UNDER the Resource Management Act 1991 ("**RMA**")

AND

IN THE MATTER of a notice of requirement ("**NoR**") for a designation by KiwiRail Holdings Limited ("**KiwiRail**") for the Palmerston North Regional Freight Hub ("**Freight Hub**") under section 168 of the RMA

STATEMENT OF EVIDENCE OF MICHAEL SKELTON ON BEHALF OF KIWIRAIL HOLDINGS LIMITED

DESIGN, CONSTRUCTION AND OPERATION

1. SUMMARY

1.1 I was involved in the preparation of the Concept Design of the Freight Hub which has been developed to ensure that the Freight Hub will achieve KiwiRail's operational requirements while also managing effects. The key components that informed the Concept Design included the track work, marshalling and freight forwarding facilities, storage facilities, the building and structure height parameters, and site access. Internal access roads as well as a new perimeter road is proposed to enable access to the Freight Hub. The Concept Design also considers a number of existing roads that will need to be stopped.

1.2 Other elements such as noise mitigation barriers, landscape and amenity planting, and the stormwater management system are required to manage effects from the Freight Hub. These components have shaped the proposed layout for the Freight Hub to provide for functioning and efficient operation of the Site, while minimising effects on the surrounding environment where practicable.

1.3 A number of utilities are identified as being affected by the Freight Hub, given its scale. These have been considered as part of the Concept Design but in some cases will need to be relocated.

1.4 In order to understand how KiwiRail's operational requirements will be achieved, a number of complex technical considerations have been considered. The facilities needed to be designed to accommodate up to 1500m trains, with capacity for electrification. The Site layout also had to be future proofed to accommodate demand growth, which means providing space for the Freight Hub to be developed in stages. Other matters, such as site gradients and a level site for the Freight Hub were required to enable efficient train movements. Track layout, geometry and speeds have also been considered, with a number of different types of tracks leading to various on-site facilities, such as the container storage area and locomotive maintenance.

1.5 The Freight Hub is expected to start operating in 2030, and is anticipated to be constructed in three stages. From confirmation of the NoR, there would be an approximately 3.5 years lead in period where detailed design will be completed and regional consents will be obtained.

1.6 Construction of the Freight Hub is then expected to occur over a 6 year period. Bulk enabling works are expected to occur over three years, with imported material required to level the Site. Once enabling works are complete, the Freight Hub itself is expected to be constructed over three years, after which Stage 1 of its operation will begin in 2030. Stages 2 and 3 will involve expansion of the Freight Hub to accommodate future growth, and are expected to be completed between 2030 and 2050 as demand requires.

2. INTRODUCTION

2.1 My full name is Michael John Skelton. I am a Senior Transportation Engineer at Stantec. I hold the qualifications of BE(Civil) and I am a member of Engineering NZ.

Experience

2.2 I completed my studies in 1980 and graduated in May 1981 from Auckland. I joined NZ Railways Christchurch District Engineers office where I worked until 1990. Toward the later part of my time at NZ Railways I was part of the Repositioning Project Team. This work involved rationalisation of freight facilities and freight handling, relocation of marshalling facilities from Christchurch to a new yard at Middleton, development of the Addington triangle, and a direct connection from the Main North Line to the Main South Line. I also looked at freight handling operations at the Southdown terminal Auckland and facilities in Invercargill.

2.3 From 1990 to 1993 I worked for Rodney District Council having a number of roles as Area Engineer West (one of 3) with management role over the Huapai Council office and responsibility for all Council services in the Helensville, Kumeu, Muriwai, and Riverhead Communities. I also had a management role with responsibility for solid waste management over the Rodney District.

2.4 In 1993 I joined a private Engineering Consultancy Company Payne Sewell Ltd (PSL) based in Whanganui. In 2000 PSL became part of MWH and in 2016, merged with Stantec, my current employer. My experience during this time has principally been in roading. This included project investigation and development, design, construction and contract management, and maintenance management of State Highways. More recently, I have been involved in contract management (NZS:3910 contracts), acting as Engineer to the Contract on a wide variety of works in the lower North Island.

Involvement in the Freight Hub

2.5 My first involvement in the Freight Hub was when I was asked to complete engineering degree of difficulty assessments of potential sites in the wider Palmerston North area as part of the multi-criteria analysis assessment process. Once the preferred site was identified I worked with KiwiRail and the Stantec design team to optimise the concept Freight Hub layout on the preferred site and the Designation Extent.

2.6 As part of this, I assisted in the preparation of the concept design plan (Appendix B of the NoR) ("**Concept Design**"), and the preparation of Cross Sections and Landscape Plan (Appendix C of the NoR).

2.7 I also attended a number KiwiRail Community Engagement events where I explained the construction and operation of the Freight Hub and responded to queries from attendees.

2.8 I prepared the Design, Construction and Operation Report ("**DCO Report**") (Technical Report A) that was included with the Assessment of Environmental Effects for the Freight Hub. I also provided input to KiwiRail's section 92 response dated 15 February ("**First Section 92 Response**").

2.9 As part of the First Section 92 Response, I also assisted with the preparation of the Updated Concept Plan (Attachment 14), and the Updated Landscape Plan and Graphic Sections (Attachment 10).

Code of conduct

2.10 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.

3. SCOPE OF EVIDENCE

3.1 This statement of evidence will:

(a) provide an overview of the concept design work undertaken to demonstrate construction and operation feasibility of the Freight Hub;

(b) explain the technical considerations that were considered in developing the Concept Design of the Freight Hub;

(c) outline the construction requirements, including the level of earthworks required; and

(d) respond to relevant submissions received address relevant matters raised in the Section 42A Report.

4. CONCEPT DESIGN FOR THE FREIGHT HUB

4.1 The Concept Design of the Freight Hub is broadly made up of the following components:

(a) the key operational elements of the Freight Hub (such as the arrival and departure yard, marshalling yard, container terminal);

(b) the roading changes that are required to service the construction and operation of the Freight Hub;

(c) the building and structure height parameters; and

(d) the safety, security and environmental management components, including landscape and amenity planting.

4.2 As this is a Concept Design, some of the features may be subject to change at the detailed design stage. This is common with a project of this scale and type.

Key functions of the Freight Hub

4.3 The Concept Design was prepared considering the factors outlined in the Master Planning Report.[1] In summary there are three key operational functions of the Freight Hub:

(a) marshalling of trains;

(b) wagon storage, equipment maintenance, network service and yard operations; and

(c) areas for container and commodity storage, rail serviced freight forwarding facilities and specialist traffic such as log handling.

Marshalling of trains

4.4 Facilities required for marshalling of trains include 8 arrival and departure tracks with provision for 4 to be electrified by full build out (if demand requires additional tracks can be electrified recognising that both diesel and electric locomotives can use electrified tracks). These are the longest tracks within the yard suitable for holding up to 1500m long trains and are sited adjacent to the NIMT.

4.5 The marshalling yard will be located alongside the existing Railway Road. It will consist of 12 tracks (including for transiting trains) ranging in length from 900m to 1500m in a split ladder configuration that allows for up to 1500m trains to be built or broken up. For flexibility, the arrival and departure tracks have North and Southbound crossovers off the NIMT approximately 700m from each end. These are connected through to the first marshalling track.

4.6 The existing rail embankment will be modified and used to develop the noise barriers on the eastern side of the Freight Hub, with amenity planting.

Wagon storage, equipment maintenance, network service and yard operations

4.7 The new Freight Hub site affords the opportunity to accommodate growth and deliver a modern hub design which will allow for improved speed, connectivity capacity and reduce double handling.

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[1] Assessment of Environmental Effects, Appendix D: Masterplan Report, dated April 2020.

4.8 The locomotive and wagon maintenance repair facility to be located in a building at the northern end of the Freight Hub (approximately 1700m^2 and up to 16m tall) will contain under floor wheel lathe, 3 wagon maintenance tracks, 7 tracks for engine maintenance (two of which are electrified and 4 for service or track maintenance plant). Supporting this facility are external tracks for repair to curtain side wagons and container repair.

4.9 Adjacent facilities include network services buildings including workshops (approximately 4,000m^2) heavy plant storage, material storage areas (approximately 6,000m^2) and ballast storage track for 8 wagons. Located between the container yard and maintenance depot is a main administration and terminal operation building. Ancillary facilities such as the train control and rail operation centre, are provided at the end of the marshalling yard.

Container and commodity storage

4.10 To the west of the marshalling yard is the container yard. The container yard is serviced by 3 tracks allowing simultaneous loading / unloading of containers either to storage or direct to road. The storage capacity of 200, 40foot containers includes refrigeration and controlled Hazard Analysis and Critical Control Point ("**HACCP**") plug in capability.[2] For efficient storage of refrigerated containers "reefer towers" are expected to provide for three high stacking at two areas, with capacities of 120 and 60 TEU units respectively. It will provide for up to 12m high stacks of 3 container units over 880m.

4.11 The tracks within the container yard are located so they can accept direct arrival and departures of short (900m) unit trains. Longer trains will be broken up on arrival before container traffic is taken to the container yard.

Freight Forwarding facilities

4.12 The Concept Design has four co-joined rail-served facilities for major freight forwarders with each individual section having a built floor space and storage totalling some 22,000m^2. A further six covered areas will provide for smaller freight forwarding operations, each being rail served and having an area of 11,600m^2. These facilities are proposed to be set back from the new perimeter road and from Roberts Line by at least 40m with a maximum height of 14m, stepping up from a road edge height of 11m.

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[2] HACCP is an internationally recognized system of identifying and managing food safety related risk. In transportation this revolves around safe handling, avoidance of contamination, and maintaining the food at the requisite temperatures.

Log handling yard

4.13 Specialised rail serviced facilities for log traffic will be provided. These facilities include two 450m long log loading tracks, with a similar length log wagon storage track.

Storage tanks

4.14 Four storage tanks for bulk liquids (such as for example diesel fuel for locomotives) are also provided for in the Concept Design, with each having a maximum capacity of approximately 1570m^3. These will be contained within a bunded area to manage spills or leakages.

Other facilities

4.15 Other facilities within the Freight Hub required for operation include:

(a) a turning triangle to turn engines and wagons;

(b) a number of "run around" tracks to permit engine (and wagon) movements through and to various sections of the Freight Hub;

(c) two "bad order" tracks (to hold wagons identified during shunting that require minor repairs);

(d) four wagon storage tracks at either end of the marshalling tracks each approximately 565m long;

(e) locomotive setoff track at either end of the arrival and departure tracks (to allow engine to hold after disconnecting or before connecting to a train);

(f) four storage tracks to hold engines and wagons pre and post service in the locomotive and wagon depot;

(g) loading tracks for network services;[3]

(h) adjacent to material storage areas at the northern end of the Site;

(i) a short loop track with engine service – fuelling, sanding and oiling facilities at the Northern end of the Site; and

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[3] Network services refers to maintenance teams this includes: Track, Structures Signals and Electrification.

(j) a weigh in motion bridge ("**WIM**") with wagon identification at the south end of the Hub to weigh south and east bound trains. Note there is an existing facility that near Bunnythorpe that weighs North (and West) arrivals and departures; and a short loop track with engine service – fuelling, sanding and oiling facilities.

Roading changes to enable construction and operation

4.16 The Freight Hub has three planned connections to the external roading network. One of the key components of the Master Plan was a zero-harm philosophy for safety and environmental requirements. As part of achieving this, KiwiRail sought to minimise the number of level crossings (road vehicle / train conflict points) within the Freight Hub. This influenced the layout and location of entry / exit points, with three proposed road entrances:

(a) Entry 1 is the southern and main access to the Container Yard and the freight forwarding facilities. This access joins the external roading network at the proposed new roundabout on the Roberts line-Richardson Line intersection.

(b) Entry 2 is the western access located on the western side of the Freight Hub and north of the freight forwarding facilities. Access will be via the new perimeter road. Entry 2 provides access to the tank farm area, container yard, freight forwarders and the terminal and administration and operations building areas.

(c) Entry 3 is the northern access off the new perimeter road. Located at the northern end of the Freight Hub Entry 3 provides access to the log yard, storage areas, engine and wagon maintenance building, network services workshops and the administration and operations building. This entry point also provides access to the locomotive sand and fuelling facility in the north eastern corner of the Site.

4.17 Detailed planning will determine how the internal roading network will operate. For example, if a one-way network will be used for commercial vehicles using the Site. For safety reasons, general public entry to the Site is expected to be restricted.

4.18 The Site overlays a number of local roads that will be partially stopped to enable the Site to be developed. The affected roads are:

(a) Railway Road – A section of Railway Road will be stopped from north of the intersection with Roberts Line to Maple Street, Bunnythorpe. The length of the stopped section is 3km;

(b) Richardsons Line – Richardsons Line will be stopped from Roberts Line to Railway Road (approximately 425m). The intersection with Roberts Line will be reconfigured from a crossroad to a roundabout with the fourth leg (closed section of Richardsons Line) becoming the main southern entrance road to the Freight Hub;

(c) Clevely Line – Clevely Line will be stopped approximately 400m north east of Robert Line and then again on the Eastern side of the NIMT at Sangsters Rd. The stopped section will be approximately 1160m long; and

(d) Te Ngaio Road – The connection between Kairanga Bunnythorpe Road and Railway Road along Te Ngaio Road will be stopped from between approximately 180m on the eastern side of the Maple Street intersection through to 730m towards Railway Road.

Other closures

4.19 In addition to the closure of local roads, two public level crossings at Clevely Line and Roberts Line will be closed. Although on the margins of the Site, additional tracks (increased safety risk) and changes in ground level mean that level crossing cannot be retained at these locations.

4.20 A private level crossing located on the unformed section of Richardson Line will also be closed. A new access road will be constructed along the Sangsters paper road exiting to Roberts Line East.

Building and structure height parameters

4.21 As set out in Ms Bell's evidence, approximately 50% of the Site is located in the NEIZ and is subject to the restrictions on height imposed to protect flights accessing the Palmerston North Airport.[4]

4.22 The relevant control for buildings (and structure heights) in the NEIZ specifies height shall be the lesser of the airport protection surface or 9m.[5] The airport protection surface over the Site is 90m above mean sea level ("**AMSL**"). The proposed level of the Freight Hub is 50m with all buildings and most fixed

4 PNCC District Plan Section 13: Airport Zone.

5 Rule R12A.4.1 performance standards part (a) maximum heights.

structures not exceeding the 9m height restriction (being 59m AMSL). The Freight Hub will also include light structures which, will be approximately 20m in height and tilted to reduce visibility from the air.

4.23 Specific building materials can be chosen to reduce heavy metal contamination of stormwater systems. The details around the type of "neutral" building material are to be addressed as part of the detailed design of the buildings. The purpose of this is to minimise contaminants downstream in addition to the other measures proposed as part of the stormwater management system for the Freight Hub. Further detail on the stormwater management system of the Freight Hub is outlined in the evidence of Mr Leahy.

Safety, Security and Environmental management components

4.24 Designated safe working zones will be identified in all yards and areas where both moving equipment and staff will be managed appropriately.

4.25 Perimeter site security will be a mix of a 2m high security fencing (integrated with noise walls where possible) and vertical noise walls with security-controlled gates at the three site access points. The noise walls commence from Entry 1 at Richardsons Line and extend along the western boundary stopping at approximately Te Ngaio Road. The balance of the perimeter of the Freight Hub on the northern and southern side will be surrounded by a 2m high security fence. For the greater part of the eastern boundary, the noise wall will provide perimeter security. The exception being a section of security fence will separate the Freight Hub and the NIMT from Sangsters Road and Te Araroa Trail near the culverted area.

4.26 A provisional lighting design has been completed to meet KiwiRail's operational standard for outdoor activities and other relevant lighting standards. In addition to site flood lighting, security lighting and CCTV are proposed although specific details will not be addressed at detailed design stage. The evidence of Mr McKensey outlines the lighting design for the Freight Hub.

4.27 Spill containment measures are applicable at the tank farm where the area is to be enclosed in a containment bund. In other areas, concrete surfaces will be provided to contain, collect, and allow treatment. This applies particularly at the fuelling stations adjacent to the arrival and departure track at the northern end of the Freight Hub and approaches to the maintenance facility work bays. The evidence of Mr Heveldt outlines the management of contamination from of the Freight Hub. Surface water runoff from the site

during construction and operation will be collected and managed though the ponds to remove contaminants before being discharged to the Mangaone stream.

Landscape and amenity planting

4.28 As discussed in Ms Rimmer's evidence, extensive landscape planting is proposed in a number of areas as indicated in Appendix B and Appendix C to her evidence. These areas are adjacent to the two stormwater ponds to the west of the Site, the naturalised channel on the northern side of the Site, the area below the houses on Maple Street and the western side of the tank farm. Buffer screen planting is provided around the Site perimeter to reduce visibility of the perimeter fence and / or noise walls where they exist.

4.29 At the construction stage there may be opportunities for early development of landscape works and planting, particularly around the Western and Northern sides of the Site as the ponds and the perimeter road are part of the initial earthworks stage allowing these area to be planted as earthworks and development take place further into the site.

4.30 The potential for early planting along the eastern (Sangsters Road) boundary is minimal and cannot take place until the NIMT has been relocated. The existing rail formation will form the base of the noise bund, newly formed Te Araroa Trail / share pathway and landscaped planted area.

5. TECHNICAL CONSIDERATIONS

5.1 The following sections of my evidence focus on the key technical inputs and considerations that have influenced the Concept Design of the Freight Hub, including:

(a) KiwiRail's operational standards, including:

(i) site gradients and elevation; and

(ii) track alignment geometry, structure, and speeds.

(b) roads and connectivity;

(c) utilities and infrastructure; and

(d) other geotechnical and stormwater considerations.

KiwiRail's operational requirements

5.2 KiwiRail's operational requirements were established early in the masterplanning phase and were used to initially identify an appropriate location for a central North Island Freight Hub, and as a strategic document for the development of any future freight hubs across New Zealand. For that reason, the operational standards are expected to be adjusted to meet the needs of a particular project and to accommodate local conditions. For example, in fitting the elements of the Freight Hub to the Site tracks, some radii were required to be changed to avoid PNCC's existing water bore.

Gradients and Elevation

5.3 Generally, landforms fall away from the NIMT in a south-to-south westerly direction. The existing NIMT rises away from Palmerston North toward Bunnythorpe. However, the track is not evenly graded and contains rolling features known as "the Bunnythorpe dips", with low points where the NIMT drops to cross two watercourses.[6]

5.4 The Site contours also vary, with high ground located between water courses and flood plains.

5.5 Maximum specified gradients for a connection from the NIMT to the arrival and departure yards was 1:200 (0.5%). This was particularly important when determining the level of the Freight Hub as the level of the Freight Hub is constrained by the grades and level on the NIMT at the connection points and by other physical constraints (such as bridge levels).

5.6 Leads or connections between sections of the Freight Hub also have similar maximum grade constraints. However, these are generally not problematic as the Freight Hub will be built level (0% grade).

5.7 The Site level of 50RL was determined considering the following factors:

(a) sufficient height to allow passage of overland flows through the Site by culverting or construction of open channels;

(b) the ability to provide connections to the NIMT at each end of the Site (avoiding the need to construct the 1500m pull backs for the longer trains until required by demand);

6 Further detail on the uneven grade is outlined at Table 2 of the DCO Report.

(c) ability to increase operational flexibility by constructing midpoint crossovers;[7] and

(d) ability to optimise earthworks so that all suitable cut material is reused in order to minimise the amount of imported fill.

Track Alignment Geometry, Structure and Speeds

5.8 Tracks will be spaced at a minimum of 4m between pairs. This increases to 7m when a maintenance road is required. All tracks across the Site are adjacent to a maintenance road on at least one side.

5.9 Where coupling and uncoupling of rolling stock takes place a minimum curve radius of 140m is required. In all other cases the desired minimum curve radius is 150m. Tracks will be laid on concrete sleepers and all joints (including turnouts) will be welded to minimise noise.

5.10 Ballast (a specialised product produced for KiwiRail) will also be required for the construction of track work.

5.11 The Freight Hub design will allow for a range of train speeds for operations within the Freight Hub, with maximum speeds being:

(a) 40km/h in the arrival and departure tracks with 1:12 mainline turnouts;

(b) 30Km/hr within the marshalling yard, backshunts and leads. Connecting turnouts 1:9 for leads; and

(c) 25 km/hr for all other tracks within the Freight Hub. Standard 1:7.5 turnouts used.

Roads and connectivity

5.12 Paragraph 4.16 of my evidence details those parts of the local roading network that will be stopped. Of the three road entrances to the Freight Hub by road, the western and northern accesses are not directly serviced by existing roads. Therefore, the concept plan proposes a new perimeter road connecting Roberts Line to Railway Road at Maple Street.

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[7] These are additional connections from the NIMT into and through the arrival and departure road ending at the first marshalling track. There are two such connections allowing for movements from North and South. The connection points on The NIMT are at kilometrage 142.250 and 143.100.

5.13 For heavy commercial vehicle needing to enter and exit the Freight Hub the option of using Kairanga Bunnythorpe Road and in particular the section between Te Ngaio and Railway Road at Bunnythorpe was deemed unsuitable because of the two narrow and weight restricted bridges. In the absence of specific PNCC programmes to replace or upgrade these structures, KiwiRail considered that the perimeter road option was the most efficient and effective roading connection for the Freight Hub. Notwithstanding the above, it was also recognised that the perimeter road option does not preclude connections to future upgrades to the wider regional network. Further detail on the transport network and transport effects is outlined in the evidence of Mr Georgeson.

5.14 There are a number of properties that gain access across the NIMT from Railway Road that will need alternate access. A new section of Sangsters Road. Sangsters Road will be constructed to provide access to affected properties runs parallel with Railway Road, but on the eastern side of the NIMT. The road is only partially formed (from Clevely Line to 420m South of Tutaki Road). The remaining 1330m is unformed road. The intention is to form the last 700m providing access out to Roberts Line for affected properties.

5.15 Sangsters Road (formed and unformed section) also serves as part of Te Araroa Trail and has also been identified at a critical part of the PNCC and MDC active mode proposals for walking and cycling between Palmerston North and Feilding.[8] In recognition of this, the concept plan provides opportunity to retain Te Araroa Trail along the eastern boundary of the Designation Extent.

Utilities and infrastructure

5.16 The Concept Design recognises there are a number of utilities (being power, gas, water and sewer) that will be impacted by the Freight Hub. These were considered to be either critical (requiring to be addressed as part of the concept planning and design), or noncritical and (could be addressed during the detail design phase). Critical utilities included gas and water (in particular the PNCC Bore and sewer). Non-critical utilities included transmission lines local power reticulation and stormwater reticulation.

Gas

5.17 The First Gas transmission pipeline crosses diagonally through the southern corner of the Site from a point approximately 400m west of the Richardsons

[8] Active Mode Connectivity Palmerston North to Fielding SSBC – for PNCC & MDC – BECA 2019.

Line intersection on Roberts Line. It then crosses under the NIMT 50m North of the Richardson Railway Road intersection. The 300mm diameter pipeline feeds the East Coast of the North island and is a critical service. The pipeline is protected with a 10m wide easement.

5.18 Although the pipeline crosses under the NIMT, the Freight Hub cannot avoid the pipeline. Furthermore, it poses a significant safety risk and maintenance accessibility for First Gas would be compromised. As a result, relocation of the pipeline was determined to be the only available option. The details of when and where the pipeline is being relocated to is being addressed between KiwiRail and First Gas.

Water bore

5.19 PNCC has a water bore located at the south eastern corner of the Site. The Concept Design was developed to ensure the trackwork avoided the water bore area and this has been excluded from the Designation Extent.

Other technical considerations

5.20 As well as the matters listed above, a range of other factors have influenced the design, including geological, stormwater and ecological considerations. These matters are outlined in detail in the evidence of Messrs Mott, Leahy, and Garrett-Walker.

Geotechnical

5.21 At this stage a desktop geotechnical assessment has been undertaken but more detailed geotechnical investigations are required at a later stage. These will determine suitability and quantity of site material that can be reused as fill and the bearing capacity (strength) that can be expected at formation level. These will guide the design of foundations for the Freight Hub. The investigation will also look at settlement on the Site and the need for any ground improvement including preloading. This could become a time critical aspect as preloading could require up to two years. Further detail on geotechnical aspects of the Freight Hub is outlined in the evidence of Mr Mott.[9]

Stormwater

5.22 The Site level has been set sufficiently high to provide a stormwater discharge gradient across the Site. In constructing the Site, some 23Ha of flood plain will

[9] Evidence of Andrew Mott, dated 9 July 2021, at paragraphs [7.1] to [7.5].

be lost. Together with increased runoff from the Site, due to reduced surface permeability, there is potential risk of downstream flooding impacts. These effects are to be managed by two stormwater attenuation wetland ponds located between the perimeter road and the Mangaone stream.

5.23 The North Catchment will pass through a twin box culvert under the NIMT, discharging into a naturalised channel and then to the Mangaone stream is the same location as present. Track layouts has been modified to provide space within the Designation Extent for this. The Central Catchment running through the middle of the Freight Hub will be culverted for the whole length (some 650m) using two box culverts and will exit to west of the Site. The discharge point will be also at the same downstream location as present.

5.24 Further detail on stormwater design is outlined in the evidence of Mr Leahy.

6. CONSTRUCTION OF THE FREIGHT HUB

6.1 While a detailed construction programme cannot be confirmed until detailed design, I have prepared an indicative construction programme to assist with understanding the likely timings of various aspects of the construction of the Freight Hub. This programme outlines the expected timings from detailed design and regional consenting through to completion of the first stage of the Freight Hub.[10]

6.2 The indicative construction programme covers from commencement of detail design through to Stage 1 operation when KiwiRail is able to transfer all operational functions from the Existing Freight Yard to the Freight Hub. The draft / indicative programme has construction works taking about 3.5 years with an 18 month lead-in period before construction commences. This would have the site operational in the second quarter of 2030.

Regional consenting and detailed design stage

6.3 The lead-in period largely comprises the regional consenting stage together with the preparation and approval of relevant construction management plans, and other plans required to be approved and in place before construction commences. Land acquisition will also need to be completed. Running in parallel with these processes is the Site geotechnical assessment and site survey to confirm levels which are precursors for detailed earthworks design as outlined at paragraph 5.21 of my evidence.

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10 The indicative construction programme is set out at 4.2 of the DCO Report.

Construction of enabling works

6.4 The enabling works are then expected to start in the second quarter of 2024 and expected to be completed in the second quarter of 2027. This stage involves:

(a) bulk earthworks, including first stripping the topsoil and unsuitable material, excavation of the stormwater ponds and cut and fill to level the Site;

(b) construction of the perimeter road;

(c) placing of box culverts; and

(d) construction of noise bunds and planting.

Bulk Earthworks

6.5 Although the proposed finished yard level is RL50m, the formation level or top of the bulk earthworks level is currently assumed at 700mm below, that is RL49.3m. This lower level has been used to determine bulk earthwork volumes.

6.6 The bulk earthworks phase includes levelling the Site, construction of the two large stormwater ponds, northern noise bunds, construction of the perimeter road and boundary formation, installation of culverts, construction of security fencing and noise wall where appropriate, and planting of these areas where possible.

6.7 The first step of enabling works will be earthworks to allow roading network connections to be developed and noise bunding and planting to occur particularly on the western and northern boundaries. Bulk earthworks within the Freight Hub footprint to develop the site to formation level (RL49.3m) will then follow.

6.8 Formation level will be achieved by cutting the high points and filling the low points, with up to 5-6m of fill expected in some locations. Site earthworks are not balanced, and imported fill will be required to complete construction to formation level. A drawing showing the location of cuts and fills for the Site is outlined at Figure 1 below.

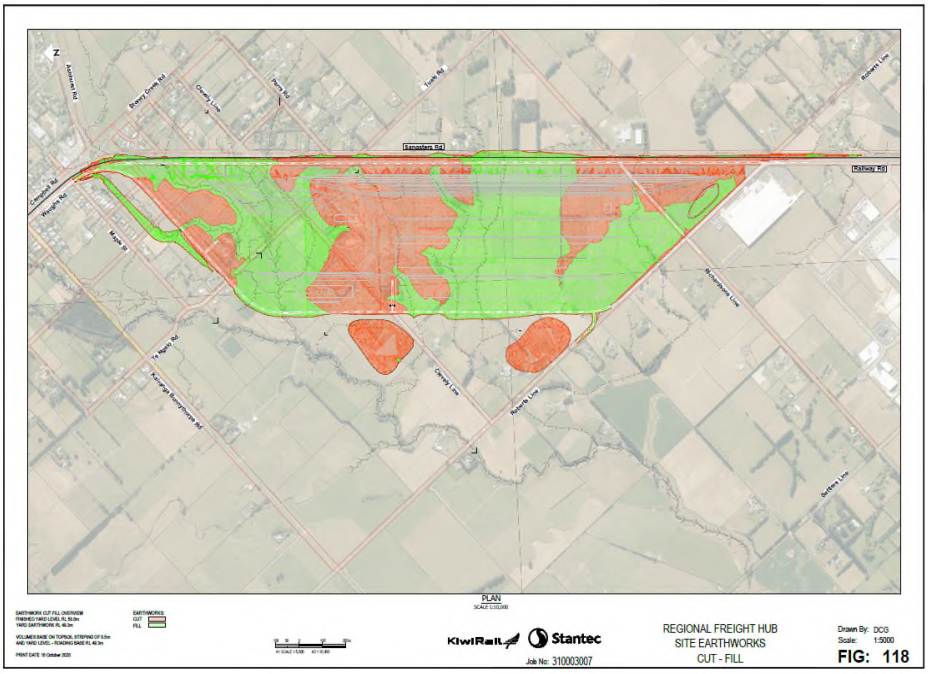

Figure 1: Earthworks

6.9 Approximately 45% of bulk fill material is expected to be available from within the Site (cut to fill) with the balance 55% or 1,550,000m3 to be imported. 11 Identifying sources and routes to Site will be determined once a earthworks contractor has been engaged.

6.10 Once construction to formation level has been completed, a layer of granular fill will be placed over the Site to provide base working surface which will also act to suppress dust. Areas that lie outside of functional area can be shaped and grassed or if appropriate planted. Works will be able to commence on multiple fronts to provide assets and facilities required for initial site operation.

6.11 For construction up to the required level it is expected that the imported material required will be a range of granular material (AP65 and AP40) for use in building foundations and under paved areas such as roads and concrete hard stands. The sources of these materials have not been determined, but the closest sources to Palmerston North are from the Manawatu River between Palmerston North and Ashhurst. This material is likely to be trucked to Site.

11 Table 6 of the Design, Construction and Operation Report provides further detail on the estimated bulk earthworks volumes for the Site.

6.12 For rail tracks, ballast will be sourced from KiwiRail specialist suppliers likely to be Otaki. Initially it is expected ballast will be trucked to Site. Railing ballast will require track access into the site as a minimum.

Construction of perimeter road and road closures

6.13 The closure of Railway Road requires completion of the first step of the enabling works, a functional perimeter road, construction of the new section of Sangsters Road to replace the lost private level crossing access together with completed intersection upgrades at, Roberts / Richardsons and Roberts / Perimeter Road.

6.14 Closing Railway Road will also close the Clevely Line level crossing. Timing of the closure of the Roberts Line level crossing and reconfiguration of the Roberts / Railway intersection must occur before the NIMT[12] is temporarily relocated as the track will be lowered approximately 1.5m through the level crossing. Access to the eastern side of the temporary relocated main to construct the new track formation, build noise bunds and permit landscape works will be from Roberts Line South. Construction access to the main site area will be from Roberts / Richardson Intersection, Entry Point 1 and nominally Entry Point 2 on the western Boundary. To reduce construction traffic on the Perimeter Road it is proposed to use the Southern section of Clevely Line as the second site access crossing the Perimeter Road near the Northern stormwater pond. No construction accesses are proposed from the Northern side of the Site.

Culverting

6.15 An estimated 650 box culvert units are required to complete the twin culvert through the middle of the site and a further 60 units for the northern end. There will be a long lead in supply period (estimated over a period of 2 years) and ordering of these units is essential as soon as funding is in place to avoid delay to the Site works.

Noise bunds and planting

6.16 The draft programme shows that up to a two-year lead is possible for the first planting and longer for other areas if started in the fourth quarter of 2023.

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12 Further detail on the potential timing and options for the relocation of the NIMT is detailed in Appendix 2 of Attachment 3 of the First Section 92 Response.

6.17 The relocation of the NIMT will leave safe working room on the east side for construction of the new track formation and noise bunds. As soon as this work is complete, noise mitigation and planting can be undertaken, with priority being given to the north eastern corner being closest to the most populated area along the eastern boundary.

Construction of the Freight Hub

6.18 Below I summarise the expected construction programme of the Freight Hub to the completion of Stage 3. The Concept Design layout identifies all components of the Freight Hub that are expected to be included by Stage 3. A table outlining the key components of the Freight Hub and the stages of development is attached at Appendix A to my evidence.

Freight Hub construction to Stage 1 operation

6.19 Once enabling works are complete, construction of the Freight Hub will start and take approximately 3 years (from 2027 to 2030).

6.20 The key elements of the construction of the Freight Hub to Stage 1 will include:

(a) the rail trackwork for the yard, including:[13]

(i) two 1500m arrival and departure tracks, both electrified;

(ii) 12 marshalling tracks; and

(iii) one 900m wagon storage track;

(b) the freight forwarding buildings (this includes 2 of the 4 major freight forwarders building and supporting trackwork, and 2 of 6 of the secondary freight forwarders facilities);

(c) the container terminal (full development including refrigerated storage, and support facilities offices and truck parking);

(d) log loading (one 450m track plus wagon storage);

(e) wagon and locomotive maintenance (full development of the main facility plus 50% of supporting storage buildings);

(f) the parking and roading; and

[13] For an indicative outline of how the Freight Hub will be expanded from Stage 1 to Stage 3, please refer to Appendix 4 of Attachment 3 of the First Section 92 Response.

(g) other ancillary structures (such as administration, network services, terminal operation buildings, and 75% of network equipment storage of facilities).

6.21 Construction of the footprint of the Freight Hub itself from formation level 49.3m to a finished level of 50m and all above ground facilities including tracks, buildings, utilities, roadways and parking areas as required for Stage 1 will commence in the second quarter of 2027 and is tentatively programmed to finish 3 years later in the second quarter of 2030.

6.22 The Site affords the opportunity to have a number of concurrent construction areas. For example, the marshalling yard will be constructed in parallel with the arrival and departure tracks. Building works for major freight forwarders and maintenance facility are expected to occur at the same time with secondary freight forwarder building and a number of other structures.

Construction of Stages 2 and 3 of the Freight Hub

6.23 At this stage, it is anticipated that the Freight Hub will be constructed in three stages, but the Freight Hub will become operational after Stage 1. Stages 2 and 3 will be constructed between 2030 and 2050, as demand requires. Further detail on the expected development for Stages 2 and 3 is outlined at **Appendix A**.

7. RESPONSE TO SUBMISSIONS

7.1 I comment below on submissions relating to the design, construction and operational effects of the Freight Hub.[14] I respond to these submissions by way of themes.

Sequencing of construction works, noise mitigation, roading and site access

7.2 A number of submitters raised concerns about the location of the perimeter road and how this has been determined. During early consultation with the community the perimeter road was shown exiting to Kairanga–Bunnythorpe Road near Te Ngaio Road. However, this route was not considered feasible

[14] These include Glen & Karen Woodfield (No. 6), Tutaki 2019 Ltd (No. 13), Martin Jones (No. 16), Kevin And Yvonne Stafford (No. 18), Bunnythorpe Community Committee (No.43), Aaron Fox (No.47), PowerCo Ltd (No.48), Foodstuffs North Island (No. 58), Peter Gore & Dale O'Reilly (61), Mary Anne Chapman (No. 62), Danelle O'Keeffe & Duane Butts (No. 72), Gordon H Malcolm (No. 83), Corinne Dingwall (No.88), Owen Reid (No.95).

because of the two weight limited bridges, preventing its use by heavy commercial vehicles.

7.3 Taking this into account, KiwiRail shifted the perimeter road connecting to the remaining section of Railway Road joining just south of Maple St. It is possible that the removal of the weight restriction on these bridges would allow the perimeter road route to be reassessed. This is something that would be considered as part of the Road Network Integration Plan outlined in the Proposed Conditions, in consultation with relevant regional and local authorities and Waka Kotahi NZ Transport Agency.

7.4 Some submitters also seek early implementation of noise reduction measures and roading developments. As detailed my evidence (section 6), the works are programmed to advance the noise bunds and roading alteration as early as possible in the construction. The western and northern sides along with the stormwater ponds will be constructed early in the programme. Before noise bunding works along the eastern boundary can occur, the perimeter road needs to be operational, Railway Road needs to be closed, and the NIMT needs to be relocated into the Site to provide room for construction along the Eastern (Sangsters Road) boundary. The Proposed Conditions will ensure that the perimeter road will be constructed before Railway Road is closed, unless an alternative access (for example through wider transport network upgrades) means that the perimeter road or a relevant part of it is no longer required to be built.

Size of site and facilities

7.5 Some submitters have raised questions about the size of the Designation Extent. The process of sizing the Designation Extent was carefully informed by the layout of the Freight Hub in the concept design (in addition to other matters such as the stormwater management system discussed in the evidence of Mr Leahy). The layout of the Freight Hub was also carefully informed by the size and relationship of each of its individual components.

7.6 A number of configurations were considered. Once the preferred site and a concept layout for the key operational facilities was identified, minor changes were made to the concept design. For example, adjusting trackwork to avoid Roberts Line Railway Road intersection and the PNCC water bore. The operational components were also shifted westward to allow for relocation of the NIMT and construction of noise mitigation bunds and walls, and alterations were made to ensure there was sufficient land for stormwater management. The base Freight Hub facilities area is about 130ha, but there are other

components needed to support the Freight Hub which support the proposed layout. I consider that the Designation Extent has been appropriately sized to accommodate the range of complex operational requirements and mitigation measures.

7.7 One submitter suggests that KiwiRail could use the proposed site if it was limited to 40ha (the equivalent area to the Existing Freight Yard) and contained within the existing NEIZ. I do not agree. There would be no benefit to a similar sized site even with layout flexibility for a number of reasons including that the current site cannot make up a 900m train without building on several tracks and then joining up to depart. The constraints of the Existing Freight Yard are also discussed in Mr Moyle's evidence.

Location and / or selection of the Site

7.8 A number of submissions sought to have an alternative site chosen. The MCA process is discussed in Ms Bell's evidence. From an engineering perspective, sites between Bunnythorpe and Feilding all had engineering issues that would need addressing. Although those sites appear level, the NIMT climbs steadily from Bunnythorpe and the natural ground falls from the north-west to the south-east this creates significant challenges and earthworks for these sites.

7.9 The MCA assessment looked at connectivity to PNCC and the NEIZ recognising that the existing roading infrastructure would require investment to support the Freight Hub as well as changes to the local roading network. The impacts of relocation of transmission lines and other service such as Manawatu District Council water supply assets were also factored into the engineering side of the MCA assessment, with several kilometres of water reticulation impacted for site 2. In terms of my component of the Engineering Degree of Difficulty, these sites ranked lower that the chosen Site.

8. RESPONSE TO SECTION 42A REPORT

8.1 I have reviewed the sections of the Section 42A Report relevant to my evidence, particularly the PNCC Infrastructure Assets[15] Report and the Technical Evidence: Railway Track Design, Construction and Operation.[16]

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15 Section 42A Technical Evidence: Palmerston North City Council infrastructure assets, dated 18 June 2021.

16 Section 42A Technical Evidence: Railway track design, construction and operation, dated 18 June 2021, p

PNCC Infrastructure Assets

8.2 Mr van Bentum has raised a number of concerns with PNCC infrastructure assets that are relevant to the design of the Freight Hub, which I respond to below.

8.3 Mr van Bentum notes that the perimeter road also includes a pathway and that the Council's expectation is that the minimum width for the pathway must be 2.5m. He also notes that the Council's preference is for connection for active transport users to be preserved between both sides of the railway line, possibly as an underpass.[17]

8.4 The provision of a shared path along the perimeter road was not included in the concept details. The concept plan allows for a nominally 30m wide road reserve. This provides adequate width to allow for a 2.5m separated path, two traffic lanes, with room for local widening for turning bays if required. The details of any shared path are expected to be subject to detailed design.

8.5 No allowance has been made for an underpass beneath the railway line at or near the Roberts Line Railway Road Intersection. There are some practical challenges to providing an underpass in terms of having sufficient room (width and length) to get deep enough to pass under the rail and road, while also being clear of underground services. I understand that these types of details can be explored further through the Road Network Integration Plan included in the Proposed Conditions, which will include the location, timing and form of any changes and upgrades to pedestrian walkways and cycleways.

8.6 Mr van Bentum has also raised concerns regarding a PNCC bore located on the Site. It is also noted that this bore will be able to service the KiwiRail site which will require potable water. There is a technical solution to this issue and KiwiRail is working through this with PNCC.

Rail Design, Construction and Operation

8.7 Mr Than acknowledges the constraints and functional inefficiencies of the Existing Freight Yard.

8.8 Mr Than generally supports for the Freight Hub. However, there is an underlying concern that the configuration might be suboptimal and that to confirm the concept design meets scale and scope of future operation a

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17 Section 42A Technical Evidence: Palmerston North City Council infrastructure assets, dated 18 June 2021, at paragraphs [49] and [50].

detailed simulation should be undertaken. Mr Than has indicated the benefits that a simulation might bring to the project. It is my view that simulation will not materially change the basic size of the components or the footprint of the site and as such is not necessary at this stage of the process.

8.9 Together with operation staff I have tested layout changes to see the impact on operations. This includes the number and type of tracks provided for Stage 1, access to the arrival and departure yard from the North without the pull back, marshalling only from the south end, operation of the log yard, the addition of North and South crossovers. I consider that sufficient work has been done at this stage to test the design and layout of the Freight Hub without the need for simulations.

8.10 Mr Than has expressed concern that the concept design has not been put through a safety in design assessment in accordance with KiwiRail's own requirements. My understanding is that Safety In Design will become part of subsequent phases of work, starting with the development of the detailed design.

Michael Skelton

9 July 2021

Appendix A

The following table extracted from the DCO report provided an overview of development of the Site

Functional Areas	**Stage 1** **2030** Full demobilization from Tremaine Ave	**Stage 2** **2040**	**Stage 3** **2050** Full implementation	**Area m^2**
Arrival / Departure Yard	2 Tracks (1500m trains); no pull backs required	4 Tracks (1500m trains); south (PN) pull back should be considered	8 tracks	83,100
Marshalling Yard	12 Tracks	15 Tracks	15 tracks	106,500
Wagon Storage Yard	1 track 900m long 50% - of capacity. marshalling tracks can be used to cover storage shortfall if required	2 tracks (100%)	2 tracks	14,400
Container Terminal	Full development. Refrigerated containers included. 3 Pad Tracks. Office, Truck and Car Parking.	Full development. Refrigerated containers included. 3 Pad Tracks. Office, Truck and Car Parking.	Full development with 8000 TEUs pa / 180 refrigerated	176,000
Wagons, Locomotives	Main maintenance Building + 50% supporting buildings(storage)	Full implementation	Full implementation	130,000
Network work Equipment	75% supporting buildings and shed areas	100% supporting buildings and shed areas	100%	43,000
Network Services Maintenance Depot and Terminal Operations	100% (see appendices for details)	100%	Depot and terminal building	2,700
Freight Forwarding Sidings- Prime Facilities	2 Warehouses (50% of full capacity) plus 50% of track required to service area	3 Warehouses (75% of full capacity) plus 100% of trackwork required to service area	4 Warehouses	90,000
Freight Forwarding Sidings: Secondary Facilities	2 Warehouses (33% of full capacity) plus Trackwork	4 Warehouses (66% of full capacity)	6 Warehouses	60,000
Log Loadings	1 track 450m long (50% of planned max capacity)	2 tracks each 450m (100%) includes northern connection to main	2 tracks	51,600
Tanks	0 Tanks	2 Tanks (accordingly to needs)	4 tanks Diameter 20m 5m tall	87,500