Heretaunga Plains Urban Development Strategy Phase 2 – Infrastructure - Reviewed

Prepared for Hastings District, Napier City and Hawke's Bay Regional Councils

March 2016

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QUALITY ASSURANCE STATEMENT

PROJECT MANAGER	REVIEWED BY
Des Parkinson	Technical Advisory Group (TAG)
PREPARED BY	**APPROVED FOR ISSUE BY**
Grant Russell	Des Parkinson

HAWKES BAY
1st Floor, 100 Warren Street South, PO Box 1190, Hastings 4156, New Zealand
P + 64-6-873 8900, F + 64-6-873 8901

REVISION SCHEDULE

Rev No	Date	Description	Prepared By	Reviewed By	Approved By
1	27/10/09	HBRC minor changes	RW	CT	GR
2	25/01/16	Updates from Contributors	GR	TAG	DP

HASTINGS DISTRICT, NAPIER CITY AND HAWKE'S BAY REGIONAL COUNCILS

Heretaunga Plains Urban Development Strategy
Phase 2 - Infrastructure

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Executive Summary

The Heretaunga Plains Urban Development Strategy (HPUDS) provides strategic direction for the growth needs of the commercial, industrial and residential sectors, for a 30 year period (2015 to 2045).

The Joint Agency, consisting of the Hastings District, Napier City and Hawke's Bay Regional Council's wish to review the HPUD Infrastructure Report (October 2009) to reflect changes from 2009 to 2015/16.

Relevant updates on the 'infrastructure of interest such as water supply, stormwater, wastewater, transport have now been provided.

The required Level of Service, including risk assessment needs to be taken into account across all infrastructure areas, as this ultimately affects the scale of the opportunities and constraints.

Shared wastewater treatment plants have been assessed for Hastings and Napier, but were not considered to be an option. While reticulated wastewater systems existing for the larger urban areas, intensification of existing settlements outside of Hastings, Flaxmere, Havelock North, Napier and Taradale is limited by the need for disposal field space on lots.

There is no more stormwater capacity available in the Karamu system, beyond that planned in HUDs 2005. Stormwater is not seen as a constraint to intensification in Hastings as long as developments are planned with onsite solutions. Some 75% of Napier's stormwater is pumped, with the likelihood that any intensification of development will increase the level of pumping.

While the Heretaunga Plains aquifer has capacity to cope with additional demands from growth; the quality of this supply does vary by location. It is noted that water short areas may limit the ability for urban growth. Growth above that previously planned for will require additional reticulation capacity.

Generally the cost of urban development is directly related to the proximity of existing gas, electricity, and telecommunications infrastructure.

Economic and planning constraints have altered forecasted projections set out in previous transportation models. New Hastings District Council urban and Heretaunga Plains transport models are being prepared, which need to be taken into account for future urban developments.

A change of land use may require existing rural road upgrades. Public transport is not currently playing a significant role as a mode of travel to work and school.

Napier Port operates an inland depot facility at Thames Street, Pandora, with additional options for further inland facilities possible at both Pandora and Whakatu. An increase of rail usage to the port could have a negative effect on the general road network in Napier, due to the number of rail crossings. This could be potentially managed by flyovers, timing of movements or potential double height loads to reduce rail movements.

The existing Hawke's Bay airport noise contours in the City of Napier District Plan unduly restrict the forecast growth of the airport over the next 20-30 years, resulting in economic costs for Napier and the region. The Airport will be seeking to proceed with its proposed Business Park plans which will require network infrastructure considerations and alterations to the District Plan to facilitate it.
Sea level rise is likely to create additional stormwater management demands on the Napier airport Residential development around the Bridge Pa aerodrome could constrain the usage.

Where urban development occurs alongside Council boundaries shared services is an option that is being rigorously explored.

Infill development potential, provided existing and potential service capacities are examined, is being progressed in more detail, through stakeholder collaboration and formulation of more 'informed' structure plans.

Climate change effects from sea level rise, inundation, storm surges, coastal erosion and tsunami will be a considerable constraint on future development in low lying areas, including the Hawke's Bay Airport and coastal communities.

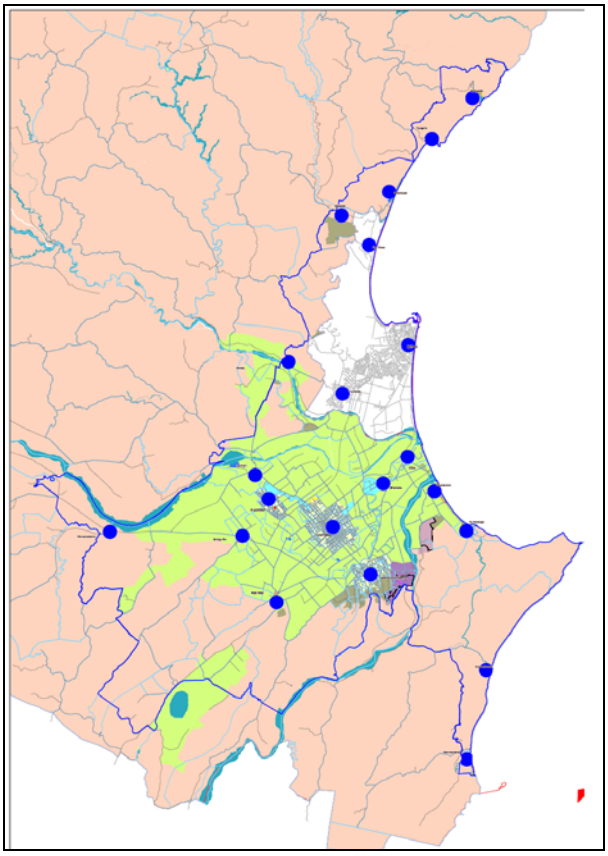
1 Introduction

1.1 Scope of work

This study assesses the infrastructure constraints and opportunities within the Heretaunga Plains. Infrastructure was noted as including electricity, telecommunications (voice and data), water, wastewater, stormwater, and transport.

For the purposes of this study, transport was considered to include car, motorcycle, cycling, walking, public transport, trucks, rail, shipping, and air.

1.2 Study Area



1.3 Timeframe of study

This study covers the time period from 2015 – 2045.

1.4 Exclusions from Study

This report does not explicitly address community reserves, landfills, waste collection, fire-fighting or schools. The scope of service did not call for significant community or stakeholder consultation, detailed traffic modelling or analysis of the connectivity of transport between the Study Area and Central Hawke's Bay or Wairoa.

2 Methodology

Infrastructure constraints and opportunities have been collated from available information and knowledge of the key infrastructure and services considerations that could affect development. In updating the HPUDS Infrastructure 2009 Report, to the 2016 review of the HPUDS Infrastructure Report, email requests were furnished upon past contributors, while allowing for updated contacts at the relevant organisations. The request to review the 2009 report findings were sent to asset managers at each of the three Councils, the Port, Airport, Aerodrome and Lines company. This report includes information from those replies and information from key documents provided.

The attached maps have been compiled using data provided with the parties consulted.

The details in this report and the supporting maps highlight areas for consideration; this report does not draw conclusions about the appropriate future level of servicing to an area nor the acceptable level of risk that a community may be willing to accept.

3 Summary of Key Findings

3.1 Overall

- Required Level of Service, including risk assessment needs to be taken into account across all infrastructure areas, as this ultimately affects the scale of the opportunities and constraints.
- Capacity for development will exist from 2015 in areas previously identified for development.

3.2 Wastewater

- Shared treatment plants have been assessed but were not considered to be an option.
- Hastings City, Flaxmere, Havelock North, Napier and Taradale all have reticulated wastewater systems. There is also a wastewater system at Waipatiki.
- Intensification of existing settlements outside of Hastings, Flaxmere, Havelock North, Napier and Taradale is limited by the need for disposal field space on lots and cumulative impacts on nearby waterbodies.
- The existing trunk mains have remaining capacity.
- The smaller communities are currently constrained by wastewater.

3.3 Stormwater

- There is no more capacity available in the Karamu system, beyond that planned in HUDs 2005.
- Stormwater is not seen as a constraint to intensification in Hastings as long as developments are planned with onsite solutions.
- 75% of Napier's Stormwater is pumped, intensification of development will increase the level of pumping.
- Sea level rise may impact on groundwater levels in coastal communities such as Clive.
- Natural detention areas (shown as ponding areas on Figure 5 Stormwater Map) need to be considered.

3.3.1 Water

- The groundwater resource has capacity to cope with additional water supply demands from urban growth; the quality of this supply does vary by location.
- HBRC have identified a number of water short areas, which could limit ability for growth.
- Hastings District Council have obtained consent to take additional water for Esk/Whirinaki Water Supply Scheme.

- Havelock North currently has a constrained water supply.
- Growth above that previously planned for will require additional reticulation capacity.
- There are limited areas in the aquifer that are outside of 400m from a surface water course.

3.3.2 Gas, Electricity, and Telecommunications

- No significant issues to note.
- Cost of development is directly related to proximity of existing infrastructure.

3.3.3 Transport

- Many of the assumptions used in the previous Heretaunga Plains transportation model have since changed. A number of the previously identified projects are unlikely to occur within the timeframe previously defined (or not at all) due to economic and planning constraints. Therefore this model is of limited use for this study period, and reference/linkages to the new model will be required.
- New transport models are being prepared at present (HDC urban and new Heretaunga Plains).
- Discussion on Level of Service resulted in different perspectives from the stakeholders.
- Existing rural roads are likely to require rebuilding where a change of land use occurs.
- Public transport not currently playing a significant role as a mode of travel to work and school.
- New mass limit routes may cause issues on structures, and industrial / commercial sites would ideally be placed close to the proposed heavy mass limit routes.

3.3.3.1 Shipping – Port of Napier

- Storage is the main constraint of the existing site.
- The port operates an inland depot facility at Thames Street Pandora. Additional options for further inland facilities exist at both Pandora and Whakatu.
- An increase of rail usage to the port could have a negative effect on the general roading network in Napier, due to the number of rail crossings. This could be potentially managed by flyovers, timing of movements or potential double height loads to reduce rail movements.

3.3.3.2 Air

- The existing airport noise contours in the City of Napier District Plan no longer align with contemporary forecasts of growth of the airport over the next 20-30 years.
- The Airport will be seeking to proceed with its proposed Business Park plans. This will require network infrastructure considerations and alterations to the District Plan to facilitate it.
- Sea level rise is likely to create additional stormwater management demands on the Napier airport.
- Residential development around the Bridge Pa aerodrome could constrain the usage.
- Noise contours have been developed but are currently not included in the District Plan for the Bridge Pa aerodrome.

3.3.4 Shared Services

No additional shared services were identified, however where development does occur alongside Council boundaries, either Council could provide services to the other.

3.3.5 Infill

There is potential to provide for infill as long as the development takes into account the existing service capacity.

4 Detailed Findings

4.1 Overall

- The level of risk to the community and property needs to be defined, especially in relation to stormwater and flooding considerations. In addition the risks to coastal communities and infrastructure from erosion, sea level rise, inundation and tsunami need to be properly identified and affordable community lead solutions developed to mitigate potential effects over the next decade. Since the 2005 HUDS study work on a coastal strategy has begun to help with the understanding and decision making process.
- The level of service to be provided to the community over the study period will affect the actual opportunities and constraints from the existing and required infrastructure. Also the level of service expected from the community into the future could result in alternative outcomes.
- The current rate of development will mean that capacity will be available from 2015 in existing 'planned' development areas (e.g. many of the Napier development areas (as shown in essential services documentation) will not be fully allocated by 2015). Typically there are the 'more' expensive areas to develop. The lagoon farm development is substantially completed with added pressure from the sports parks (Park Island) taking up land. The Park Island development is with the Office of Treaty Settlements. The Citrus Grove development is complete. (see Figure 43 – Figure 48 for NCC development areas).

4.2 Wastewater

4.2.1 Opportunities

- The Hastings District Council Treatment Plant has capacity for growth over the next 50 year period based on 2% growth per year, plus an additional 10% for a factor of error. The Hastings Wastewater Treatment Plant is now consented until 2049.
- There is spare capacity in the Hastings trunk mains, creating an opportunity for development close to these (see map provided for locations).
- There is some capacity in the trade waste sewer in Pandora for 1 or 2 more trades, long term if trade waste wasn't needed it could be converted to a domestic main to accommodate changing land usage.
- Napier City's western pumping main has available capacity.
- The Havelock North pumping main is to be extended to the south side of Havelock North before 2015, creating an opportunity for development.
- The Hastings Racecourse site is well placed to be serviced.
- Increased densification west of the proposed mission heights development could be possible.

4.2.2 Constraints

- All wastewater on the western side of Hastings needs to be pumped to the eastern side and ultimately the wastewater treatment plant. The hump is in the general location of Omahu Road and Heretaunga Street. Gravity sewers are a preference.
- Potential for leaching from onsite wastewater systems exist at Ocean Beach and Haumoana, (Glasson Potts Fowler Stage 1 & 2 Report).
- Waimarama has been identified as having sensitive receiving surface waters and therefore a potential impact from onsite wastewater solution on surface water bodies. This may limit the growth of the community based on onsite wastewater solutions. (Glasson Potts Fowler Stage 1 & 2 Report).
- Napier has some constraints around wet weather infiltration, however they have an extensive wet weather programme in place over the long term, providing this is carried out the infiltration will not constrain development.
- Napier has a new consent for a biological trickle filter system.
- Pre-treatment of wastewater is needed if the source is a long way from the main network; an example is the Irongate Industrial development which is close to the limit of distance from the network prior to pre-treatment.

- Wastewater systems in the reticulated urban areas of the Heretaunga Plains are generally designed on the basis of 12 lots per hectare. Any denser infill development would need to be planned for so that the appropriate services could be provided.

4.3 Stormwater

4.3.1 Opportunities

- The Estuary stop-banks in Napier have been designed for both sea level rise and storm surge events, and are up to standard on both sides.
- Many of the urban areas have the space for onsite disposal, creating an opportunity for onsite solutions.

4.3.2 Constraints

- Climate change may constrain Napier's ability to cope with stormwater. The comment was made in our meeting with Napier City Council that in 50 – 80 years development may need to be concentrated on the hills.
- The Estuary stop-banks are up to standard on the northern side.
- 75% of all of Napier's urban stormwater is pumped requiring ongoing energy use. The Taipo Stream is the only stream which is not pumped and it already has some capacity problems. (The Taipo has been identified as having some ecological value worth enhancement.)
- The Business Park (Technical Park) to the north of Napier is now zoned as a Business Park. Careful stormwater management will need to underpin this newly rezoned area to ensure sustainable solutions are in place.
- Onsite stormwater in Hastings and Flaxmere is generally not constrained; the exception is contaminated stormwater discharges over the unconfined aquifer. Stormwater discharge over the unconfined (and semi confined) aquifer is becoming a real concern for HBRC. More work is required in this area to be certain that it is a sustainable solution for stormwater disposal in these areas.
- Future growth of the industrial areas at Awatoto has been identified by Napier City Council, however stormwater disposal is difficult in this area. A large pump station would be required to pump stormwater into the Waitangi Estuary. The Waitangi Estuary has been identified as a priority wetland by HBRC (see Figure 5 Stormwater Identified Constraints).
- All of the Stormwater from the Hastings, Flaxmere and much of Havelock North flows into the Karamu Stream catchment. This catchment has been designed to cope with the stormwater from the existing urban area, plus those urban areas planned for in the 2005 HUDs study. Growth in excess of these areas will need to address stormwater onsite, as there is no additional capacity in the Karamu system (see Figure 5 Stormwater Identified Constraints).
- Stormwater is not seen as a constraint to intensification in Hastings as long as developments are planned with onsite solutions.
- Sea level rise could result in groundwater rising by up to the same margin, if this becomes an issue it would be expected to only affect areas close to the shore line.
- HB Regional Council noted that the natural detention areas (identified as ponding areas on Figure 5 Stormwater Identified Constraints).
- Natural stormwater detention areas (eg Paki Paki) need to be protected from development and artificial drainage improvements that simply transfer flooding problems downstream and reduce groundwater and stream recharge opportunities.
- Napier has identified Greenfield Development areas, there is poor drainage in some of these areas include Jervoistown, South Pirimai and Meeanee. The land is relatively low-lying near mean sea level in drainage can only be improved through improved pumping capacity.

4.4 Water

4.4.1 Opportunities

- There are opportunities for growth in the Lyndhurst and Omahu Areas of Hastings.

- The Hastings racecourse site is well placed to be serviced.
- Napier has plans to develop a new well field in the Awatoto area.
- Demand management initiatives should bring efficiencies and assist with capacity/supply issues.
- The Aquifer has capacity to cope with additional demands as long as the extraction is from the main flow areas, and outside a 400m buffer from surface water bodies.

4.4.2 Constraints

- The HBRC Resource Management Plan currently has a policy that any groundwater take within 400m of a surface water body should be considered a surface water take. This is a constraint as the majority of the surface water bodies on the Heretaunga Plains are fully allocated. However, this policy may be replaced in future as HBRC continues to enhance its understanding of the location, extent and connections of the groundwater and surface water resources in the Heretaunga Plains.
- The water short areas (shown on Figure 6 Water Map) show a potential water supply constraint to future growth.
- Previously the area around Whirinaki/Esk Valley experienced limited water supply. A water take consent has now been granted to Hastings District Council to take more water from the Esk River for the Esk/Whirinaki Water Supply Scheme.
- There are some temporary flow and pressure constraints in Hastings and Havelock North. The solution to these is expected to be at least 15 – 20 years away.
- The current water supply for Havelock North is currently constrained; a new source is being sought and must be in place by 2017.
- There are network constraints in the Arataki Area of Havelock North for water supply once Council retracts from the existing Brookvale bore water source.
- The Mission Heights development area in Napier has a water supply capacity for 500 lots; water could be a constraint in this area if a higher density of development is proposed which could result in up to 900 lots in the area. This could be compounded if additional growth is identified in the vicinity of this development. Additional capacity could be built into the system but does not currently exist.
- HDC only has three hours of reservoir storage, it would be ideal to have 24 hours of storage.

4.5 Gas

Gas is not seen as a constraint to development. Much of the existing Heretaunga Plains area is not serviced by Gas. Gas suppliers will typically react to the demand of market forces, not before.

4.6 Electricity

- No significant items noted.
- Cost of servicing is less when building alongside existing development, the more isolated a development the more costly to provide power infrastructure.
- No issues were noted with the supply capacity into Hawke's Bay, and long term plans (likely outside study period) of Transpower makes provision for an additional power feed from the national grid being installed.

4.7 Telecommunications

- No reply was received from Chorus. However telecommunications are not seen as a significant constraint to development, with them generally able to react to the demand of market requirements.
- Unison have entered into the communications market, by making available fibre optic connectivity; this will be based off surplus capacity in their own fibre optic network. (see Figure 3 Power Map).

4.8 Transport

- Napier City Council proposes to maintain their overall network speed as it has been, this assessment is completed on the network as a whole.

- Hastings District Council has completed the micro simulation model on a paramix platform.
- The Heretaunga Plains Transport Study (HPTS) (Urban Sequencing Study) has been completed in 2012 and has been adopted by Hastings District Council, Napier City Council, Hawke's Bay Regional Council and New Zealand Transport Agency. This report discusses the development order of new capital requirements.
- The Hawke's Bay Heretaunga Plains transport model has been updated and reassessed by GHD (Cube Model). However, some of the assumptions around the timescales and densities of development may need revisiting.
- Hastings District Council has developed a Bridge Management Strategy in 2012. This strategy adopts a risk based approach to bridge management.
- Hastings District Council has undertaken several Corridor Management Studies in order to identify the traffic solutions required along key transport corridors. For example Havelock Road, Pakowhai Road, Karamu Road, St. Aubyn Street.
- Transport assessment for the Medium Density Housing Strategy (MDHS) has been completed.
- NZTA are currently completing a study in relation to access to and from the Port of Napier. This is likely to involve some updates to the HPTS model.

4.8.1 Opportunities

- Much of the existing network has capacity to take additional traffic.
- Hastings DC reviewed overall approach using placed based planning, with options to provide for some densification of housing and to open up existing linkages. (Transport Assessment for MDHS and Corridor Management Studies) This exercise identified the gaps in the current facilities and promoted further study and funding to fill the gaps.
- Planning and implementation of work on Key Projects (Whakatu Arterial link, North Eastern Connector, Links Road/ Pakowhai Road/ Expressway Roundabout, Prebensen Drive, Port Access Project, iway/ Urban Cycleway etc.) is continuing.
- Provision and upgrade of Transport links for expansion of industrial activity in Whakatu, Tomoana, Omahu Road and Irongate Industrial areas.
- Provision and upgrade of Transport Links for expansion of residential activity in Arataki, Lyndhurst, Havelock hills, Medium Density Housing and other areas.
- A transportation assessment is currently being completed to identify the impacts of residential development options at Iona Road/Middle Road.

4.8.2 Opportunities

- Much of the existing network has capacity to take additional traffic.
- Hastings DC currently review overall approach using placed based planning, with options to provide for some densification of housing and to open up existing linkages being investigated (e.g. Heretaunga Street).

4.8.3 Constraints

- The existing transportation model did not include the proposed Business Park; there was suggestion from Napier City Council that greater capacity would be required on the expressway to accommodate this development. The existing model predicts that the expressway will need to be 4 lanes by 2026, but this may need accelerating. The model also did not make allowance for a number of other items such as redevelopment of the Hospital site, Mission heights 900 units (modelled at 350), Napier's eastern developments, and large format retail development. These will all need inclusion into the next assessment, as will any expansion to the port operations.
- The current road network (Puketitiri Road) will constrain the ability to develop in the Poraiti Hills area, this upgrade currently has a BC of 0.9 and a price tag of 2.5 million[1].
- Future Industrial growth has been identified in the Awatoto area, however the capacity of the road network was identified as a potential constraint. This would be a significant traffic generator, having a major impact on the State Highway or expressway.

[1] 2009 dollar estimate.

- The northern arterial previously identified as priority has been blocked at the planning approval phase. However, a part of the identified alignment is retained, renamed as North Eastern Connector (Pakowhai Road to Karamu Road).
- Nelson Park redevelopment is not included in existing regional transportation model.
- Potential intensification of the Omahu industrial area, beyond that previously considered, is not included within the model.
- Level of Service requirements appear to be a point of discussion with different messages coming from the different stakeholders (maintain, reduce, improve).
- Napier City Council has considered the land behind the existing Industrial development at Awatoto for future development; however roading could be a constraint to this.

4.8.4 Walking and Cycling

- Both Cities are working through the construction and updating of their walking and cycling strategies.
- The Hawke's Bay Regional Council is looking at the combined strategies. A Regional Cycling Governance Group has produced a Regional Cycling Plan through HBRC.
- Hastings has a focus on increasing usage of active modes of transport, potential at the expense of delays on major linkages.
- Napier/ Hastings Urban Cycleway Programme Proposal has been produced and initiatives outlined there are being progressed.
- Hastings has 3 years of strong walking and cycling data which could be used to update any transport models to reflect mode shift change in the District.
- Hastings has a focus on increasing usage of active modes of transport, potential at the expense of delays on major linkages.

4.8.5 Public Transport

- Managed by the Regional Council, relatively low usage and difficulty due to the spread of urban areas and destinations.
- Councils have different perspective across the study area, Napier referred to HBRC, and Hastings looking at a number of studies to see how better usage of public transport.
- HBRC looking at the public transport plan, looking at options of early start and increased frequency – particularly on intercity express route (see Figure 7 Transportation Map).

4.8.6 Trucks

- New mass limits seen to have limited effects in Napier, but some issues in Hastings, particularly on structures such as Bridges.
- Ideally industrial and commercial operations that may utilise vehicles covered by the proposed heavy mass limits should be located close to these routes (HPMV routes - a route exists to the Port of Napier and there are other identified routes in the region).
- Provide increased load and dimension capacity requirements for the road and bridges to service industry on HPMV routes.
- HDC are currently developing a programme to upgrade structures across the district to HPMV classification this opening up these routes to HPMV movements.
- There is ongoing tension from the communities to remove trucks from residential and/or tourism focused areas.
- Effects of Trucks not necessarily modelled effectively in previous transportation model. This deficiency is rectified by the Hastings District Council's Heavy Freight Transport Strategic Plan in 2014.

4.8.7 Rail

HBRC looked to commission a review of the use of Rail, but did not secure funding so this is unlikely to proceed.

4.8.8 Shipping – Port of Napier

- Storage at the Port location was seen as the main constraint to development of the Port. There are large infrastructural costs required to reclaim land.
- There are numerous reclamation options available to the Port.
- The Port owns and operates a container depot facility at Pandora (Thames Street); further expansion is being considered.
- An inland Port at Whakatu remains an option being considered. The option is uneconomical at present but could be made feasible with increased volumes and cooperation with partners such as shippers, Kiwirail, NZTA etc.
- The Port anticipates continued strong growth in the next 5-10 years.
- Seen as a major linkage by both Councils for local economy.
- Changes to container storage at the port and the use of an off-site storage yard at Thames Street will have had a significant impact on traffic movements in this area.
- Access to the Port is currently being assessed by NZTA with additional modelling, optioneering and designs expected to progress for the surrounding state highway network once deficiencies are defined.

4.8.9 Air

4.8.9.1 Hawke's Bay Airport

- The Airport has progressed its Business Park plans since 2009 due to increased demand for business land in the locality and forecast airport growth over the lifespan of the Airport Master Plan. The airport may seek changes to the District Plan. Associated network infrastructure will need to be upgraded to facilitate the Business Park. In addition to this, Watchman Road is currently being investigated for the main airport entrance from SH2 to improve access safety.
- The Business Park planned for Napier will partly fall under the approach path to the Hawke's Bay Airport. The area under the identified flight path that cannot be used for buildings will be used to dispose of stormwater.
- The airport has recently reviewed and undertaken to update their 2013 Master Plan which indicates that the airport is expecting a 6% growth in passenger numbers per year until 2034. These growth projections show that the existing airport noise contours in the City of Napier District Plan will unduly restrict this growth. As such, the airport will be lodging a private plan change to the District Plan in 2016 to change the airport noise contours to safeguard the future growth of the airport and to ensure that suitable land use controls are in place for sensitive activities located within the revised airport noise contours. Economic analysis undertaken for the airport suggests that restricting the growth of the airport by not changing the airport noise boundaries for the forecast growth will have significant cost impacts for Napier City and regional economy. Therefore it is important that HPUDS takes into consideration the proposed airport noise contours when setting out the strategic direction for residential and other sensitive activities within the proposed airport noise contours.
- The groundwater level at the airport is currently 1 - 3 metres below ground level. The proximity of the airport to the coast and the estuary means that it may be subject to influences from sea level rise.
- Land ownership may constrain further expansion of the airport; a lease is being negotiated with the Maori land claimants who have a claim over the land at the southern end of the runway.
- To the North is the Estuary which is in DoC ownership, the airport does not feel that it can extend in this direction.
- NZTA are currently progressing a study to consider access to the airport and options to improve this alongside safety enhancements for SH2/Watchman Road.
- The airport terminal and associated services (car rentals, parking, cafes etc) are proposed for upgrade and extension presently. HB Airport are progressing plans to identify options to enhance the airport.
- Additional services are now provided by JetStar at the airport. It is not yet clear whether this will increase patronage at the site or simply divert users from one carrier to another. Any future modelling should consider the implications of this growth.

4.8.9.2 Bridge Pa Aerodrome

- Nearby residential development could constrain the use of the Aerodrome.
- Noise contours have been developed but are not yet included in the District Plan. A 3km radius has been shown on the map in Figure 7 Transportation Map as this is the likely zone of influence for noise.
- The volume of air traffic at the aerodrome is larger than the volume at the Airport.

4.9 Solid Waste

- There is another 60 years of life at the Omarunui Landfill site which receives refuse from all of the serviced areas within the Heretaunga Plains. No major constraints were identified within the timeframe of this study.
- Demand management initiatives being implemented to reduce the waste stream to the landfill.
- What future infrastructure may be required given the proposed land use pattern id in HDC and NCC urban developments.

5 Potential for shared infrastructure

There is currently joint infrastructure with the provision of water supply in and around the Bay View / Eskdale area. This fits with feedback from Council's which indicated that where development occurs alongside Council boundaries then either side could provide the services.

Consideration has already been given the shared wastewater treatment facilities for the greater Hastings and Napier communities. This concluded that neither of the existing ocean outfalls would have the capacity to provide for both communities, a joint facility was disregarded. (per comms Bill McWatt 14 September 2009).

With the recent binding referendum, in September 2015, on Council amalgamation, it concluded that the status quo would remain. It was agreed that the Councils would work closer together and explore further shared service opportunities.

6 Infill

It is clear that infill can be accommodated as long as suitable planning is performed. Existing infrastructure does not provide the capacity needed for infill in all areas. In 2009, one Council officer did suggest that the areas with a high amount of impervious area would be most suitable for medium density housing as the existing stormwater system is already accounting for 100% runoff, so no additional capacity would need to be built in.

The areas identified for infill in Hastings were Mahora, the CBD, and Heretaunga Street. The areas identified as infill by Napier were Ahuriri (including the 'Humber' yard), with Marewa the area likely to start infilling as Taradale and Greenmeadows fill up.

7 Conclusions

There is existing capacity in many of main urban areas for infrastructure. While in many places this is most easily provided for close to the main trunk services and arterials it can be provided for in most locations if investment is made.

The main constraint for the larger urban areas is stormwater. The stormwater from Hastings, Flaxmere and Havelock North is limited by the capacity in the Karamu catchment. Future stormwater solutions for these communities will need to balance the onsite and reticulated stormwater options to ensure that the stormwater development level does not exceed that planned for in the 2005 HUDs study. Stormwater disposal in Napier, Taradale and Greenmeadows is already reliant on pumping with 75% of the urban areas having pumped stormwater. Intensification of development is likely to increase the stormwater runoff rate. This combined with sea level rise and the potential for an increase in groundwater level could limit residential development in some of these areas in the next 100 years. While it is unlikely to have an unresolvable impact in this study period consideration should be given to the longer term outcome.

The smaller rural and coastal communities are largely un-serviced and therefore limited in their ability to expand until further investment is made in infrastructure.

Climate change effects of sea level rise, inundation, coastal erosion and tsunami will be a considerable constraint on future development in coastal communities.

Appendix A: Correspondence and Supporting Reports

Information review and updated February 2016

The following people were contacted and provided the opportunity to provide updates to the 2009 report.

Hawke's Bay Regional Council
Iain Maxwell
Michael Ayde
Gary Clode

Napier City Council
Johan Ehlers
John Schwas

Hastings District Council
Raoul Oosterkamp
Mark Clews
Tracey Gray
Jag Pannu
Tony Mills
Brett Chapman
Dylan Stuijt
David James
Matthew Kneebone
Martin Jarvis

Napier Port
Bruce Lochhead
Michel de Vos
Steve Young

Unison Networks
Jason Larkin

Napier Airport
Nick Story
Olivia Pierre

Bridge Pa Aerodrome
Bruce Sutherland

Chorus
Ginette Pore

Written references in 2009

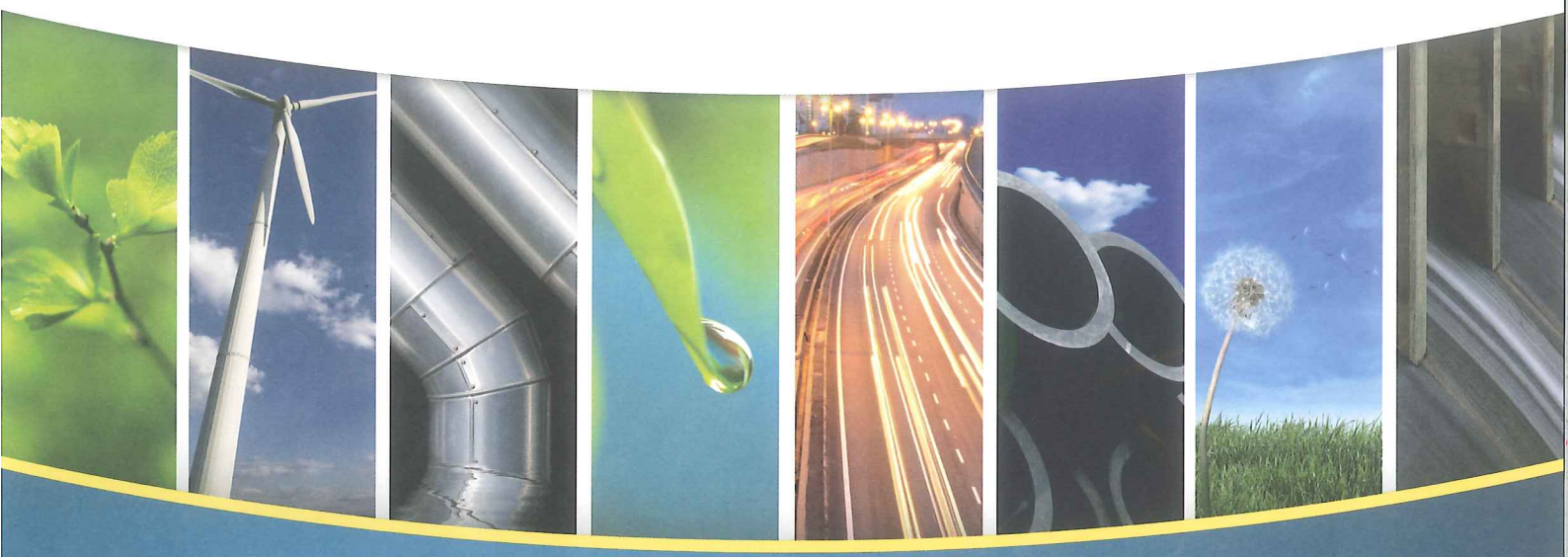
The following are a list of the documents that we were directly referred to as part of the study in 2009. There are numerous other documents that were provided which have been included electronically in the CD enclosed with the 2009 version of this report.

- Beca Cater Hollings and Ferner Ltd. 2005:Hastings Urban Development Strategy Study
- Glasson Potts Fowler; Hawke's Bay Regional Council. 2003: Onsite Wastewater Treatment Risk Assessment Framework Stages 1 and 2 Framework Development and Testing
- Hawke's Bay Regional Council. 2006: Hawke's Bay Regional Resource Management Plan.
- Napier City Council. 2007: Napier City Council Plan
- Hastings District Council. 2003: Hastings District Plan
- Napier City Council. 2000: Essential Services Development Plan

Appendix B: Constraint Maps

Appendix C: Napier City Council Constraint Maps

HAWKES BAY
1st Floor, 100 Warren Street South, Hastings 4122
PO Box 1190, Hastings 4156
TEL +64 6 873 8900
FAX +64 6 873 8901
www.mwhglobal.co.nz



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