

# Workforce Modelling Overview

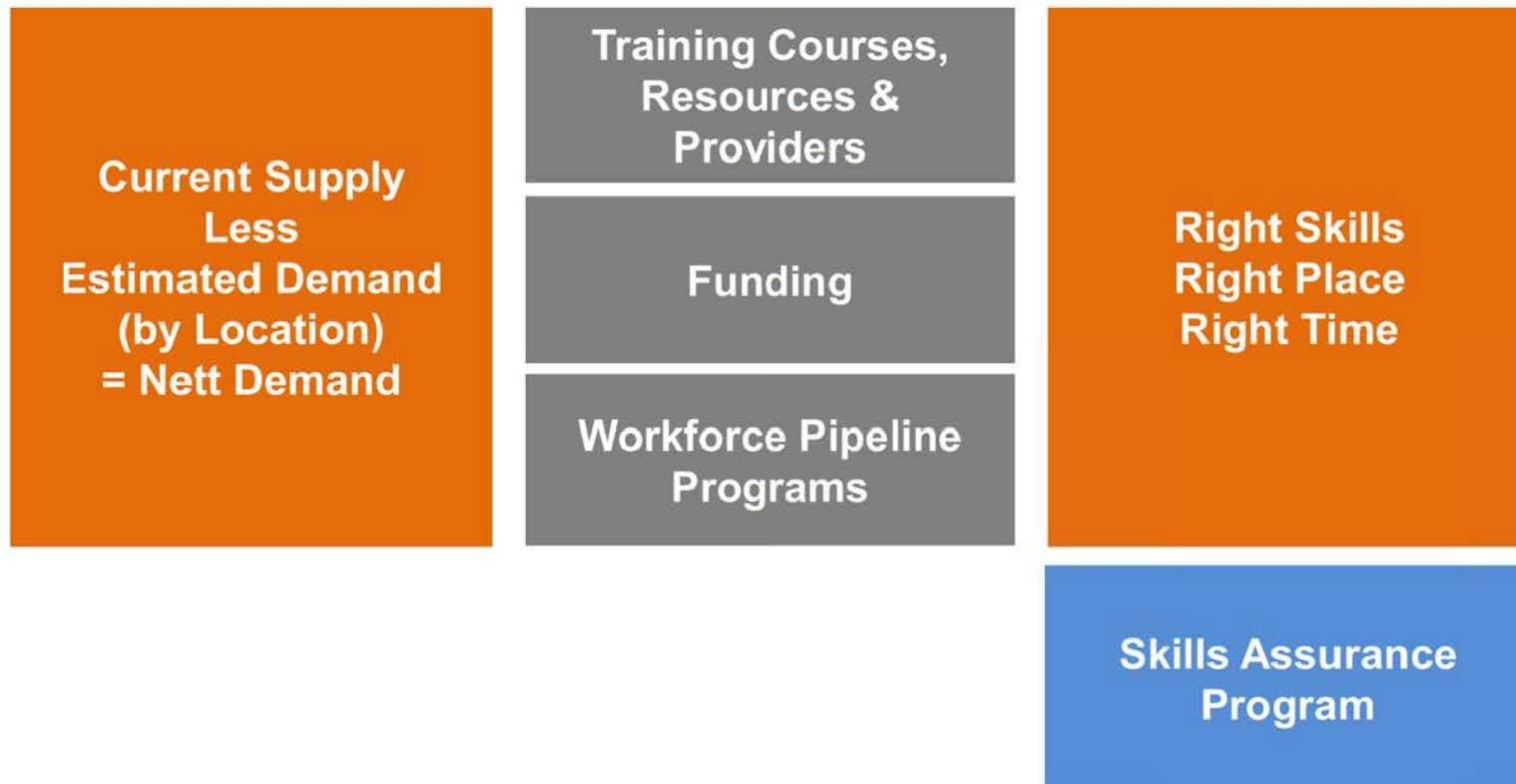
Dan Flemming - 9 June 2010

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# Workforce Development Roadmap



## Forecast Demand

- 16,000 – 18,000 jobs at peak (based on Telstra deal)
- 40 core jobs identified using the Australian and New Zealand Standard Classification of Occupations (ANZSCO) codes.
  - 28 jobs primarily engaged in the construction of the NBN
  - 5 “Priority Jobs” account for 80% of the forecast workforce demand for fibre construction

	<b>Current supply</b>	<b>Peak requirement</b>
Labourers	39,300	5,500
Earthmoving Plant Operator	21,100	2,300
Road Traffic Controllers	N/A	900
Cabler	3,100*	3,000
Telecommunications Linesworker	3,100	1,100

\* Under-reported occupation. Many of the 60,000 ACMA registered cablers could perform this work

## Executive Summary - Workforce Development Model V3.0

*We have a number of key observations we would like to share with you:*

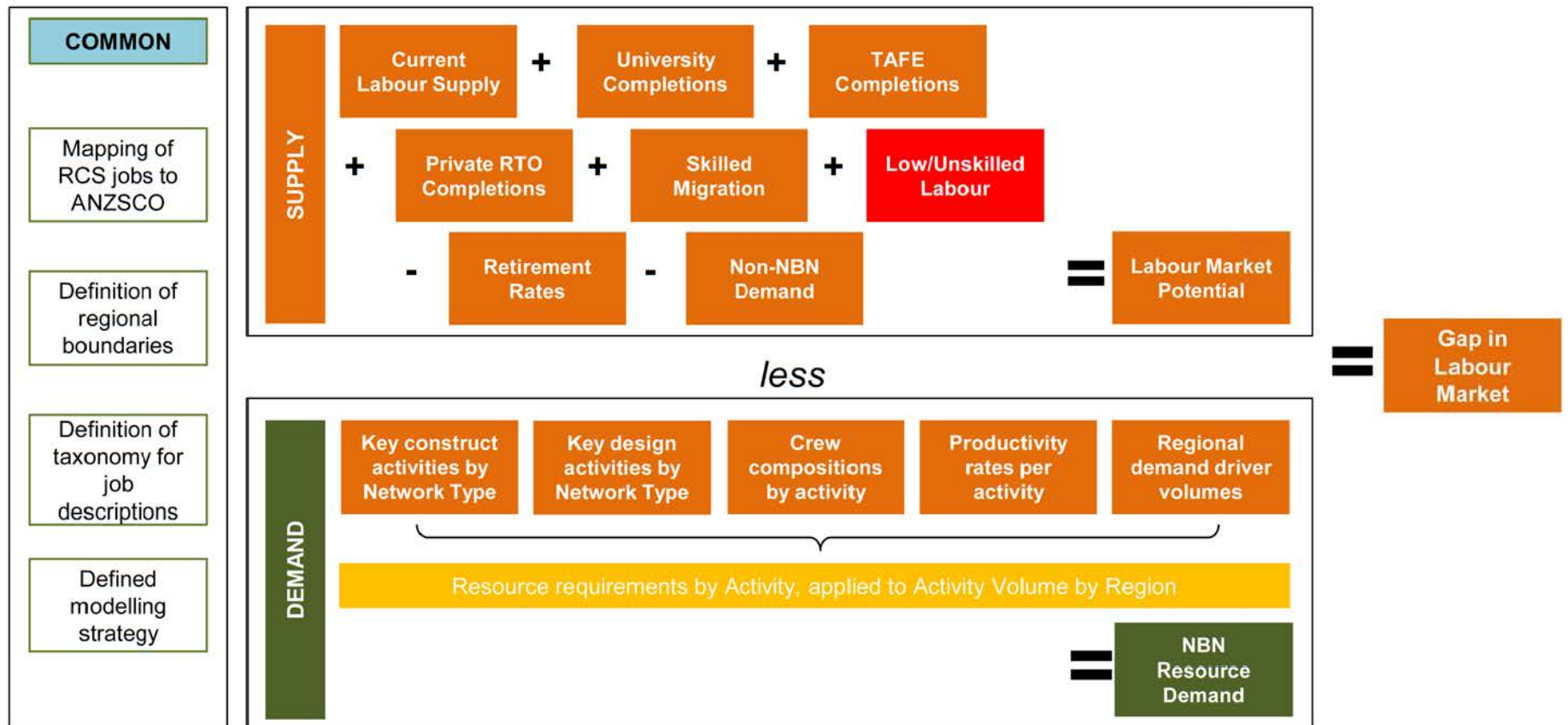
- Modelling is based on roll out schedule (v3.14 lite) – it would have presented significant challenges from a workforce resourcing perspective

Out of scope of application - As agreed by applicant

- First release sites productivity is lower than modelled productivity
- Business case productivity offsets wage increases over and above inflation (2.5%)

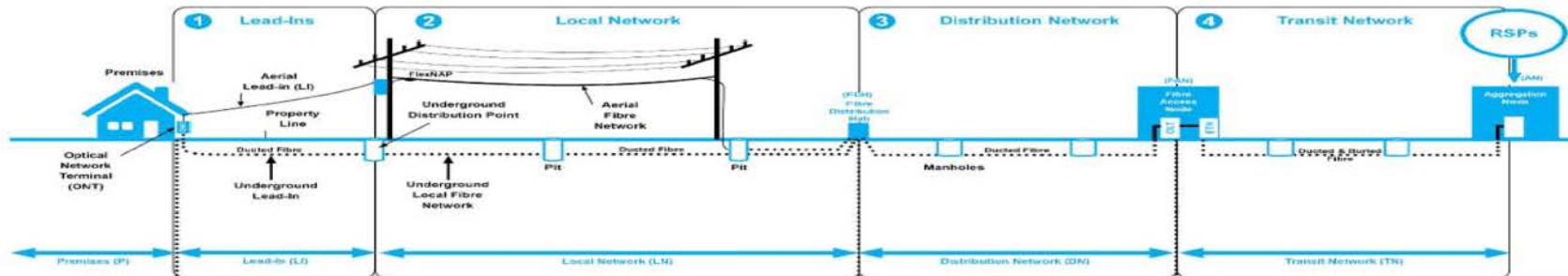
# Modelling Structure

The diagram below provides an overview of the modelling methodology used to estimate the Demand and Supply of jobs required to deliver the NBN.



- Not incorporated in quantitative results – qualitative discussion
- Partially incorporated - additional data or validation required
- Sourced Data

### Tasks and crew compositions for NBN construction (excludes Design)



<p><b>INSTALL NTUs (Both SDUs &amp; MDUs)</b> 1 x Cabler (Data &amp; Tele-communications)</p>	<p><b>INSTALL AERIAL POWER LEAD INS</b> 2 x Electrical lineworkers</p>	<p><b>AERIAL POWER – CONSTRUCTION</b> 2 x Electrical Lineworkers 1 x Truck Driver 1 x Trades Assistant</p>	<p><b>SPLICE &amp; TEST</b> 1 x Cable Joiner 1 x Trades Assistant TRAFFIC MANAGEMENT (50% of time) 2 x Road Traffic Controllers</p>	<p><b>RURAL PLOUGH TRANSIT CREW</b> 2 x Telecommunications Lineworkers 2 x Labourers 1 x Earthmoving Plant Operator 2 x Bulldozer operator</p>
<p><b>Multi Dwelling Units</b></p>	<p><b>INSTALL AERIAL COMMS LEAD INS</b> 2 x Tele-communications Lineworkers</p>	<p><b>AERIAL COMMS – CONSTRUCTION</b> 2 x Telecommunications Lineworkers 1 x Truck Driver 1 x Labourer</p>	<p><b>SPLICE &amp; TEST</b> 1 x Cable Joiner 1 x Trades Assistant TRAFFIC MANAGEMENT (50% of time) 2 x Road Traffic Controllers</p>	<p><b>PIT INSTALLATION CREW (as req.)</b> 1 x Telecommunications Lineworker 1 x Labourer</p>
<p><b>CIVIL WORKS and LEAD IN (UG)</b> 1 x Telecomms Lineworker 1 x Labourer 1 x Earthmoving Plant Operator (50%) 1 x Labourer (50%)</p>	<p><b>INSTALL UNDERGROUND LEAD INS - NEW</b> 1 x Tele-communications lineworker</p>	<p><b>UNDERGROUND - NEW</b></p> <p><b>PIT INSTALLATION CREW (as req.)</b> 1 x Telecommunications Lineworker 1 x Labourer</p> <p><b>BORING CREW</b> 1 x Driller 2 x Labourers</p> <p><b>TRENCHING CREW</b> 1 x Earthmoving Plant Operator 2 x Labourer</p>	<p><b>INSTALL CABLE CREW:</b> 1 x Crane, Hoist, Lift Operator 1 x Labourer</p>	<p><b>BORING CREW (as req.)</b> 1 x Driller 2 x Labourers</p>
<p><b>LEAD IN (Aerial)</b> 2 x Telecomms Lineworkers</p>	<p><b>EARTHWORKS (50% of time)</b> 1 x Earthmoving Plant Operator 1 x Labourer</p>	<p><b>UNDERGROUND - EXISTING</b></p> <p><b>PIT INSTALLATION CREW (as req.)</b> 1 x Telecommunications Lineworker 1 x Labourer</p> <p><b>BORING CREW (25% of time)</b> 1 x Driller 2 x Labourers</p> <p><b>TRENCHING CREW (25% of time)</b> 1 x Earthmoving Plant Operator 2 x Labourer</p>	<p><b>SPLICE &amp; TEST</b> 2 x Cable Joiner</p> <p>TRAFFIC MANAGEMENT (50% of time) 2 x Road Traffic Controllers</p>	<p><b>TRENCHING CREW (as req.)</b> 1 x Earthmoving Plant Operator 2 x Labourer</p>
<p><b>CABLE &amp; PCD INSTALL Small MDUs</b> 1 x Cabler (Data &amp; Tele-communications) 1 x Labourer</p> <p><b>Medium – Crew x 2</b> <b>Large – Crew x 3</b> <b>FDA – Crew x 4</b></p>	<p><b>INSTALL UNDERGROUND LEAD INS - EXISTING</b> 1 x Tele-communications lineworker</p>	<p><b>EARTHWORKS (25% of time)</b> 1 x Earthmoving Plant Operator 1 x Labourer</p>	<p><b>SPLICE &amp; TEST</b> 2 x Cable Joiner</p> <p>TRAFFIC MANAGEMENT (25% of time) 2 x Road Traffic Controllers</p>	<p><b>SPLICE &amp; TEST</b> 2 x Cable Joiner</p>
<p><b>FIRE PROOFING</b> 1 x Fire Proofing Specialist</p>				

## 61 Workforce Demand Drivers (excluded productivity)

### Premises

- # Premises (GNAF)
- # MDU Blocks Small
- # MDU Blocks Med
- # MDU Blocks Large
- # MDU Blocks FDA
- # Satellite Premises

### Network Components

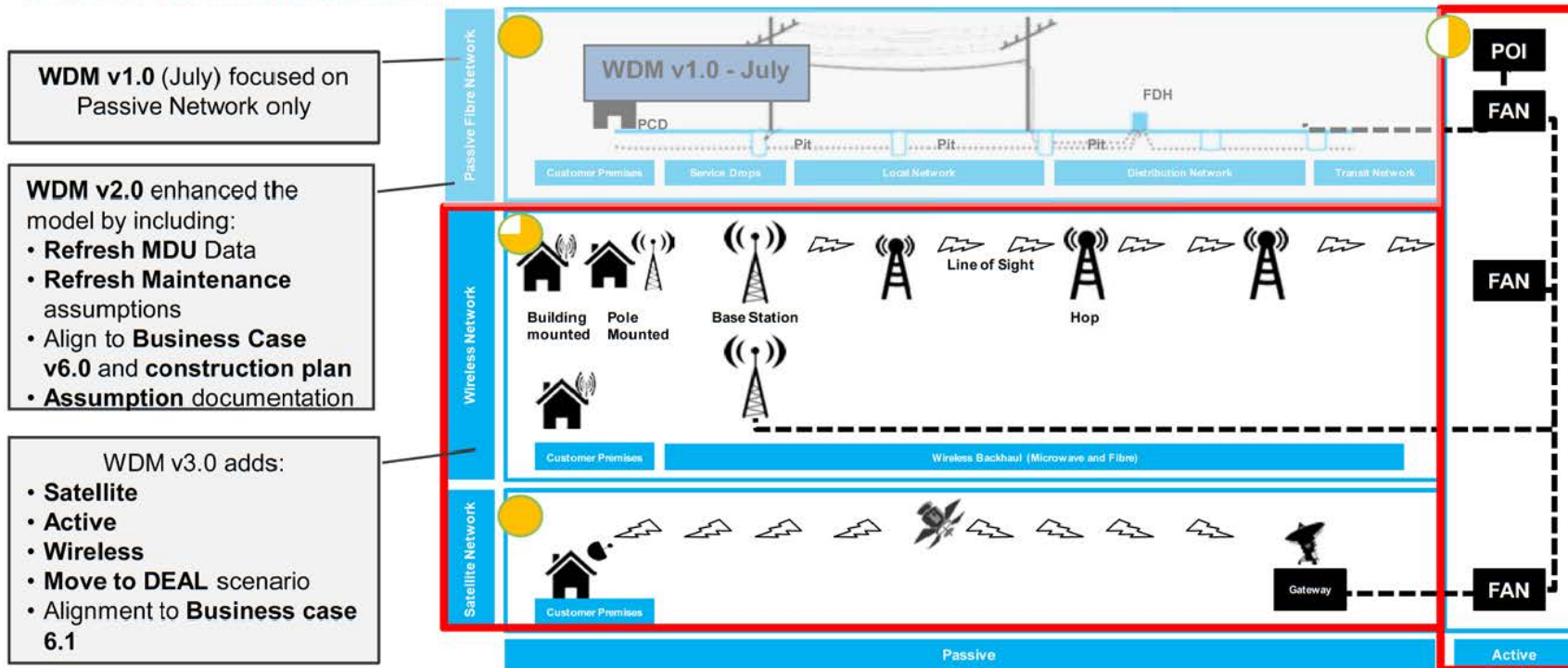
- # New Building Mounted Wireless Premises
- # FSAMs
- # FSAs
- # MDU Blocks
- # MDU Premises
- # NTU Premises
- Distribution # Pits
- Distribution # Splices
- Distribution Network Distance
- Local # Pits
- Local # Splices
- Local Network Distance Aerial
- Local Network Distance UG
- Shared # pits
- Shared # Splices
- Shared Network Distance
- Transit # Pits
- Transit # Splices
- Transit Network Distance
- # Satellite Gateway
- # New Wireless Base Station
- # Existing Wireless Base Station
- # New Microwave Hop
- # Existing Microwave Hop
- # MW Tower for FAN
- # Small POI
- # Medium POI
- # Large POI
- # Small FAN
- # DWDM for Small FAN
- # Medium FAN
- # Large FAN
- # DWDM for Medium FAN
- # DWDM for Large FAN

### Unforeseen Faults

- # Faults in Premises
- # Faults DUG Small
- # Faults DUG Average
- # Faults DUG Large
- # Faults Shared Small
- # Faults Shared Average
- # Faults Shared Large
- # Faults Transit Small
- # Faults Transit Average
- # Faults Transit Large
- # Faults LAC Small
- # Faults LAC Average
- # Faults LAC Large
- # Faults LAP Small
- # Faults LAP Average
- # Faults LAP Large
- # Faults LUG Small
- # Faults LUG Average
- # Faults LUG Large
- # Faults Satellite Premises

# WDM v3.0 Overview

*WDM 3.0 encompasses the remainder of the workforce required for field construction of the fibre, satellite and wireless network.*



Key **scenarios** have been identified to answer specific questions asked to date. These include addition of a 6 day working week, networks section volume changes, greatest activity by network section.

**First Release Site Validation** has now been received from contractors in the first release sites at Willunga, Armidale and Brunswick. Initial comparisons included in this summary.







# Early insights from WDM v3.0

Interim insights have been identified for First Release Site productivity and crew composition comparison, Wireless, Satellite and MDU data refresh.

Version 3.04 (Input v25)

Data: Dec 2013	Passive Fibre Design, Construct and Maintain (unplanned)	Satellite	Wireless	Active	TOTAL	+ 15% inefficiency
Peak Baseline (Deal scenario)	Out of scope of application - As agreed by applicant					

## Insights

 <b>First Release Sites</b>	 <b>MDUs</b>	 <b>Wireless</b>	 <b>Satellite</b>
<ul style="list-style-type: none"> <li>Armidale, Willunga and Minnamurra provided crew and productivity feedback</li> <li><b>Significant variation in productivity</b> in responses and from that modelled (Local, Distribution, Transit)</li> <li>Crew compositions <b>generally added low skilled labour</b></li> <li>Further validation to occur as ramp up</li> </ul>	<ul style="list-style-type: none"> <li><b>35% of premises</b> are within MDU's</li> <li>Approx <b>25% of workforce demand</b> is a result of MDU fibre installation</li> <li>Significantly increase requirements for Cabler (Data and Telecommunications)</li> </ul>	<ul style="list-style-type: none"> <li><b>Installation at approx. 150,000 premises</b> likely to drive the most part of workforce demand, however can leverage satellite workforce</li> <li><b>Base station and hop tower construction</b> adds moderate FTE</li> </ul>	<ul style="list-style-type: none"> <li>VSat installations at customer premises will form the most part of the workforce</li> <li>Installation of gateways likely to be performed by teams from outside Australia</li> </ul>
<p><b>Note:</b> 15% inefficiencies added to total workforce in line with business case</p>			

# Skills Assurance

# Executive Summary - Skills Assurance

*To mitigate business and safety risks, a robust and targeted solution that will ensure the contracted workforce is suitably skilled and qualified to perform their work is required*

## Key challenges:

1. **Contractor skills assurance variation** – First release site audits demonstrate that contractors are at various stages of maturity for skills assurance
2. **Principal and sub-contractor validation** – Visibility and assurance of entire workforce is critical both at principal and sub-contractor levels which is where most of the risk exists
3. **Network rollout and ramp-up** – Workforce modelling indicates that there is a rapid and large scale workforce ramp up
4. **Complex regulatory environment** – Ability to align with varying State requirements
5. **Non-forecasted financial investment** – Implementing the right solution at the right time to capture return on investment

# Skills Assurance

## Skills Assurance Catalogue & Checklist

### Regulated Skills

- Licence or qualification that is required by Federal or State law or regulation, underpinned by National OHS Codes of Practice

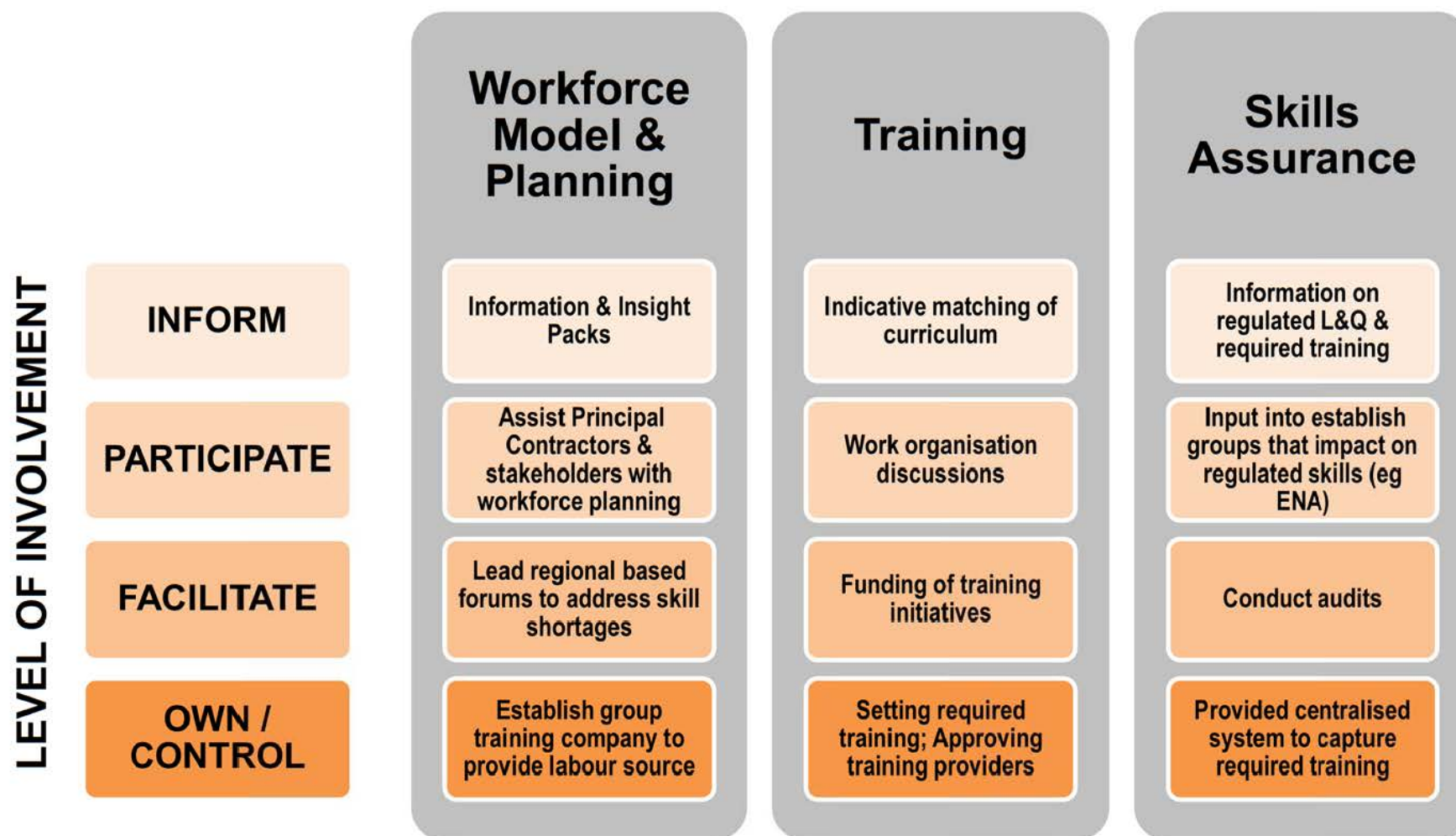
### Required Skills

- Training required by:
  - NBN Co (eg; NBN Safety & Awareness)
  - Asset Owner (eg; Railcorp RISI card)

### REGULATED SKILLS

- Asbestos Removal
- Backhoe Operation
- Construction Industry White Card (CIW)
- Dozer Operation
- Electrical Linesworker (ESI Passport)
- Elevated Work Platform
- EME Awareness
- Excavator Operation
- Front End Loader Operation
- Grader Operation
- HRW - Crane & Hoist
- HRW - Forklift
- HRW - Pressure Equipment Operation
- HRW - Rigging
- HRW – Scaffolding
- Motor Vehicle Licence
- Heavy Vehicle Licence
- Ladder Handling
- Road Traffic Control
- Road Traffic Planning
- Skid Steer Loader Operation
- Telescopic Handler Operation
- Working at heights (>2m)
- Working in confined spaces

# Levels of Involvement



# Back Up