool Road to the north, Roberts Road running north-south, Punchbowl road traversing east-west, Cosgrove Road which traverse north-south, Norfolk road to the west of the site, Wentworth Street that runs north-south, Mainline Road providing access into the site and Turnout Drive which connects Mainline and Cosgrove Road.

The Hume Highway is an inter-city national highway between Sydney and Melbourne. It is an alternate route for the Princess Highway, which stretches for most of the coastline between New South Wales and Victoria. The Highway also provides an efficient route for interstate road freight and has a close proximity to the Enfield site.

The Enfield ILC also has strong ties to the arterial network linking into King Georges Road, Centenary Drive and then into the wider motorways such as the M4 and M5.

The Enfield ILC is located adjacent to the Metropolitan Freight Network (MFN), which directly links to the Port of Botany. The MFN is a dedicated freight line with links back to the passenger network at Sefton Park, Belmore and Marrickville.

4.2.2 Origin & Destination Reporting

The DPE requirements call for a representative vehicle origin and destination report based on data from warehouse tenant and intermodal operators.

This report uses tenant-supplied origin/destination volume splits to give a representation of vehicle origins and destinations including, Port Botany, metropolitan, regional and interstate movements.

The origin & destination data is based on annual averages enabling a view on the representative container origin and destination journeys related to Enfield. See Section 3 for more information on reporting output and methodology.

4.2.3 Periodic Detailed Survey

NSW Ports is prepared to conduct a more detailed periodic assessment of origins and destinations if additional information is required by DPE. This option is to be discussed and considered further.

An illustration of origin/destinations is shown in Figure 7. Figure 8 shows that the largest proportion of containers are transported to/from Port Botany with 61% of total TEUs. The next most frequent location is the Outer West at 27%. Figure 8 provides the detailed breakdown of location data.

Figure 7 Illustrated Origin and Destination

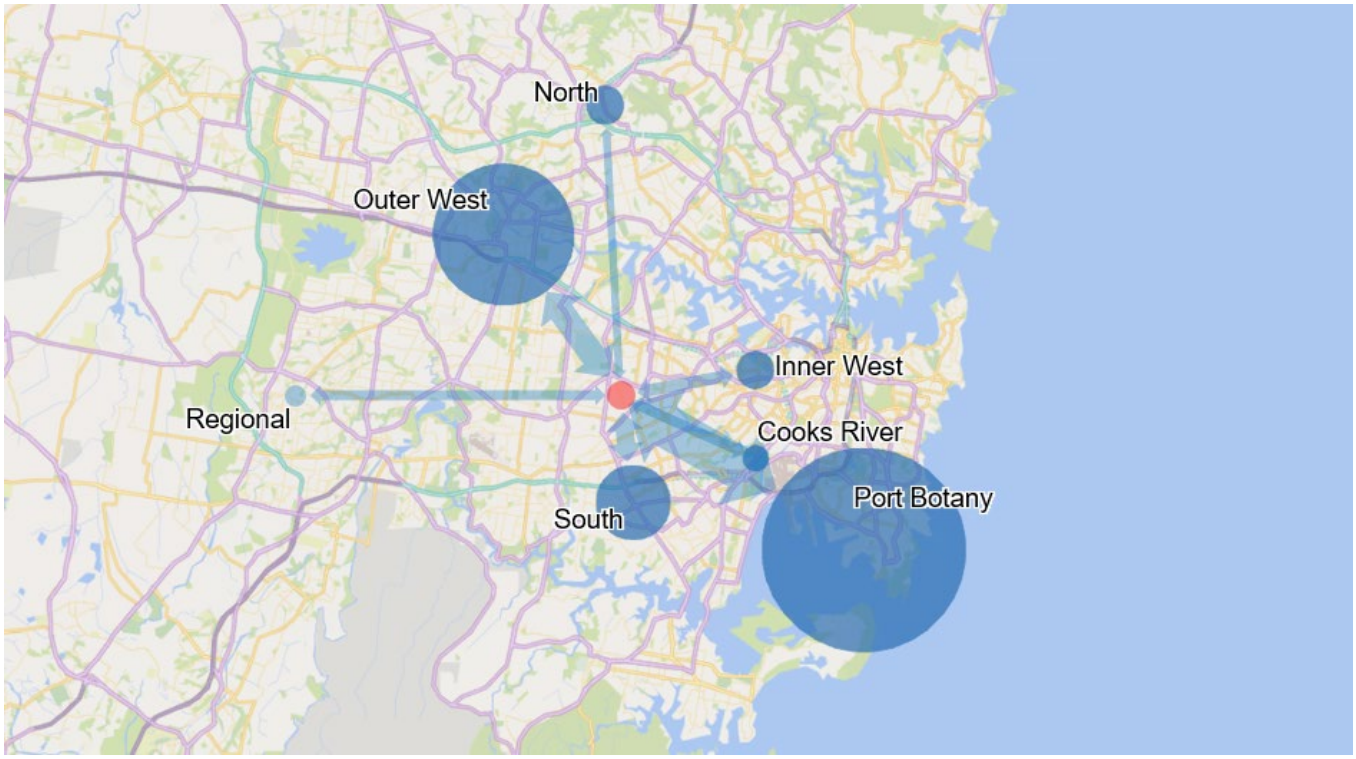
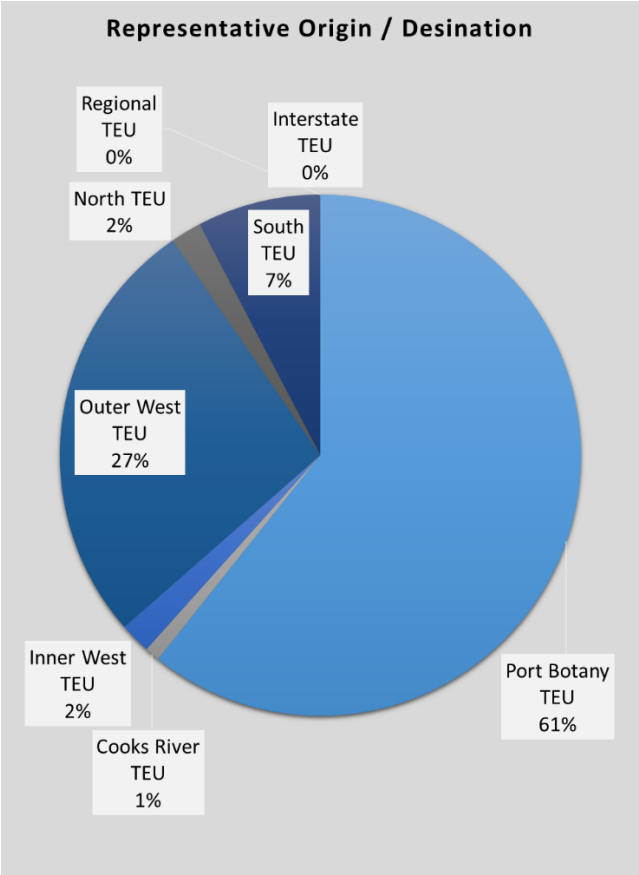


Figure 8 Representative Origin and Destination



5. Constraints and Opportunities Analysis

In order to identify constraints and opportunities, NSW Ports have liaised with multiple stakeholders to gather input into this section of the report. Stakeholders will include but not be limited to;

- Transport for NSW (TfNSW)
- Department of Planning & Environment (DPE)
- Rail Optimisation & Coordination Centre (ROCC)
- Port Botany Rail Optimisation Group (PBROG)
- Enfield operators & tenants
- Current & potential Enfield intermodal users
- Industry associations

5.1 Mode Shift Constraints

The following mode shift constraints have been identified:

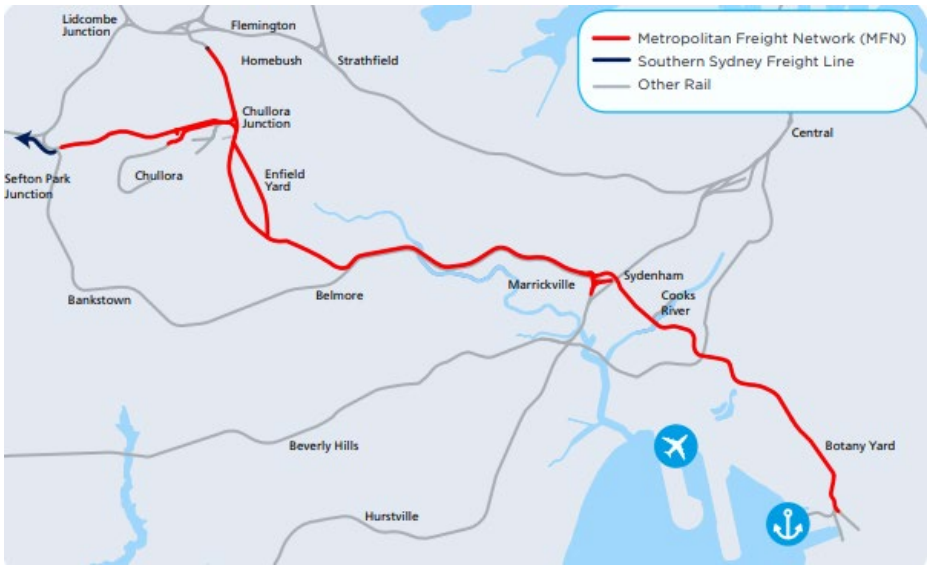
- A-Double/Super B-Double permits – There has been an increase in the number of permits issued by the National Heavy Vehicle Regulator (NHVR) allowing HPV to transport containers from Port Botany to the Western Suburbs of Sydney. Specifically permits have been approved by the NHVR for A-Doubles to carry freight from Port Botany to the Enfield precinct and vice versa. This is in direct competition to the rail service offering that is in place from the Enfield IMT Rail Operator.
- Current rail capacity allocation at Port Botany is constraining the volume of freight that can be transported by rail to/from Enfield IMT.

5.2 Mode Shift Opportunities

The following mode shift opportunities have been identified:

- SABRE project at Port Botany – Joint project between NSW Ports & Patricks to invest $190m in new rail infrastructure to increase annual capacity at Pt Botany to 1.5m TEU p.a. Phase 1 of this project is scheduled to go live in December 2020 with the project scheduled to be completed by 2022.
- ARTC Botany Line duplication – Project conducted by ARTC to duplicate the remaining section of single line freight track between Mascot and Botany. Together, with the Cabramatta Loop Project, Botany Rail Duplication aims to provide the capacity to meet predicted growth in the containerised freight task and support rail services between Port Botany and metropolitan freight intermodal terminals.
- Rail Access Agreements between container terminal operators (Patricks & DP World) and rail operators – Rail access agreements to be put in place to ensure allocation of rail windows optimises the capacity of rail at Port Botany and increases the volume of containers being transported to/from Port Botany by rail.
- Enfield Tenancies – NSW Ports is currently in discussions with a potential new tenant for the Enfield ILC precinct that would generate significant rail volumes. If this opportunity is realised there could be up to ~250k TEU p.a generated in year one of the tenancy increasing to 380k+ TEU p.a within a 10 year period. Realisation of this opportunity may require a number of the smaller tenants currently operating within the Enfield ILC to exit from the Enfield ILC which would reduce the volume of truck to truck TEU movements that are currently being generated by these tenants.

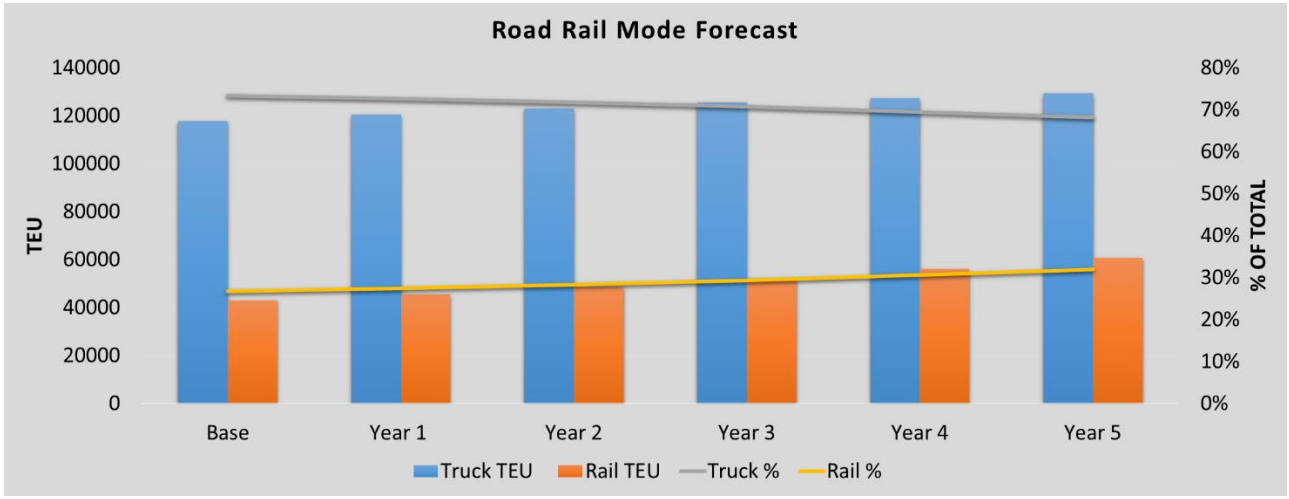
Figure 9: Rail Capacity Initiatives - Southern Sydney Freight Line



5.3 Forecast Container Growth and Mode Shift

The forecast change in TEU share in the next 5 years anticipates that rail will experience, on average, a 7.2% annual growth in volume. Mode share is forecast to increase for rail from 27% to 32% over this period.

Figure 10 Road and Rail Mode Percentage Forecast



6. Comparison to Forecast Traffic

This section contains detail on traffic generated from Enfield. This includes information traffic generation and the current volumes of container traffic calculated from the data captured.

6.1 Forecasting Methodology

The data captured in previous sections will be used as a basis for forecasting future mode shift and comparing future road and rail movements to the projected movements as per the existing Traffic Impact Assessment (TIA). Ason Group were engaged by Goodman Property Service Pty Ltd to prepare a TIA for the movements at the Enfield ILC. As part of the assessment, Ason Group provided analysis of the relevant traffic, transport and parking implications.

6.1.1 Traffic assessment forecast comparison

Comparisons and commentary will be offered between current container truck traffic which will be compared to 'Proposed' future traffic as stated in the Ason Feb 2018 TIA. Table 14 from the TIA report shows anticipated hourly truck numbers for AM and PM.

Figure 11: Enfield Intermodal Logistics Centre TIA

Table 14: Comparison of Future Traffic Generation (Approved vs Proposed)

Component	Approved				Proposed			
	AM		PM		AM		PM	
	Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks	Vehicles	Trucks
Intermodal	21	60	43	45	21	60	43	45
Warehouses	121	30	98	9	174	47	158	19
Light Industrial	164	5	159	10	74	3	76	1
Sub-total	306	95	300	64	269	110	277	65
TOTAL	401		364		379		342	

Source: MOD 14 TIA_Enfield Intermodal Logistics Centre, Enfield, Issue V

In regard to the forecasting methodology, NSW Ports would look to use the methodology outlined in the Traffic Impact Assessment with the appropriate adaptations that would be required for it to be applicable to this project. This methodology has been selected on the basis that it is designed to determine traffic volumes. Actual data will be collected as appropriate on an ongoing basis with the purpose of satisfying the planning requirements set out in Section 2.2A Part D. Note: The 50,000 TEU Traffic Audit was completed in 2017.

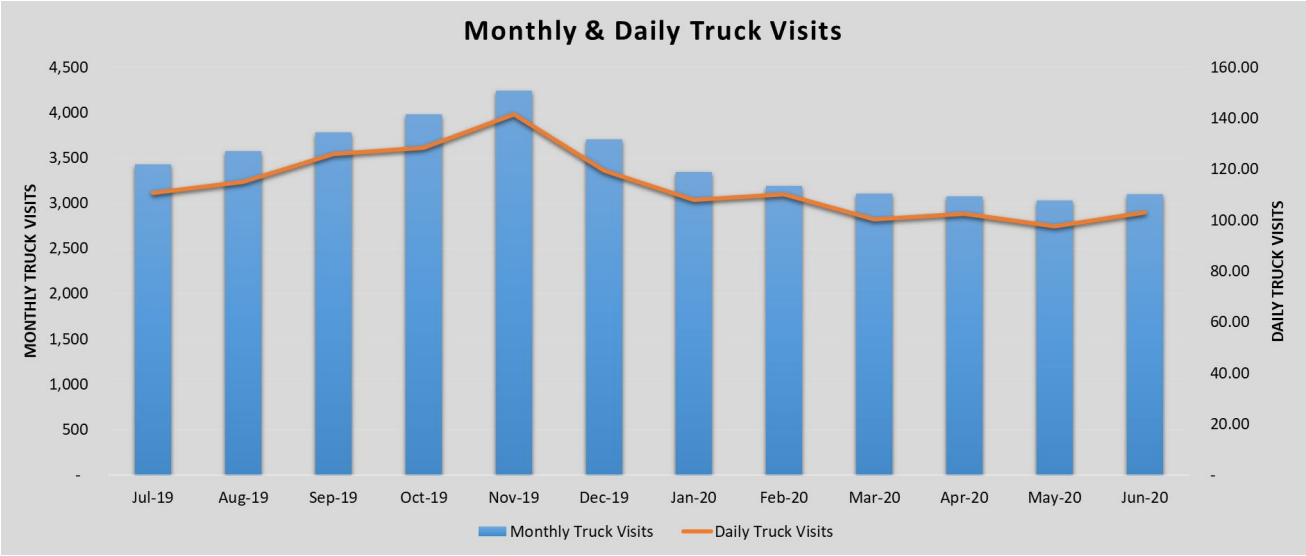
The total containers transported on road have been converted into truck numbers using average TEUs per truck as shown below in Table 1.

Figure 12 shows that the peak volume per month is equal to 4200 trucks per month (140 trucks per day).

Table 1 TEU per truck assumptions

	TEU per truck
In Full	1.4
In Empty	1.4
Out Full	1.4
Out Empty	2

Figure 12 Monthly and Daily Truck Visits



6.1.1.1 Review of Environmental Management Plan (EMP) and Traffic Management Plan (TMP)

The EMP & TMP will be continually reviewed and updated where necessary for Enfield based on the changing site requirements

7. Assumptions and Exclusions

Data contained within this report has been supplied by third parties, GHD has not undertaken any traffic assessments or first-hand observations or studies. It is assumed that all data provided by NSW Ports and Tenants of the Enfield ILC are a true representation of actual freight flows and as such no further validation of this data has been undertaken. All traffic analysis has been derived from tenant supplied shipping container data and has been extrapolated based on truck utilisation assumptions.

8. Conclusion

This independent report has detailed how NSW Ports is working to increase the modal share of rail at its Intermodal Logistics Centre at Enfield. The GHD team has adopted an approach that follows the specific requirements of the ILC's Planning Approval Conditions 2.2A and 2.2B of Major Project Approval 05_0147, in conjunction with NSW Ports.

It was identified that there are a number of opportunities that are in development which will increase the volume of containers transported on rail. It is forecast that over the next five years that the rail mode shift will increase from 27% to 32%.

The report provides a transparent and repeatable reporting process and output which can be repeated on a regular basis. Data has been provided by tenants and analysed resulting in clear outputs showing current volume throughput, mode share, and representative container origins and destinations.

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Appendix A – Tenant Input Sheet

Below is an example of the input required from Enfield tenants.

Reported Annually

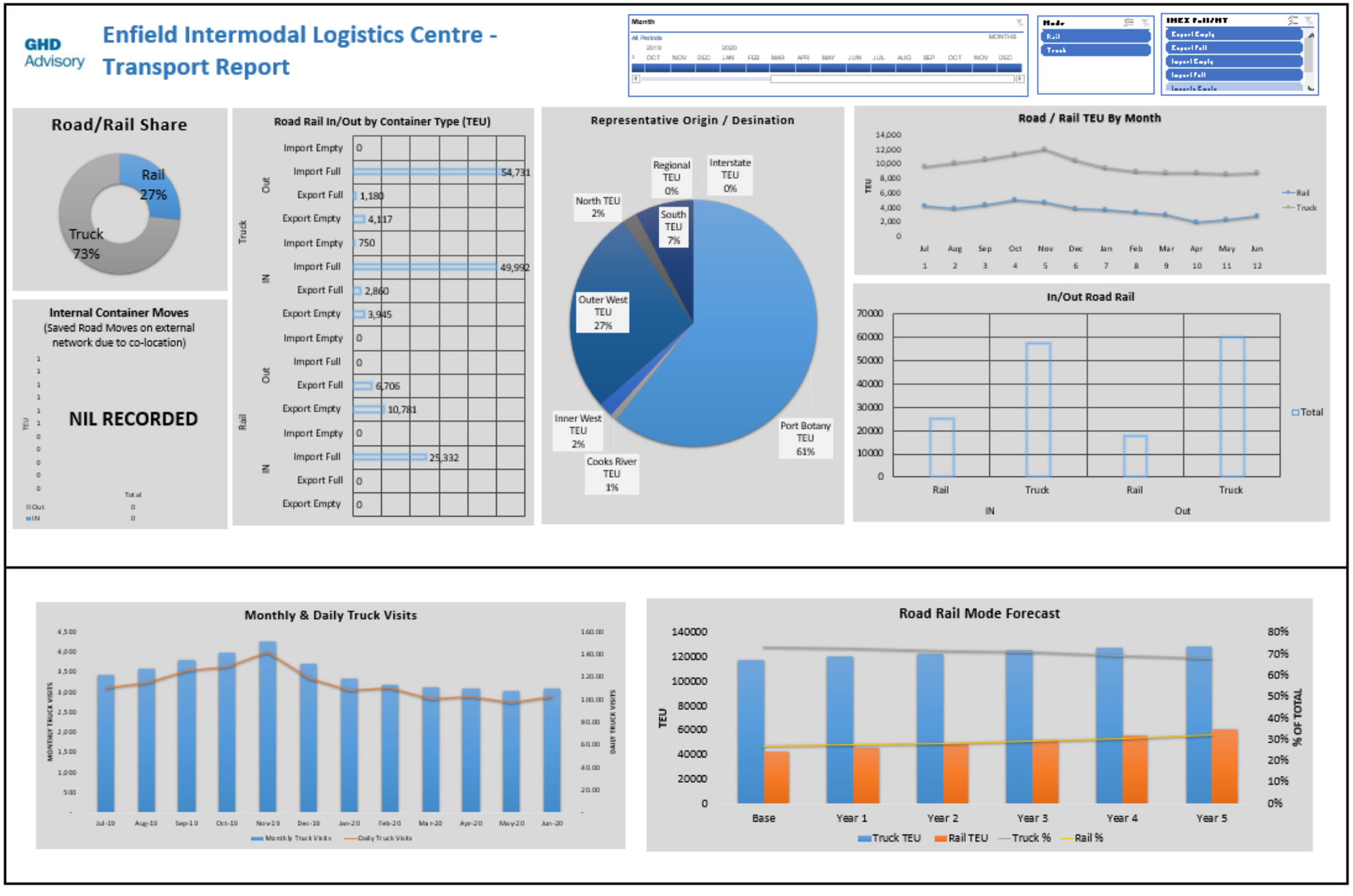
				Period	Tenant to Populate 1	2	3	4	5	6	7	8	9	10	11	12
Tenant	Model	In/Out	TEU Type	Lookup Code	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
Warehouse Operator 1	Truck	IN	Export Full	Warehouse Op	217	337	180	396	10	498	99	211	428	243	60	67
Warehouse Operator 1	Truck	IN	Import Full	Warehouse Op	496	232	456	365	187	52	479	139	184	132	463	75
Warehouse Operator 1	Truck	IN	Export Empty	Warehouse Op	98	243	18	381	378	284	464	446	452	34	352	457
Warehouse Operator 1	Truck	IN	Imports Empty	Warehouse Op	222	99	437	436	442	458	479	248	446	14	224	189
Warehouse Operator 1	Rail	IN	Export Full	Warehouse Op	486	364	211	229	488	173	168	493	177	65	319	463
Warehouse Operator 1	Rail	IN	Import Full	Warehouse Op	175	459	327	181	248	185	185	429	370	449	299	114
Warehouse Operator 1	Rail	IN	Export Empty	Warehouse Op	345	377	52	249	218	169	83	478	191	293	152	239
Warehouse Operator 1	Rail	IN	Imports Empty	Warehouse Op	338	231	415	111	306	49	331	242	120	211	311	118
Warehouse Operator 1	Truck	Out	Export Full	Warehouse Op	444	383	26	213	106	189	47	199	439	96	52	19
Warehouse Operator 1	Truck	Out	Import Full	Warehouse Op	357	208	331	136	68	150	318	349	330	295	256	277
Warehouse Operator 1	Truck	Out	Export Empty	Warehouse Op	173	24	126	19	458	68	328	325	222	388	240	198
Warehouse Operator 1	Truck	Out	Imports Empty	Warehouse Op	226	316	306	149	150	19	96	268	414	229	84	58
Warehouse Operator 1	Rail	Out	Export Full	Warehouse Op	484	80	166	207	487	439	243	259	467	455	175	455
Warehouse Operator 1	Rail	Out	Import Full	Warehouse Op	32	142	460	380	217	292	50	492	187	451	43	141
Warehouse Operator 1	Rail	Out	Export Empty	Warehouse Op	111	131	87	485	445	68	411	157	217	134	497	153
Warehouse Operator 1	Rail	Out	Imports Empty	Warehouse Op	350	210	448	29	108	142	45	8	194	476	34	214

Origins and Destinations Percentages Reported Annually

					Tenant to Populate 1	2	3	4	5	6	7	8	9
Tenant	Model	In/Out	TEU Type		Port Botany	Cooks River	Inner West	Outer West	North	South	Regional	Interstate	Internal
Warehouse Operator 1	Truck	IN	Export Full	Warehouse Op	0.0%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%
Warehouse Operator 1	Truck	IN	Import Full	Warehouse Op	80.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Warehouse Operator 1	Truck	IN	Export Empty	Warehouse Op	10.0%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
Warehouse Operator 1	Truck	IN	Imports Empty	Warehouse Op	10.0%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
Warehouse Operator 1	Rail	IN	Export Full	Warehouse Op	20.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Warehouse Operator 1	Rail	IN	Import Full	Warehouse Op	80.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Warehouse Operator 1	Rail	IN	Export Empty	Warehouse Op	10.0%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
Warehouse Operator 1	Rail	IN	Imports Empty	Warehouse Op	20.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Warehouse Operator 1	Truck	Out	Export Full	Warehouse Op	95.0%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Warehouse Operator 1	Truck	Out	Import Full	Warehouse Op	2.0%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
Warehouse Operator 1	Truck	Out	Export Empty	Warehouse Op	80.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Warehouse Operator 1	Truck	Out	Imports Empty	Warehouse Op	2.0%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
Warehouse Operator 1	Rail	Out	Export Full	Warehouse Op	95.0%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Warehouse Operator 1	Rail	Out	Import Full	Warehouse Op	15.0%	10.6%	10.6%	10.6%	10.6%	10.6%	10.6%	10.6%	10.6%
Warehouse Operator 1	Rail	Out	Export Empty	Warehouse Op	90.0%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Warehouse Operator 1	Rail	Out	Imports Empty	Warehouse Op	70.0%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%

These are internal - interterminal movements

Appendix B – Output Dashboard



Appendix C – Reporting Requirements

Planning Approval Conditions 2.2A and 2.2B of Major Project Approval 05_0147

Intermodal operations

2.2A The proponent is to provide an **Intermodal Freight Transportation Report**, prepared by an independent qualified person(s) approved by the Planning Secretary.

The purpose of the Intermodal Freight Transportation Report is to detail how the Proponent is working to increase the modal share of rail, and is to include the following:

a) the number of twenty-foot equivalent shipping containers despatched and received during the period;
b) modal splits of container volumes (in TEUs), provided by the warehouse operators and/or the intermodal operators, moved in/out of the project by:
   i. rail-to-truck/truck-to-rail, and
   ii. truck-to-truck;
c) representative vehicle origins and destinations, based on data from the warehouse operators and/or the intermodal operators;
d) review of recorded actual traffic generation against the traffic model referred in, and the findings of, the report titled *Traffic Impact Assessment Enfield Intermodal Logistics Centre; Cosgrove Road, Enfield MOD 14 Ref: 0440r03v5* (Ason Group, 26 February 2018);
e) a constraints and opportunities analysis to assist with identifying measures to increasing the modal split of container movements via rail-to-truck/truck-to-rail; and
f) a future forecast outlining expected TEU volume despatched and received on rail, demonstrating how the Proponent is using the opportunities identified above, subject to the constraints identified, to assist with switching the main mode of transport for container TEUs to rail.

The report is to be submitted throughout operation of the project, with the first report to be submitted one year after the commencement of operation of the first warehouse/s permitted as part of the approval of MP 05_0147 MOD 14, unless otherwise agreed by the Planning Secretary. Subsequent reports will be completed and submitted to the Planning Secretary on a two-yearly basis, or as otherwise agreed.

Note: Subject to condition 1.3B, the requirements of this condition are in addition to the requirements of the Traffic and Capacity Monitoring Program and the Traffic Audit required under conditions 3.6-3.9, and the Proponent may elect to address the requirements of any of those conditions in a consolidated document.

2.2B A framework for recording and reporting on the data required for the report required under condition 2.2A is to be prepared by an independent qualified person(s) approved by the Planning Secretary, and submitted to the Planning Secretary for approval three months prior to the commencement of operation of any warehouse permitted as part of the approval of MP 05_0147 MOD 14.

The Proponent shall prepare the report required under condition 2.2A in accordance with the framework for recording and reporting approved by the Planning Secretary under this condition from time to time.

Level 15 133 Castlereagh Street Sydney NSW 2000 Australia

61 2 9239 7100
advisory@ghd.com

https://projects.ghd.com/oc/Advisory2/nswportsenfieldinter/Delivery/Documents/Report/Enfield Intermodal Transport Report 2020.docx

Rev.No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
[00]	Nick Kerameas	Tristan Anderson		Tristan Anderson		
[01]	T. Jones	Tristan Anderson		Tristan Anderson		25/11/2020