

KiwiRail Holdings – Palmerston North Regional Freight Hub - S92 Requests and Responses – Design, Construction and Operation

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Rev. no	Date	Description	Prepared by	Checked by	Reviewed by	Approved by
1	15 February 2021	Final response	M Skelton	K Bell		

The following responds to Queries 6(i), 124-140, 168 and 169.

S 92 Request	Reason given in PNCC letter	Answer
6(i)	<p><i>With reference to Technical Report A - Design, Construction and Operation, please provide the following clarifications:</i></p> <p><i>3.2 Key Elements, 3rd to last bullet point, states: "Overhead lighting in all yards with the possibility of providing underside lighting on tracks". What will this underside lighting on tracks consist of?</i></p>	<p>Underside lighting systems could be used to light walking areas (to assist with minimising trip hazards), but these systems are not intended to be used for inspections (to look at wheels, brakes, couplings and other defects beneath wagons etc). Typically, these inspections are carried out by staff using headlamps and torches. It would be impractical to have underside lighting on all arrival/departure tracks for the purposes of inspections. (Refer to Attachment 4a s92 Response Lighting)</p>
124	<p><i>Please outline risks, safety, hazards identification etc. for the Regional Freight Hub's lifecycle (concept, design, construction, maintenance, operation, decommissioning), including derailment risk, safety point, track switches, and stop blocks.</i></p>	<p>We have not documented a safety/risk/ hazard analysis at this stage. The concept design layout was developed using the concept of Precision Scheduled Railroading (PSR) which has Safety as a one of the 5 core Principles – “safety in every aspect of Work”. (refer Intermodal Freight Hub Master Plan – Palmerston North Report - section 2.3).</p> <p>KiwiRail adheres to Safety, Health and Environment (SHE) standard 14-STD-003-COM, which sets out the arrangements for the KiwiRail Enterprise-Wide Safety, Health and Environment (SHE) Management System. These standards will apply throughout the course of the project and include details of management at a programme / project level and how SHE project management will be established, implemented, and monitored on a programme of work. The SHE aligns with and supports compliance with relevant laws and associated rules and regulations applicable to complex projects that are not a “Standard Design / Process” typically delivered by KiwiRail. The SHE also sets out organisational responsibilities, as well as mandatory requirements and guidance regarding design safety, risk assurance and staging of projects.</p> <p>A copy of the SHE standard is attached as Appendix 1.</p>
125	<p><i>125) Please provide further justification, explanation, or information to identify how the elements of the concept design plan (including size, quantity, spatial requirements) meet or fulfil the associated functional requirement.</i></p>	<p>The functional requirements were established during the master planning phase and are contained in Section 4 of the Master Plan Report.</p>

127	<p><i>127) Please clarify which tracks will be electrified and the staging of these tracks for electrification.</i></p>	<p>Currently the NIMT is electrified from the existing PN yard and past the new RFH and to Hamilton.</p> <p>Once the RFH is operational the southern extent of electrified network is expected to be south of the RFH and Roberts Line level Crossing (approximately km 141.400)</p> <p>The arrival and departures yard contains 8 tracks, all of which can be electrified. The timing of electrification cannot be confirmed but will occur as demand requires.</p> <p>At this juncture, 2 tracks are expected to be electrified at stage 1 when operations commence on site, 4 tracks at stage 2 and 4 tracks in the final configuration stage 3.</p> <p>In addition, electrified tracks can be found:</p> <ul style="list-style-type: none"> • In and leading into the maintenance facility. The design provides for 2 electrified tracks, these will be functional stage 1, • Northern Locomotive setoff track functional stage 1.
128	<p><i>Please advise by plans or sketches.</i></p>	<p>The updated Concept Plan provided in response to Query 188 (Attachment 14) indicatively shows which tracks are expected to be electrified in the arrival and departure yard and includes the Northern engine setback, maintenance yard and new termination point for electrification on the NIMT.</p>
129	<p><i>Please clarify how trains move in/to/from the area.</i></p>	<p>While specific details may be subject to change at detailed design, below is an outline of expected train movements within the Freight Hub. Commentary is based on the updated Concept Plan Figure 142 provided in response to Q188.</p> <p>Looking at each end of the yard: in turn under stage 1 where there are 2 of the arrival & departure tracks constructed and both are expected to be electrified.</p> <p>From the north (Bunnythorpe end), arrivals move from the NIMT directly into the Arrival & Departure yard with electric locomotives expected to use tracks 1 or 2. Engines decouple and then run around to service area for refuelling (diesel only) sanding or oil checks.</p> <p>There are a number of run around options such as on the mainline, through the arrival and departure yard or via the marshalling yard.</p> <p>Once service is complete, the locomotives are placed on the setoff/holding track adjacent to the arrival and departure yard- (there are two located at each end of the yard, with the northern one expected to be electrified).</p> <p>To provide flexibility in final configuration (stage3), marshalling track 1 will be connected to the arrival and departure yard at the northern end, with the run-around used as a pull back. This additional connection is not required for stage 1</p> <p>The 2 sets of cross over proposed for the arrival and departure tracks to are required. Under the reassignment they would extend from the NIMT across the two arrival and departure track and then through to reassigned marshalling track 7 (track 1 in stage 3). The exact location will be established during preparation of operational and detail design plans.</p>

		<p>Electric powered departing trains will leave directly from the arrival and departure yard however there is flexibility to have diesel powered trains leaving from the marshalling area.</p> <p>All trains from the east and south are expected to be diesel powered. Trains will enter directly into the arrival and departure yard if not occupied (otherwise they will enter the marshalling yard). The locomotives will de-couple and move to service before running around and being placed in the southern setoff track. The southern end pull back is not constructed at stage 1. Additional cross over will be provided in the marshalling yard to allow room to pull back for break or make up trains.</p>
130	<p><i>The Design, Construction and Operation report does not address the potential for decommissioning of facilities, tracks and assets both for temporary and permanent assets and installations.</i></p> <p><i>Will this occur and if so, how will this be managed?</i></p>	<p>Decommissioning of redundant facilities in on the current yard sites has not been examined in any specific detail at this stage. Table 7 of the Design and Construction and Operation Report provides an indicative timetable that includes full demobilisation from the Tremaine Avenue area occurs once Stage 1 works are complete. As part of demobilisation of the existing site, the planning, redevelopment of the existing site, and disposal of existing site assets will be considered. The details of decommissioning of the existing site will necessarily be informed by its future land use, which is yet to be determined.</p>
131	<p><i>How will the NIMT be relocated, what works are required for the relocation, and how will that affect the continuity of the NIMT operation?</i></p>	<p>The relocation of the NIMT is required to allow space for site earthworks and construction of noise mitigation measures on the eastern boundary. As a major rail spine, the new NIMT alignment would likely need to be constructed offline first, and the transfer between the old and the new line managed with the minimum of disruption to the route. All design and construction methodologies for achieving this will be developed in the detailed design phase. Appendix 2 details how the relocation might be managed recognising that the prerequisites are:</p> <ul style="list-style-type: none"> • The Perimeter Road is built and operational, • Railway Road is closed from North end of the Hub site to Roberts Line intersection
132	<p><i>Have crossings/ frog (flange bearing, moveable frog) been considered as a means of minimising operation noise?</i></p>	<p>Kiwi Rails current standard Turnouts are asymmetric and fully welded. Specialised turnouts such as swing nose crossings are not used in normal operational situation. Under special circumstances have used flange running frog and flange lubrication as mitigation for identified problem areas. The type of track structures used will be determined during the detailed engineering design of the Freight Hub.</p> <p>Operational noise will be managed under the Operational Noise and Vibration Management Plan.</p>
133	<p><i>Has KiwiRail confirmed that the area of the NoR is sufficient, accounting for:</i></p> <p>(i) <i>(i) KiwiRail track design standards with the requirement of minimum track</i></p>	<p>Yes, the site has been sized to accommodate all the necessary elements including relocation and future duplication of the NIMT.</p> <p>A separate document titled “KiwiRail Design Standards” is attached at Appendix 3. It provides specific details of standards used in the concept design.</p>

	<i>centre spacing between tracks; (ii) The fouling point combined with minimum radii, which could potentially limit the required shunt lengths of the track.</i>	(i) Tracks are alternately spaced 4m and 7m centres which allows for 3m wide service roadway adjacent to each track; and (ii) The concept design is based on achieved the design track length within the yard. during the detail design phase fouling points will be determined for each track and the actual operating length determined to ensure the design lengths have been achieved
134	<i>Please provide a plan that identifies and names of all of the tracks that are referred to in the Design, Construction and Operation Report. For example, what are the arrival/departure yard tracks, yard track, shunting tracks, marshalling yard, back shunts?</i>	Please refer to the updated Concept Plan, which contains a legend identifying the relevant tracks and is provided under items 128 & 188
135	<i>Has a complete fire hazard assessment been carried out for all activities within the proposed Regional Freight Hub? If so, please provide a copy.</i>	No specific fire hazard assessment has been completed for this phase of the work. In addition to fire safety design for the various building on site as required under the building code the fire hazard assessment will need to consider provision of water supply for firefighting purposes, site accessibility for firefighting equipment, fire safety systems, sprinkler systems and control points. The site is complex, and it is likely that the Fire Engineering Brief (FEB) process as set out in the International Fire Engineering Guidelines (IFEG) will be used as requirements will be well outside the use of "simple" acceptable solutions. It is expected that this work will be part of the detail design.
136	<i>Please provide a copy of the operational requirements.</i>	The operational requirements are not contained within a specific document able to be provided by KiwiRail. The process of preparing the Master Plan involved engagement with key operational staff from within KiwiRail to ensure that relevant operational requirements were understood. The concept plan is a spatial representation of many of those requirements which it is expected will change over time in response to changes in technology and practice and in direct response to the location of this Hub.
137	<i>Section 3 of the Design, Construction and Operation report states 'KiwiRail has developed a master plan for intermodal freight hubs'. Please clarify whether this is the document "Intermodal Freight Hub Master Plan – Palmerston North Report". If not, please provide a copy.</i>	The Master Plan document referred to in my assessment was attached to the NoR application and is high level concept plan that was initially used to identify an appropriate location for the Central North Island freight Hub and is a strategic document for future development of freight Hub across NZ. It should be noted that the concept layout associated with this application has similarly sized elements to that shown in Appendix A of the Master Plan report but has been reconfigured to suit the site.
138	<i>The Design, Construction and Operation Report states that there will be "Fuelling on the Marshalling Yard and Arrival/Departure Tracks with fuel stored onsite (underground tanks) piped to the tracks. LPG will also be stored onsite. Air will also be supplied to the Arrival/Departure tracks".</i>	Please refer to the separate Contaminated Land Response (Attachment 5 that responds to questions 172 and 175.

	<i>Please identify any associated hazards and risks at the designed location.</i>	
139	<i>Please provide more clarity, perhaps by way of providing a staging plan/diagram, on intended staging details. Which tracks are considered to be built in the initial stage?</i>	<p>Table 7 of the Design and Construction and Operation Report outlines the anticipated staging of construction. Stage 1 will provide sufficient track and facilities for rail operation to fully demobilise from the Tremaine Ave area. The table identifies the indicative tracks expected to be built in stage 1, this is expanded in more detail below with track identification taken from the update concept layout figure 142 referenced under items 128 & 134, and in Appendix 4.</p> <ul style="list-style-type: none"> • 2 Arrival/Departure Tracks No1 & No2 Both electrified ;(green) including 2 setoff tracks • 12 Marshalling Yard Tracks; tracks1 to 12 (red) to diesel powered trains will arrive & depart into the Marshalling yard - Track 1 & 2. • 1 Wagon Storage Yard Track; tracks 2 & 4. • 1 Log Loading Track; Track2 and storage track • Container area - pad tracks 1 ,2 & 3 • Intermodal track • Freight forwarding area all tracks but only 50% of primary buildings and 33% of secondary buildings. <p>Maintenance facility - all tracks (blue) including turning triangle</p> <p>Detail design stage plan will determine the location of cross over and other connections between yard elements to aid operational flexibility, for example connections from the arrival and departure yard to the marshalling yard.</p>
140	<i>Please provide a concept of train operations to and from the Regional Freight Hub. Of specific interest, the 'operation concept' should address how (or if) braking of trains will be carried out through Bunnythorpe.</i>	Please refer to the response to question 27 in the Noise and Vibration response in Attachment 7 .
168	<i>If fill material is sourced further afield and transported by rail, would it be stockpiled on or off-site? If stockpiled off-site, where would this likely be and what would be the predicted traffic effects?</i>	<p>Fill will consist of earth/granular fill to build the site up to formation level (which is RL 49.3m). A further 700mm will be ballasted and filled with other granular material to reach RL50.0m for the final Freight Hub level.</p> <p>Any railing of material to site will not be possible until area has rail access this could be a temporary track and an unloading facility. Unless this can be economically established all material will be transported by road. The site is sufficiently large to allow on-site stockpiling and thus can be managed over an extended period of time.</p> <p>General fill material sources have not been specifically identified, with sourcing of material commencing in parallel with the detailed design, allowing time for consenting of new sources if required before physical construction commences.</p> <p>Typically, granular fill likely to be river sourced –the Manawatu or Rangitikei.</p>

		Expansion plans for the Turitea quarry may provide suitable general fill (ex-overburden) and granular material. No formal approaches will be made to potential suppliers or contractors until Kiwi Rail are confident the work will proceed.
169	<i>In section 3.2 of the Design, Construction and Operation report there is reference to being able to include an inland port facility. What does this mean?</i>	A customs secure facility that would allow freight to move directly to and from a port (in this instance likely to be Napier or Wellington).

Appendix 1

ENTERPRISE-WIDE SHE STANDARD

14-STD-003-COM

PROGRAMME SHE MANAGEMENT



This Enterprise-wide SHE Standard sets out arrangements for the KiwiRail Enterprise-Wide Safety, Health and Environmental (SHE) Management System, and applies to the KiwiRail entities KiwiRail Holdings Limited, KiwiRail Limited, and New Zealand Railways Corporation.

1. DOCUMENT CONTROL

Document Type:	Standard	Scope:	Enterprise-Wide
Authoriser:	Executive Manager, SHE	Date Authorised:	TBA
Process Owner			

Issue No	Date	Amendments		Preparer (P) / Reviewer (R)
		Section	Details	
0.1	08/05/2020	All	Initial draft	Cat Salt (P) N. Chevis (R) David Gordon (R) A.Farmer (R)
0.2	22/06/2020	All	Consultation review and amendments	Cat Salt (P) Consultation Parties (R)

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3. PURPOSE

This Enterprise-wide SHE Plan provides KiwiRail's minimum requirements for SHE management of at a programme/project level and how to implement expectations into delivery of a Programme and how SHE programme management will be established, implemented and monitored on a programme of work. It is aligned with the Safety in Design, SHE Risk Assurance and the CPAD staged gate process, as shown in **Section 6.1**.

This Plan aligns with, and supports the application of the following documents to enable compliance with relevant laws and associated rules and regulations:

- Enterprise Health and Safety Policy (01-POL-001);
- Enterprise Environmental Policy (01-POL-002);
- SHE Risk Management Standard (04-STD-001-COM);
- SHE Management of Change Standard (05-STD-001-COM);
- SHE Risk Assurance Standard (04-STD-004-COM);
- Safety in Design (G-ST-AL-9131);
- Health and Safety At Work Act 2015; and
- Resource Management Act 1991;
- CPAD Manual (document that sets out all the stages and accountabilities)

4. SCOPE

This Enterprise-wide Standard applies to complex projects delivered by CPAD under the CPAD Manual framework that have a significant safety risk and require a SFAIRP level of assurance. Complex projects shall include any project / package of works that is not a "Standard Design / Process" typically delivered by KiwiRail.

This may include, but not limited to:

- Replacement / renewal of large asset's, such as bridges, towers, tunnels, large drainage, retaining structures, shunting yards / new sidings and buildings.
- Realignment of sections of rail.
- Replacement / renewal of rolling stock.
- Purchasing of large equipment / plant.
- Reopening of mothballed lines
- Delivery of works through large complex teams

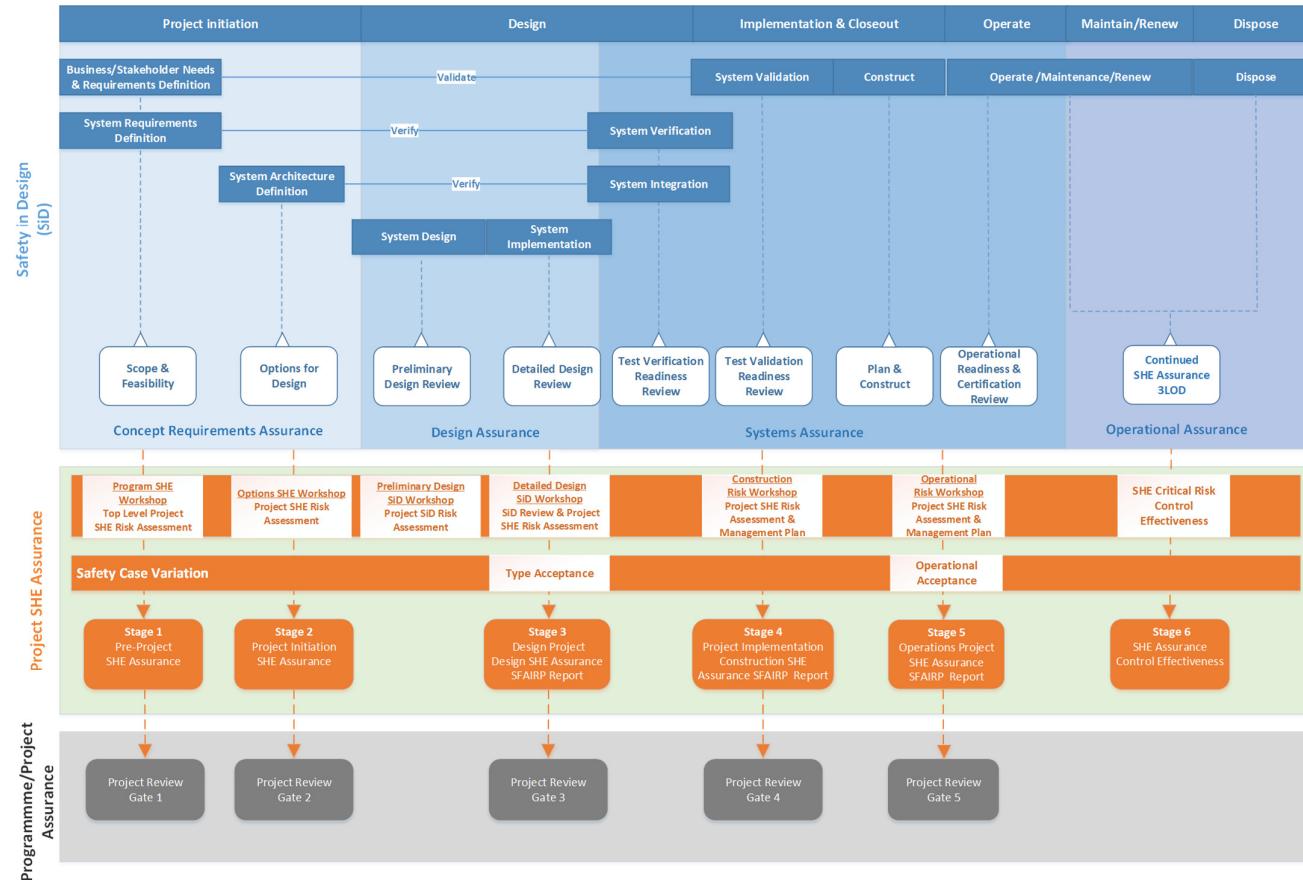
Note: Small projects only require a *SHE Risk Assessment and Risk Management Plan (04-TEM-002-COM)*.

5. ORGANISATIONAL ACCOUNTABILITY AND RESPONSIBILITY

Roles	Accountability or Responsibility
Executive Manager, SHE	<ul style="list-style-type: none"> • The PROCESS authorisation of all Enterprise-wide SHE Management System documents (i.e. has the document been developed or changed in accordance with the approved processes and arrangements under the SHE Management System), as per the SHE System Governance and Management Control Arrangements Principle (16-PRI-001).
Discipline Area Authorising Officers (Process Owner)	<ul style="list-style-type: none"> • CONTENT authorisation of new and existing discipline specific Enterprise-wide SHE Management System documents as per the SHE System Governance and Management Control Arrangements Principle (16-PRI-001). • Reviewing the process on a regular basis to ensure it stays current • Review the Assurance items on a regular basis to ensure there is no process drift • Define investigator the skill and competence requirements
Programme Director/Project Manager	<ul style="list-style-type: none"> • Effective risk management; • Effective supervision and management of SHE requirements; • Managing and monitoring SHE performance of the Project; • Ensuring the relevant SHE Requirements are met prior to each Gate Review.
SHE Project Manager	<ul style="list-style-type: none"> • Supporting Programme Directors/Project Managers in the implementation of SHE Requirements through the Project Stages • Conducting Gate Reviews prior to progression through Project Stages.
Generic accountabilities	<ul style="list-style-type: none"> • Governance and Internal Control Accountabilities Principle (01-PRI-002) • System Governance and Management Control Arrangements Principle (16-PRI-001).

6. MANDATORY REQUIREMENTS AND GUIDANCE

6.1 Safety in Design, SHE Risk Assurance and the CPAD Staged Gate Process



6.2 Stage 1: Pre-Project

Overall Objectives – Per CPAD Manual

The overall objective of the Pre-Project stage is to produce a clear definition of the outcome of the project, and what activities are needed to make it happen. The whole of business elements of Pre-Project are captured at Programme Level in a Tier 1 Programme Plan or at a Project Level in a Tier 2 Project Plan

SHE Mandatory Requirements

The key tasks to be completed during this phase are shown in the table below. Key themes to consider are

- Major change activities have the potential to significantly influence KiwiRail's SHE performance. During this phase the Project needs to determine whether the ***SHE Management of Change Standard (05-STD-001-COM)*** must be followed.
- A high level SiD workshop is to be conducted to create the Project SiD Risk Profile.
- Stakeholder and User needs requirements are to be captured in order to develop the high level SHE requirements including SHE risks, objectives and targets.

These actions are to be completed prior to Project Review Gate 1.

Implementation Actions	Accountable	Responsible	Tools - ref
Initial high level SHE Risk Profile	Programme or Project Manager	Project Manager SHE Project Manager (Facilitation)	Project SHE Risk Assessment template (04-TEM-002-COM)
Identify SHE Stakeholders and needs	Programme or Project Manager	SHE Project Manager	Project Mandate Document KR-ST-FM0003.1
First cut SHE Project Objectives and Targets	Programme or Project Manager	Project Manager SHE Project Manager (Facilitation)	Project Mandate Document KR-ST-FM0003.1
Initiate SHE Management of Change Plan	Project Manager	Project Manager SHE Project Manager	SHE Management of Change Plan Template (05-TEM-001-COM)
Deliver SHE Risk Management Training to Project Team	SHE Project Manager	SHE Project Manager	SHE Risk Management Standard (04-STD-001-COM);
Complete Gate 1 Pre-Project Control Verification	SHE Project Manager	SHE Project Manager	Pre-Project Control Verification Checklist (04-CV-016-SHE)

6.3 Stage 2 : Initiation

Overall objective – per CPAD Manual

The Initiation Stage takes the Pre-Project high level assumptions, costings and optioneering conclusions to a more detailed level and validates them through a detailed development of the scope, programme and related costs along with preliminary opportunities and risks. Concurrently the high-level requirements are tested, validated and aligned amongst the stakeholders. A Concept Design is produced at this stage, normally.

The validated requirements, selected design and resultant financial case will support the Business Case – being either at Programme Level in a Tier 1 Programme Plan or at a Project Level in a Tier 2 Project Plan. .

SHE Component

The Initiation Stage takes the pre-project high level SHE requirements and objectives and validates them through a detailed development of the scope, programme and SHE risk by;

- Reconfirming the SHE objectives and requirements that were documented during the Pre-Project phase
- Setting out the SHE structure, and confirming the SHE obligations
- Build the SHE Risk Register
- Undertaking the second SiD workshop to deliver initial SFAIRP statements
- Setting a schedule of leadership assurance oversight activities

Implementation Actions	Accountable	Responsible	Tools - references
Review and Confirm SHE Project objectives and targets	Programme Director	SHE Project Manager (Facilitation)	System Governance & Management Control Arrangements (16-PRI-001)
Develop, review SHE organisation and responsibility Matrix including SFAIRP Professional Head/Technical Authority and Risk Register Coordinator	Programme Director	Project Manager	Governance and Internal Control Accountabilities (01-PRI-002)
		SHE Project Manager (Facilitation)	Tier 1 Programme Management Plan
Update Project Management Plan to include SHE System Requirements	Programme Director or Project Manager	Project Manager or Programme Manager	Tier 1 Programme Management Plan[CS1]
Conduct local legal requirement review	Programme Director or Project Manager	SHE Project Manager	Review Westlaw updates
Conduct SFAIRP Industry Scan and gain approval from Professional Head/Technical Authority	Project Manager	Project Manager Design Lead	SFAIRP Industry Scan (04-TEM-007-SHE)
Detailed Project SHE Risk Assessment	Programme Director or Project Manager	SHE Project Manager (Facilitation)	Project SHE Risk Assessment template (04-TEM-002-COM)
		Risk Register Coordinator (Maintenance)	
Obtain SHE Historical Data Analysis Report to feed into Human Factors Analysis	Programme Director or Project Manager	SHE Project Manager	Incident Management System download
Conduct Human Factors Analysis including SHE Requirements	Programme Director or Project Manager	Design Lead	Safety in Design (G-ST-AL-9131)
Hold Initiation Stage SiD Risk Workshop	Programme Director or Project Manager	Design Lead	Project SHE Risk Assessment template (04-TEM-002-COM)
Agree and develop Schedule of Leadership Oversight and Due Diligence	Programme Director or Project Manager	Project Manager SHE Project Manager	Project Oversight and Due Diligence Schedule (14-TEM-008-SHE)
Complete Gate 2 Project Initiation Control Verification	SHE Project Manager	SHE Project Manager	Project Initiation Control Verification (04-CV-017-SHE)

6.4 Stage 3: Design

Overall objective – per CPAD Manual

The purpose of this stage is to progress the concept design to a level that is appropriate for the next stage of procurement. Depending on the procurement strategy, this could range from enough for

- Outline plan of works
- Other consents
- Reference design to be completed by others
- Through various stages up to and including Issue for tender and Issue for construction.

Regardless of the procurement strategy the objective is to validate all assumptions, reduce risk, drive value engineering options and remove as much uncertainty as possible.

Depending on the size of the project, there may be multiple stage reviews to ensure the project is still providing the desired benefits as the solution materialises but as a minimum you would expect to have two stages being

- Preliminary design and
- Detailed design.

SHE Mandatory Requirements

Through this stage the team will validate all SHE assumptions, reduce SHE risk SFAIRP including SFAIRP review and approval, and drive SHE led engineering options through SHE and human factors data analysis.

Where the contractor is involved during this stage (for example under an ECI or design & build) then some of the contractor requirements identified in Gate 4 will need to be implemented.

The sign-off at the end of this stage evidences that the design has incorporated the SHE requirements SFAIRP.

The key tasks are shown in the table below

- Undertaking a detailed SHE SiD risk assessment including a PCBU risk assessment
- The development of the SFAIRP design reports and gain approved by the technical authorities; to ensure that risk have been mitigated SFAIRP and any outstanding RMP actions are approved for completion after the gate.
- Set out the SHE contractor requirements for tender as per the ***Contractor Management Standard (08-STD-002-SHE)***
- Ensuring that the type acceptance variations are documented and approved gained form the regulator.

Implementation Actions	Accountable	Responsible	Tools – references
Assign Officer of the PCBU	Programme Director or Project Manager	Programme Director or Project Manager	Attendance at the Risk Assessment Workshops and Gate reviews
Design Actions			
Complete and document a Preliminary SiD workshop	Project Manager	Design Lead	Safety in Design (G-ST-AL-9131);
Prepare SFAIRP Statements for approval by Technical Authority			Project SHE Risk Assessment template (04-TEM-002-COM) SFAIRP Statement Report (04-TEM-06-SHE)
Design SFAIRP reports approved by Professional Head/Technical Authority	Project Manager	Professional Head/Technical Authority	SFAIRP Statement Report (04-TEM-06-SHE)
Complete detailed SHE Project Risk Register Confirm SFAIRP Scan is still current	Project Manager	SHE Project Manager (Facilitation) Risk Register Coordinator (Maintenance)	Project SHE Risk Assessment Template (04-TEM-002-COM)
Actions Relating to Licence Variation if Required			

Complete Type Acceptance Variation submission and obtain NZTA Type Approval if required	Project Manager	Project Manager	Rolling Stock Type Acceptance (05-TEM-002-SHE)
		Technical Authority	
Actions Relating to Forming Tender Documents			
Complete initial SHE Construction Risk Assessment Workshop	Project Manager	Project Manager	SHE Risk Assessment (Template 04-TEM-002-COM)
		Contractor Representative	
		SHE Project Manager (Facilitation)	
		Risk Register Coordinator (Maintenance)	
Develop SHE Contract tender documents in particular	Project Manager	Group Legal Project ZH	Standard contract 3910:2013 Long Form (Build Only)
- General obligations - Principal's Requirements section 5,6			
Complete Gate 3 Design Control Verification	SHE Project Manager	SHE Project Manager	Project Design Control Verification (04-CV-018-SHE)

6.5 Stage 4: Implementation

Overall objective – per CPAD Manual

Implementation covers the construction of the asset.

SHE Mandatory Requirements

The document **08-STD-002-COM Contractor Management Standard** provides the methodologies and guidance relating to management of contractors through selection leading to award.^[CS2] Actions are outlined in the table below.

Implementation actions below are directed to confirming that the Contractor SHE Management Plan is established to manage the safe construction of the asset(s).

Implementation Actions	Accountable	Responsible	Tools – references
Activities Relating to Engaging Contractors			
SHE Assessments completed for non-prequalified tenderers and outcome fed back to Tender Evaluation Panel or Procurement Team	Project Manager	ZH Systems Manager	Contractor SHE Procurement Questionnaire Approval (08-TEM-003-COM)
Ensure Contractor Execution Request Form is signed off by relevant discipline area authority	Project Manager	Procurement ZH Systems Manager	Contractor Execution Request Form
Pre Site Establishment			
Complete Construction detailed SHE Risk Assessment Register & Risk Management Plan	Project Manager	SHE Project Manager (Facilitator)	SHE Risk Assessment Template (04-TEM-002-COM)
		Officer of PCBU	
		Contractor SHE Representative	
Review and amend the SHE organisation chart reflecting contractor inputs and requirements	Project Manager	SHE Project Manager (Facilitator)	Organisation Chart with SHE Accountabilities
		Project Manager	
		Contractor SHE Representative	
Develop Project Induction	Project Manager	SHE Project Manager	As per Stage 4 Contractor Management Standard
Develop SHE Communications Plan to capture SHE communication process for the project	Project Manager	SHE Project Manager	E.g. Project Engagement and Communication Plan Template (10-TEM-004-SHE)
Develop Schedule of Contractor Oversight and Due Diligence	Project Manager	SHE Project Manager	CV Audit Schedule (CV Template Excel Spreadsheet) ^{[CS3][NC4]}
Site Establishment			
Project Site Specific SHE Plan established	Project Manager	Contractor SHE Representative	Example template: Project Site Specific SHE Plan (14-TEM-009-SHE) ^[CS5]
Review and approve Site Specific SHE Plan	Project Manager	SHE Project Manager	Site Specific SHE Plan Assessment (08-TEM-004-SHE)
Communicate Project Induction	Project Manager	SHE Project Manager	Project Induction development
		Contractor SHE Representative	
Establish Project SHE Committee and schedule	Project Manager	SHE Project Manager	HSAT Meeting Minutes Template (10-TEM-001)
		Contractor SHE Representative	

Conduct SHE training needs analysis as per KiwiRail Learning Exchange (KLE) for Contractor and ensure training is undertaken.	Project Manager	SHE Project Manager	SHE Competency Report (KLE)
Develop SHE Competency Matrix requirements		Contractor SHE Representative	
During Construction			
Project SHE Committee Meetings	Project Manager	SHE Project Manager	HSAT Minute Template (10-TEM-001)
Undertake Schedule of Contractor Oversight and Due Diligence reviews	Project Manager	SHE Project Manager (oversight)	Construction Control Verification Review Records
Prepare Monthly SHE Metrics as per Contractor SHE reports	Project Manager	SHE Project Manager	Contractor SHE Report (08-TEM-001-SHE)
Complete Construction Control Verification for Site Inspections	SHE Project Manager	SHE Project Manager	Construction Control Verification (04-CV-019-SHE)

6.6 Stage 5: Close

Mandatory Requirements

This purpose of this stage is to ensure that the process or asset delivered meets the SHE requirements to operate. The handover process captures the transition of the asset / process back to the asset owner / business owner. Includes the handover of any remaining SHE risks identified in the SiD assessments to the appropriate business as usual or Operational risk profiles.

Implementation Actions	Accountable	Responsible	Tools – references
Conduct Operational SHE Risk Assessment which includes requirements set out in Operational SHE Handover Checklist	Project Manager	SHE Project Manager (Facilitation)	SHE Risk Assessment Template (04-TEM-002-COM) Operational SHE Handover Checklist[CS6][NC7]
SFAIRP Reports completed and signed off by Technical Authority	Project Manager	SHE Project Manager	Operational SFAIRP Report (04-TEM-006-SHE)
Complete Operational Control Verification	SHE Project Manager	SHE Project Manager	Operational Control Verification (04-CV-019-SHE)

7. INTERNAL ASSURANCE

This Standard will be assessed periodically using the ***Control Verification Template (04-TEM-002-COM)*** and if appropriate, revision will be undertaken as necessary to maintain its on-going relevance in managing KiwiRail SHE legal obligations.

8. TRAINING AND COMPETENCY

Requirements relating to the Risk Management process and this standard should be undertaken in accordance with the ***SHE Training Compliance Standard (11-STD-001-COM)*** by the Process Owner, by the Discipline Area Authorising Officers, or Approved Delegates and the following are to be verified as a minimum:

- Completion of Risk Management Training
- Completion of Programme SHE Management Training

9. RECORDS

Records of Enterprise-wide SHE assurance shall be established and must be maintained in the SHE Management IT System to allow for suitable access and review for both internal and external assurance.

Evidence documents and records related to the requirements in this standard are to be saved into the Project's document control system.

10. DEFINITIONS

Abbreviation / Term	Meaning
PCBU	Person Conducting Business or Undertaking
SFAIRP	So Far as is Reasonably Practicable
RMP	Risk Management Plan
SiD	Safety in Design
Approved Contractor Panel	

11. REFERENCES

Project SHE Assurance	04-STD-004-COM
SHE Risk Management	04-STD-001-COM
SHE Management of Change	05-STD-001-COM
Safety in Design	G-ST-AL-9131
Contractor Management Standard	08-STD-002-COM

Appendix 2 - Stages & Options for Relocating the NIMT

1. Introduction:

The proposed final location of the NIMT is on the line of Railway Road. To achieve this outcome the NIMT will need to be temporarily relocated to allow earthworks to be completed before being moved to its final location as shown on the concept plans.

A series of scenarios were created to compare the different construction phases to determine the best outcome. For each scenario, a position of the temporary NIMT was established based on the timing of the closure of Railway Road. This impacts on the earthworks programme and scope of work required for the temporary relocation of the NIMT.

The following scenarios were considered:

1. Leave the existing Railway Road in operation as late as possible, with an option of a temporary NIMT as soon as possible.
2. Leave the existing Railway Road in operation as late as possible and construct the temporary NIMT without any restrictions.
3. Construct the perimeter road as soon as possible with early closure of Railway Road.

2. Methodology

Cross sections were examined along the length of the existing NIMT and the section where earthwork fills had the greatest impact was selected to test the scenarios on. This worst case had the largest difference between the Natural Ground Level and Hub proposed finish level of RL50, some 6.3m high at approximate meterage 142 700. (middle of site and line of the box culvert)

Other structures of importance were identified and marked on the cross section like the Western boundary of the existing Railway Road, Railway Road and the existing NIMT.

For each of the mentioned scenarios a temporary NIMT line was selected as close and safe as possible to the Eastern boundary of the hub to have minimal impact on the available construction site.

3. Findings

Please refer to the attached for the detailed cross section, position of the temporary NIMT and construction phases for each scenario.

Based on the attached, the following findings were made on each scenario:

1. Leave the existing Railway Road in operation as late as possible with an option of a temporary NIMT as soon as possible.

- The extent of earthworks west to east is limited by Railway Road.
- The temporary NIMT would be constructed over A/D Track 6. Only A/D tracks 1 & 2 to be built in stage 1 (and both are expected to be electrified). The remaining tracks are to be built but reallocated for marshalling in Stage 1. Furthermore, at Stage 3 this track is not planned to be electrified. If this track were to be used, then the electrification equipment required to make the road functional as the NIMT would be removed (for reused elsewhere) once NIMT is in final location

- Whilst the bulk of the temporary NIMT can be constructed on A/D track 6 alignment, the tie-ins cannot be constructed until Railway Road is closed.
- To achieve the early switch a fourth earthworks phase must be introduced.
- Due to the temporary NIMT running over A/D Track 6, more earthworks need to be completed to East of the temporary line before the NIMT can be placed in its final location across the active railway line.
- Delaying the closure of Railway Road maximises the time available to make final determination on the route of the perimeter road.

2. Leave Railway Road in operation as late as possible construct temporary NIMT without restrictions

- The temporary NIMT will be constructed over A/D Track 1 which is planned to be an electrified track as part of Stage 1.
- The temporary NIMT will be completed after the road traffic has been switched to the Perimeter Road.
- This scenario requires 3 phases of construction.
- Earthworks area to the west of the temporary NIMT is maximised, less earthworks are required to the east.
- Delaying the closure of Railway Road maximises the time available to make final determination on the route of the perimeter road.

3. Construct the perimeter road and switch traffic as soon as possible.

- Only 2 phases of construction are required as phase 1 and 2 is combined in one operation as per attached.
- The temporary NIMT will be constructed over A/D Track 1 which is expected to be electrified.
- Earthworks area to the west of the temporary NIMT is maximised, less earthworks are required to the east.
- KiwiRail may be locked into using the current planned perimeter route which may affect opportunities to integrate with any wider network upgrades.

4. Conclusion

The scenario testing shows that the NIMT must be moved to a temporary location. In Scenarios 2 and 3, the temporary location of the NIMT would use A/D Track 1, which will be one of the two expected electrified tracks under Stage 1.

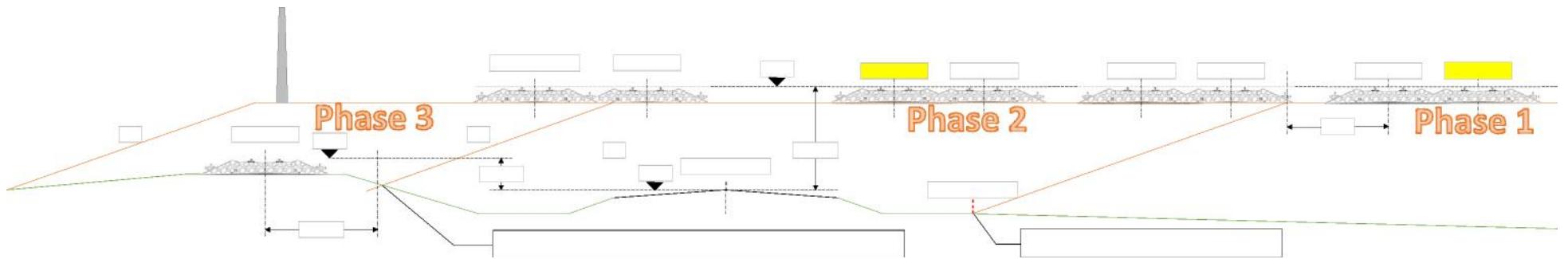
Scenario 1 requires A/D Track 6. Current planning indicates that this track is not expected to be electrified in the future. More importantly although the Trackwork will be constructed for Stage 1, its initial functional purpose this will be for marshalling and any equipment installed to electrify the track would have to be removed before Stage 1 operation commence. For these reasons, Scenario 1 is considered to be impractical.

Once earthworks to the east of the temporary NIMT are completed, then a new electrified track would be laid and the NIMT can be moved to its final position. The temporary NIMT track then reverts to A/D track 1 in Scenarios 2 and 3.

Delaying the closure of Railway Road means that KiwiRail are not locked into the current perimeter road route and options remain open to exit to Kairanga Bunnythorpe (KB) road if decisions are made around bridge upgrades (on KB Road) and location of the bypass route at Bunnythorpe. Refer clause 10.2.4 of the AEE which discusses the spatial extent of the proposed designation and the same point is made.

On balance, the preferred option is to manage earthworks construction to allow the NIMT to be temporarily relocated to A/D track 1. A prerequisite would be the closure of Railway Road to allow Stage 2 earthworks as detailed on the section to be completed.

Delaying the construction of the perimeter road (as shown on the concept plans) may afford the opportunity to review and optimise road network integration. Using Roberts / KB Road could provide a workable short-term alternative (subject to any other required upgrades such as to weight restricted bridges).



Different Construction Phases for the following Scenarios:

Scenario 1 - Leave the existing Railway Road in operation as late as possible with an option of a temporary NIMT as soon as possible

Phase 1: Construct the two Stormwater Attenuation Ponds on the Western side of the new hub.

Close the existing Richardsons Line Portion through the new hub.

Close the existing Te Ngao Road Portion through the new hub.

Construct the naturalised channel and box culverts through the new hub up to the boundary of Railway Road (Marked as Phase 1).

Complete the Cut and Fill operation up to the existing Railway Road boundary (Marked as Phase 1).

Construct the new Ring Road.

Construct A/D Track 6 to accommodate the temporary NIMT (Black Broken Line) (Incomplete sections due to unconnected tie-in points marked in red)

Construct new the Access Road to the properties on the East of the existing Railway Road.



Phase 2: Divert traffic over the new Ring Road and new Access Road.

Complete the box culverts and earthworks along the Red Broken Lines first (Portions of Phase 2) and finish the temporary NIMT over A/D Track 6.

Phase 3: Divert the rail to the temporary NIMT over A/D Track 6.

Complete all the outstanding Culverts and Earthworks (Marked as Phase 2 and 3) up to the Eastern Boundary of the new hub.

Complete noise wall.

Construct the permanent NIMT and all outstanding Rail.

Scenario 2 - Leave the existing Railway Road in operation as late as possible and construct the temporary NIMT without any restrictions

Phase 1: Construct the two Stormwater Attenuation Ponds on the Western side of the new hub.

Close the existing Richardsons Line Portion through the new hub.

Close the existing Te Ngao Road Portion through the new hub.

Construct the naturalised channel and box culverts through the new hub up to the boundary of Railway Road (Marked as Phase 1).

Complete the Cut and Fill operation up to the existing Railway Road boundary (Marked as Phase 1).

Construct the new Ring Road.

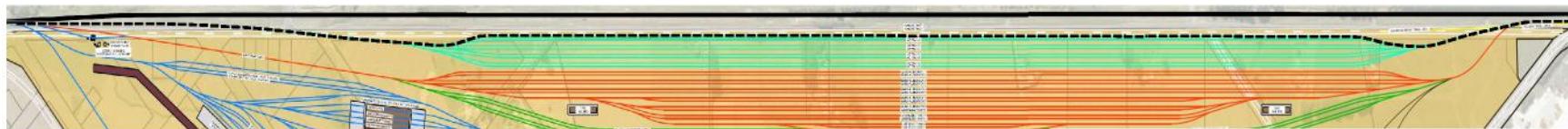
Construct new the Access Road to the properties on the Eastern Boundary.

Phase 2: Divert traffic over the new Ring Road and new Access Road.

Continue with the Naturalised Channel and Box Culverts up to the existing NIMT Track boundary (Marked as Phase 2).

Continue with the Earthworks up to the existing NIMT Track boundary (Marked as Phase 2).

Construct A/D Track 1 to accommodate the temporary NIMT (Black Broken Line)



Phase 3: Divert the rail to the temporary NIMT over A/D Track 1.

Complete all the outstanding Culverts and Earthworks up to the Eastern Boundary of the new hub (Marked as Phase 3).

Complete noise wall.

Construct the permanent NIMT and all the outstanding Rail.

Scenario 3 - Construct Railway Road and switch traffic as soon as possible

Phase 1: Construct the two Stormwater Attenuation Ponds on the Western side of the new hub.

Close the existing Richardsons Line Portion through the new hub.

Close the existing Te Ngao Road Portion through the new hub.

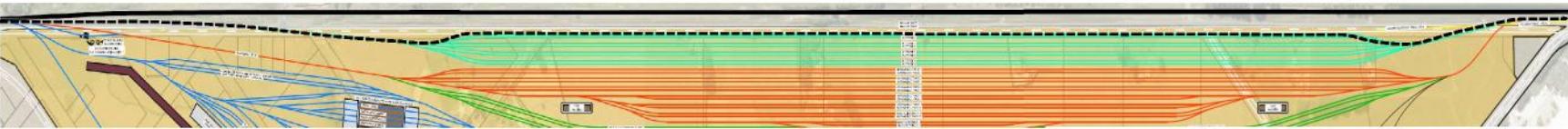
Construct the new Ring Road after completion of the two ponds.

Construct new the Access Road to the properties on the Eastern Boundary.

Phase 2: Divert traffic over the new Ring Road and new Access Road.

Construct the naturalised channel and box culverts through the new hub up to the boundary of Railway Road (Marked as Phase 1 and 2).

Complete the Cut and Fill operation up to the existing Railway Road boundary (Marked as Phase 1 and 2).
Construct A/D Track 1 to accommodate the temporary NIMT (Black Broken Line)



Phase 3: Divert the rail to the temporary NIMT over A/D Track 1.
Complete all the outstanding Culverts and Earthworks up to the Eastern Boundary of the new hub (Marked as Phase 3).
Complete noise wall.
Construct the permanent NIMT and all the outstanding Rail.

Appendix 3 - KiwiRail Design Standards

References: This note is in response to S92 item 125

Background: The following expands comments from the Master Plan Report included in the lodged document where reference is made to KiwiRail standards - Section 2.3 Technical design Influences.

Design standards applied:

The KiwiRail design criteria used for planning the RFH:

- Speed categories:
 - SC4 – 40 KPH – Arrival / Departure Tracks
 - SC4 - 30 KPH – Marshalling yard, Terminal Leads
 - SC5 - 25 KPH – All other locations
- Class A Standard Axle loads - 20 tonne maximum
- Track Structure:
 - Standard KiwiRail track section for yards and Terminal
 - Standard concrete sleeper
 - Exposed to be used in all parts of the terminal.
- Horizontal Curves:
 - Minimum curve Radius for coupling/uncoupling of rolling stock – 140 m
 - Minimum curve radius otherwise - 150m
- Maximum vertical gradient:
 - Mainline to Arrival / Departure Yard – 1:200 (0.5%)
 - Leads between yard – 1:200 (0.5%)
 - Yard tracks – 0%
- Track Spacing:
 - 4.0m minimum
 - 7.0 m minimum includes allowance for 3m maintenance roadway between adjoin track pairs.
- Turnout design:
 - Arrival/Depart Tracks 1:12 – Maximum speed = 40KPH
 - All other location 1:7.5 – maximum speed = 20KPH
 - Marshalling yard terminal leads 1:9 – maximum speed = 30KPH

Appendix 4 – Stage 1 Trackwork

References: This note supports the following S92 responses:

- Item 129. Please clarify how trains move in/to/from the area. The initial response is based on the final (stage 3) configuration and not stage 1.
- Item 139 tracks to be built in the initial stage. track function has been listed but this does not necessarily align with the track names as shown on the concept plan.

Detail:

The concept plan attached to the DCO response shows the proposed trackwork in the final configuration for the RFH that is at the end of stage 3. The stage 3 labels shown on the concept plan match the proposed operational function when the site is fully developed.

The table below identifies which tracks are not being built for stage 1 and if built the function of the track. For efficient operation (with the reduced trackwork) there has been some functional reassignment of tracks. For example :

The table shows that all 8 tracks in the arrival and departure yard will be built. For stage 1 only 2 will be electrified and be used for arrivals and departures the other 6 will be assigned for marshalling but can receive or depart diesel powered trains.

Stage 3 – final configuration	Stage 1- Functional reassignment	Comments
NIMT 2		Future proposed track
NIMT electric	NIMT electric	NIMT relocated for stage 1
Loco Setoff tracks	Loco Setoff tracks	2 track located North and south ends of A/D yard
A/D Track 1 Electric	A/D Track 1 Electric	
A/D Track 2 Electric	A/D Track 2 Electric	
A/D Track 3 Electric	Marshalling Track 1	No electric installed
A/D Track 4 Electric	Marshalling Track 2	No electric installed
A/D Track 5	Marshalling Track 3	
A/D Track 6	Marshalling Track 4	
A/D Track 7	Marshalling Track 5	
A/D Track 8	Marshalling Track 6	
Crossovers NIMT to marshalling (track 1)	Crossovers NIMT to marshalling (track 70)	Both crossover connection to be made stage 1 and 3 identical
Marshalling Track 1	Marshalling Track 7	
Marshalling Track 2	Marshalling Track 8	
Marshalling Track 3	Marshalling Track 9	
Marshalling Track 4	Marshalling Track 10	
Marshalling Track 5	Marshalling Track 11	

Marshalling Track 6	Marshalling Track 12	
Marshalling Track 7	Wagon storage	
Marshalling Track 8	Bad order	
Marshalling Track 9		Not included in stage 1
Marshalling Track 10		Not included in stage 1
Marshalling Track 11		Not included in stage 1
Stage 3 – final configuration	Stage 1- Functional reassignment	Comments
Marshalling Track 11		Not included in stage 1
Marshalling Track 12		Not included in stage 1
Bad Order Track 1		Not included in stage 1
Bad Order Track 2		Not included in stage 1
Wagon Storage 1 (South)		Not included in stage 1
Wagon Storage 2 (South)		Not included in stage 1
Wagon Storage 3 (North)		Not included in stage 1
Wagon storage 4 (North)		Not included in stage 1
Run-around	Run-around	
Intermodal Receiving track	Intermodal Receiving track	
CT Pad Track 1	CT Pad Track 1	
CT Pad Track 2	CT Pad Track 2	
CT Pad Track 3	CT Pad Track 3	
Log Loading Track 1	Log Storage Track	
Log Loading track 2	Log Loading Track 1	
Log Storage Track		Not included in stage 1
Fuel Transfer track 1		Not included in stage 1
Fuel Transfer track 2		Not included in stage 1
Freight forwarding all Tracks	Freight forwarding all Tracks	
Maintenance Facility all Track	Maintenance Facility all Track	

The detail design phase will develop the final layout and then be pared back to suit stage 1. At this point an operational review will assess functional operation and identify additional connections that may be require between tracks withing the yard