

Metropolitan Planning Authority Fishermans Bend Infrastructure Update

November 2015

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1. Project Overview

1.1 Project Scope

In 2012 GHD prepared an Infrastructure Assessment for the newly rezoned Fishermans Bend Urban Renewal Area (FBURA) for Places Victoria. GHD was subsequently engaged by the Metropolitan Planning Authority (MPA) to prepare a follow up to the 2012 Infrastructure Assessment to determine the impact of the speed at which growth occurs. This project focuses on one growth scenario (roughly the high density scenario from the 2012 Infrastructure Assessment) and investigates the impact of three growth rates.

In April 2015 the Planning Minister announced that planning for Fishermans Bend will include the Fishermans Bend Employment Precinct. This precinct is approximately 200 ha in size and is bound by the Yarra River to the north and west, the West Gate Freeway to the south, and Citylink to the east. The brief was therefore extended to provide some very high level discussion of issues associated with this area.

The four precincts (Montague, Sandridge, Wirraway and Lorimer) that make up the Fishermans Bend Urban Renewal Area (FBURA) as well as the recently announced Fishermans Bend Employment Precinct are shown in Figure 1.

Figure 1 Fishermans Bend Precinct *Source: Metropolitan Planning Authority*



1.2 2012 Infrastructure Assessment

In 2012 GHD completed an Infrastructure Assessment for Fishermans Bend which covered the condition, capacity and constraints associated with existing trunk and major infrastructure in the FBURA. This assessment identified the upgrades, augmentation works, network alteration and extensions that may be required to support a range of increased residential, commercial and retail growth scenarios. In particular, emphasis was placed on any large scale costs, or long lead items likely to impact of development costs or programming.

The focus of the assessment was on the trunk, transmission and major assets within the water, sewerage, stormwater, power, gas, telecommunications, road and tram networks.

This document should be read in conjunction with the 2012 Infrastructure Assessment as the former assessment provided valuable background information and greater discussion of many of the issues raised during this project.

1.3 Project Objective

The objective of this project was to identify the key issues from the perspective of the utility stakeholders to feed into the next phase of planning for Fishermans Bend. This objective was to be addressed by responding to two key questions:

- Are there any issues with the proposed road network from a utility perspective?
- What critical issues from a servicing perspective need to be focused on in the next stage of planning for the precinct?

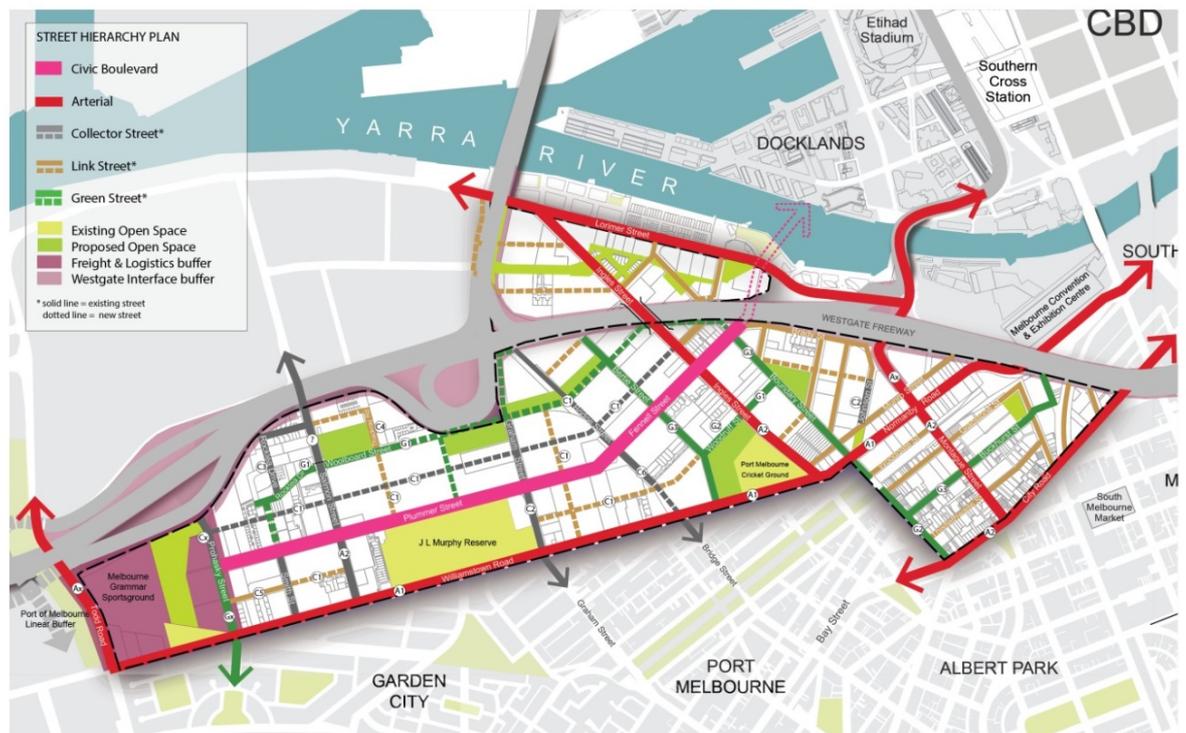
1.4 Information Provided

1.4.1 Proposed Road Network

A network of proposed new and realigned roads has been determined by the MPA and was provided to the project stakeholders for discussion purposes. The proposed road network is shown in Figure 2.

Figure 2 FBURA Proposed Road Network Source: Metropolitan Planning Authority

FISHERMANS BEND URBAN RENEWAL AREA / CoPP PROPOSED STREET HIERARCHY (Draft 12.11.14)



1.4.2 Redevelopment Rate Scenarios

MPA provided three development rate scenarios to allow the project stakeholders to gain insight into whether the rate of growth in the FBURA is likely to have a significant impact on provision of utility infrastructure. An overview of the scenarios is provided below.

Development Rate Scenario 1 – Base

- Annual total for Fishermans Bend based on ViF2014
- Montague based on South Melbourne SA2 (50% share to Fishermans Bend)
- Remainder distributed to sub-precincts

Development Rate Scenario 2 – Medium

- Based on benchmark development rates
- Montague / Lorimer - similar to Southbank
- Sandridge - similar to Richmond
- Wirraway - similar to Richmond / Port Melbourne
- Assumes a S-curve development rate (seeding is slow before a growth period, then maturity)

Development Rate Scenario 3 - High

Based on benchmark development rates (20% uplift on Scenario 2)

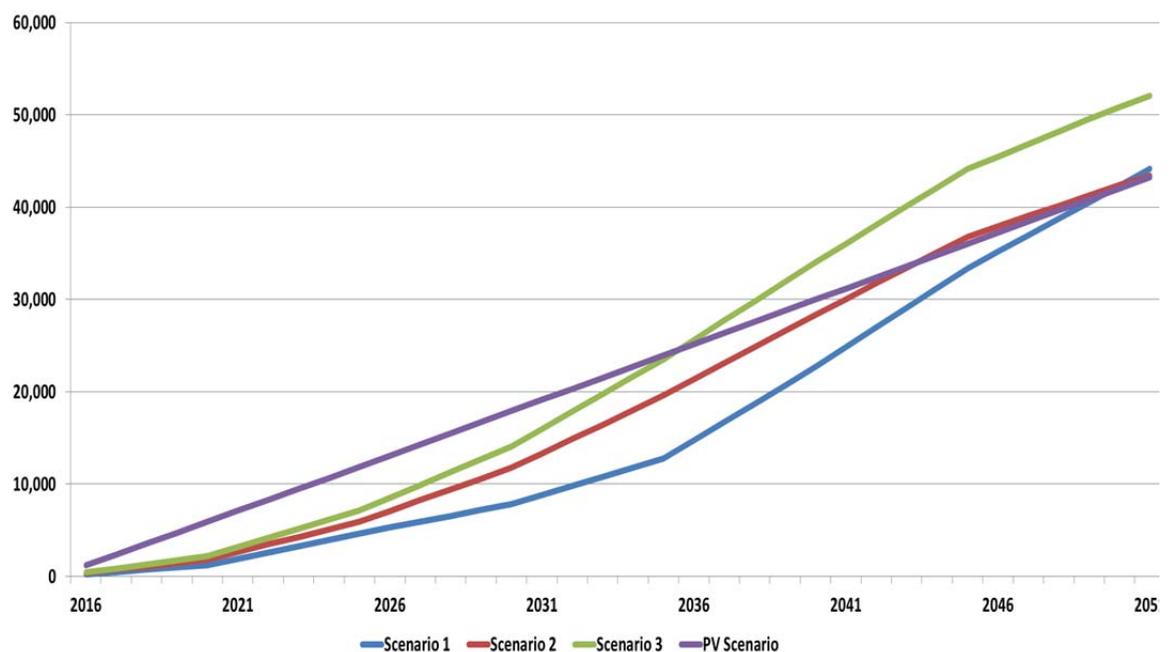
A summary of the rates and timing of development in the Fishermans Bend precinct has been included in the table below.

Table 1 Rates of Growth by Scenario

Timing & Development Rate	2016	2021	2026	2031	2036	2041	2046	2051
Scenario 1 - Base	246	1917	5302	8835	14757	24828	35159	44132
Scenario 2 - Medium	365	2646	7094	13319	21350	30052	37904	43400
Scenario 3 - High	438	3175	8513	15983	25620	36062	45485	52080
PV Scenario - Reference	1186	7116	13088	19123	25158	31193	37228	43263

The three scenarios, plus a Places Victoria (PV) reference scenario are presented graphically in the following figure.

Figure 3 Preliminary Dwelling Projections



Unlike the FBURA, there has been no planning completed for the Fishermans Bend Employment Precinct. As such we were unable to provide any development detail for stakeholders to assess. Rather they were asked to provide high level commentary based on any known issues or concerns.

1.5 Authorities Consulted

The utility stakeholders consulted as part of this project are included below.

EPA	Melbourne Water	City of Melbourne
City of Port Phillip	NBN	Telstra
Optus	South East Water	AusNet Services
CitiPower / Powercor	AEMO	APA
Zinfra (MultiNet)	Viva Energy	

1.6 Assumptions and Limitations

This report: has been prepared by GHD for Metropolitan Planning Authority and may only be used and relied on by Metropolitan Planning Authority as an update to the 2012 Infrastructure Assessment prepared by GHD. Note well that details of the 2012 report may no longer be valid and cannot be relied upon without further detailed consultation with stakeholders.

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2. Fishermans Bend Urban Renewal Area

2.1 Methodology

GHD facilitated a workshop on the 17 March 2015 and subsequently provided a questionnaire to stakeholders that was designed to assist stakeholders to provide relevant information in their detailed responses. The questions were not intended to be exhaustive, with provision of an “Additional Comments” section at the end of the questionnaire to allow stakeholders to provide relevant information that may not have been expressly requested.

The actual responses from stakeholders are included in Appendix A.

An overview of the information obtained from stakeholders over the course of this assessment has been provided below, separated into three sections. A summary has been provided at the conclusion of each section.

2.2 Proposed Road Network

This assessment sought to gain an initial understanding of the impact of the proposed road network on existing and proposed utility infrastructure. The responses obtained from stakeholders during the workshop and from the subsequent questionnaire have been combined under themes that relate to the proposed road network and spatial requirements generally.

What is the impact of proposed road network and cross sections on existing and future utility infrastructure?

- South East Water (SEW) believes its network is unlikely to have capacity for future requirements, so would like to incorporate network upgrades with any road widening or modifications. SEW is concerned that the cross sections have not considered below ground infrastructure.
- APA believes its network will be impacted. The extent to which is to be determined upon review of more detailed proposed plans.
- CitiPower is concerned the proposed cross sections do not allow for existing overhead infrastructure. Any undergrounding would not be funded by CitiPower. CitiPower is also concerned that the cross sections do not show overhead or underground assets. The protection of network assets would need to be considered, particularly where existing transmission and distribution lines are present
- City of Port Philip (CoPP) believes the road allocations are adequate for utility requirements although some consideration of waste vehicle requirements might be necessary.
- City of Melbourne (CoM) expressed concern that some carriageways are wider than in the Strategic Framework Plan.
- Telstra and Optus comment that widening roads generally results in the need to shift infrastructure, depending on excavation depths. Optus identified it has a major hub on the corner of Brady and Fennell Streets that would need to be avoided.
- Forward Planning should be considered as part of any adjustments to the road network, including:
 - Opportunity for authorities to lay new services to accommodate ultimate future requirements to avoid impacting new pavements in the future
 - Rationalisation of communication infrastructure to cater for future technology

- Relocation planning & cutover - Management of customer outages & moving assets
- Rail requirements
- Provision for overland flows
- Future impact of tree root ingress to underground services

What land is required for future infrastructure?

- SEW could require a 7,000 m² site if sewer mining is proposed under the current master plan review. A water service reservoir may be required, as well as pumping stations.
- APA requires a site for a new city gate, which will require approximately a 50 m x 50 m site. APA identified buffers protecting existing pipelines as being their key concern, in addition to the city gate requirement. Future gas distribution pipelines would typically be contained within the road reserves
- CitiPower may require a site for a new zone substation if development increases, potentially this could be located on the site previously suggested for a cogeneration plant. Easements will also be required for new low voltage, 11kV and potentially 66kV cabling in the future. AEMO identified the potential need for a terminal station, depending on the requirements of CitiPower. Additional electricity infrastructure may also be required to support transport such as a tram line through the precinct
- The City of Melbourne (CoM) and Melbourne Water Corporation (MWC) identified resolution of stormwater storage requirements being important to understanding the land requirements. If flooding increases in the area due to redevelopment, flood storage such as retarding basins is likely to be required. Land would also be required for pumping stations if needed.
- Telstra requires land for at least one telecommunications hub.
- As a result of land rezoning in the FBURA, there is concern around the ability of authorities to purchase land for future infrastructure required

2.3 Critical Servicing Issues

This assessment sought to ascertain from stakeholders the critical servicing issues for the FBURA to feed into the next stage of planning being conducted by the MPA. The responses obtained from stakeholders during the workshop and from the subsequent questionnaire have been combined under themes that relate to the critical utility infrastructure considerations.

What is the impact of the three development rate scenarios on existing services and how would the timing of planned works (upgrades, network augmentation, extensions, relocations, new infrastructure) be impacted?

- CitiPower believes that the existing infrastructure can manage incremental and low level development. Medium and high levels of development will require upgrades or replacements of substations, and new transformers. CitiPower is not able to provide detail beyond that provided in December 2012. AEMO stated there would be little impact on the transmission lines; however, CitiPower might request a new terminal station. AEMO would require any additional transmission to be provided in time to suit CitiPower requirements, which could take 5 years.
- CoM stated that redevelopment of Lorimer will need to provide approximately 300 kL of flood storage
- MWC stated there would be no significant impact provided mandatory rainwater tanks are provided as specified in the Strategic Framework Plan.

- SEW needs to complete its master planning to be able to respond.
- Optus will require approximately 3 to 4 months to coordinate undergrounding their services with CitiPower. NBN requires applications from developers to be 9 to 12 months before they are required.

What might be the triggers for infrastructure upgrades?

Likely triggers for infrastructure upgrades include:

- Rate of growth/build-up and population densities that may affect the capacity and sizing of the services network
- Load demands (peak/load profiles)
- Future technology requirements e.g. battery recharge points/power for electrical cars
- Type of development, e.g. residential/business/commercial
- Change in land use
- Public transport

The timing of authority engagement is important in the context of triggering infrastructure upgrades, protection works and relocations. CoPP has noted that presently there is no trigger for notification of authorities in the permit/application process and that it can cause issues for developers when costly utility protection / relocations works are identified late in the process.

APA has also raised the issue of who will pay for major protection works / asset relocations where transmission assets are in close proximity to redevelopment sites in the precinct. Without a Developer Contributions Plan (DCP), the cost for these types of work will fall to individual applicants which may impact the viability of redevelopment of some sites.

Is “out of sequence” development an issue?

Most of the stakeholders agreed that out of sequence development is inefficient.

SEW does not see it as critical as it has well established procedures to deal with the issue.

Is staging necessary for provision of infrastructure to support redevelopment of the Fishermans Bend Precinct?

There was general consensus amongst the stakeholders that staging would be necessary, with the exception of NBN.

How will uncertainty of demand and sustainability initiatives impact provision of infrastructure?

There are several key areas where uncertainty of demand and sustainability initiatives will impact the ability of the authorities to respond to growth in the FBURA as follows:

- Land availability for future infrastructure and easements and for temporary relocation of assets during upgrade vs purchasing new sites
- Lead times
 - Lack of controls for density leads to uncertainty in demand
 - Augmentation lead times where a capacity shortage is identified. Many of the utilities have regulated planning timeframes and processes that determine how they respond to growth
- Policies
 - Energy efficiency policy (impact on demand, building ratings)

- Visual policy which would drive cost and lead times (above versus underground)
- Supply reliability policy
- Increasing demand
 - Staging development integrated with existing development
 - Tipping point for new infrastructure
 - New technologies
- Asset Management
 - Protection of assets from flooding
 - Blockage and stagnancy of stormwater in drains
 - Gas pipelines: separation from schools, concrete slab minimum requirements, existing WAG 24" oil pipeline
- Sustainability
 - Traffic impact and facilitating alternatives to car use
 - Open space provision and overshadowing of open space
 - Achieving environmentally sustainable design in private development
 - Future climate change impact (increased storm intensity and sea level rise)

2.4 Other Questions

There was a range of questions asked beyond the key ones described above. Not all produced significant responses, so the more relevant and important responses are summarised below:

Is HV power undergrounding information still valid?

AusNet commented that the previously supplied estimates contained in the 2012 Infrastructure Assessment for alterations to the 220 kV transmission lines are still valid, although noting that they were indicative only and part of a desktop study. The undergrounding of the 220 kV lines is expected to be extremely costly and would not be funded by AusNet.

Is it possible to underground powerlines and overhead telecommunications infrastructure generally throughout the precinct and how can this be achieved?

CitiPower commented that the majority of their assets are overhead, and that the task of undergrounding is expected to require significant time and costs. Undergrounding or relocation as a result of road realignments, would have to be funded by the developer or Council. In addition, given the industrial nature of the area currently, the zone substations are of the outdoor variety with assets open to view. The cost to redevelop these substations into enclosed indoor substations would be significant and CitiPower has no plans at present to do this within the precinct.

Optus requires an agreement with CitiPower to utilise shared trenches if it is to underground its services.

How will Coode Island Silt be dealt with?

SEW stated that Coode Island Silt can lead to movement of pipe infrastructure over time and that the quality of installation is very important in overcoming this issue.

The EPA commented that it has a waste management policy for acid sulphate soils. They recommend seeking advice from a geotech consultant on the suitability of soils for any proposed development.

How will contamination (solid and groundwater) be dealt with?

EPA commented that a groundwater assessment is underway for Fishermans Bend. The aim of the project is to collect baseline groundwater quality data across Fishermans Bend to potentially be able to declare a “region wide” groundwater quality restricted use zone.

APA noted that there would be difficulty in dewatering in the proposed area.

There is likely to be an impact on pipelines due to the high water table and contaminated soil. This will have an impact on the quality of stormwater discharged from the precinct.

How would like to be engaged by MPA (e.g. level / type / timing of engagement)?

Stakeholders were generally keen to be engaged early. The key exception was the NBN which only wants to engage with individual developers as NBN Co will build on demand.

How would policies and regulations affect infrastructure upgrades (e.g. energy efficiency, standards for precinct design, open space provision, etc.)??

APA stated that a Safety Management Study (SMS) must be completed under the Australian Standard- AS2885 on the development in relation to the APA GasNet pipeline.

3. Fishermans Bend Employment Precinct

The Minister for Planning announced on 17 April 2015 that planning for Fishermans Bend is to now include the Fishermans Bend Employment Precinct. As a result GHD's brief was extended to include high level liaison with stakeholders regarding the impact of proposed development on their infrastructure.

The questions that the stakeholders were asked to respond to were:

- Are there any major servicing and utility issues that will need to be addressed in the early consideration of future growth planning for the Employment Precinct?
- What factors are likely to inform its potential capacity or the future timing or staging of any growth, such as the need for major network upgrades?

Stakeholders were only given a short period to respond, and a full set of responses was not received by the due date. Actual responses are included in Appendix B. It is recommended that further consultation with utility stakeholders is conducted for the Fishermans Bend Employment Precinct.

3.1 Key Comments

A summary of the comments by stakeholder is as follows:

APA Gasnet

Existing gas transmission pipelines within FBURA have sufficient capacity to meet typical urban development demands in the Employment Precinct. However, there is not excess capacity to meet large loads or gas fired generation. Significant upgrades would be required to meet such requirements.

Optus

No major servicing or utility issues are expected. Growth in the areas will depend on demand for new services.

Telstra

Concerns are unchanged from the broader renewal area.

South East Water

Key items raised for the original urban renewal area remain. In addition:

- Expected land take of the potential sewer mining plant has increased from 7,000 m² to 12,000 m².
- More expenditure will be required in the original areas due to larger infrastructure needs going to the employment area through the original area.

CitiPower

CitiPower's high level comment is that the doubling of the development plan will likely accelerate the rate at which new electricity capacity is required in the area. They recommend early consideration of the ultimate requirements for utilities in the area.

CitiPower also commented that the consideration should be given for the appropriate zoning of all land for utilities. They currently have a substation located at 90 Turner Street that is zoned INZ1 rather than PUZ1; a wholesale rezoning of INZ1 to CCZ may cause issues for CitiPower in the future.

4. Conclusion

4.1 Key Findings

GHD received a range of responses from the stakeholders in response during the workshop and in response to the questionnaire. For the Fishermans Bend Urban Renewal Area, the key themes to emerge were:

- The information contained in the 2012 Infrastructure Assessment is generally still valid. The key findings from that report are included in Appendix C, for reference only.
- South East Water and Melbourne Water are currently completing modelling that will provide greater understanding of the future requirements.
- Stakeholders would like early engagement to plan utilities across the entire area. Consideration should be given to when authorities are notified in relation to submitted planning permits.
- Stakeholders generally did not comment on whether the actual proposed road cross sections were appropriate. It would be useful to include overhead and underground utilities on the typical cross sections at appropriate offsets to get a clearer understanding of the situation.
- Land will be needed for infrastructure required to support growth in the precinct, to allow relocation of existing assets affected by the road changes and future development sites and for flood storage.
- The original desktop cost estimates for relocation of the 220 kV power are still valid.
- Without a Development Contribution Plan (DCP) for the precinct, significant costs for utility protection and augmentation works as well as extensions may be attributable to individual applicants / developers which may impact the viability of redevelopment of some sites.

With regard to the Fishermans Bend Employment Zone, the response was much more limited. Nevertheless, the themes from the respondents were:

- Generally capacity exists, but the additional growth / demand in this area may bring forward any upgrade requirements
- The additional growth may lead to increased costs in the original urban renewal area due to the need to upsize future infrastructure to service the employment area
- Consideration should be given to ensuring all land for utilities is appropriately zoned

4.2 Recommendations

Following are key recommendations that emerged from stakeholder responses, discussions at the workshop and discussions subsequent:

- Fully dimensioned typical sections should be prepared, incorporating expected infrastructure at appropriate offsets, for consideration by stakeholders.
- Extend land use planning and demand assessments to incorporate the employment zone to allow development of a more integrated infrastructure master plan. This will allow development of mitigations for any critical servicing issues.
- Review current zoning to consider appropriate land uses near sensitive infrastructure such as oil pipelines and other transmission assets.

- Early development of Developer Contributions Plan (DCP) and consideration of funding mechanisms for large infrastructure costs possibly not covered by the DCP. It is possible infrastructure could be funded through infrastructure charges incorporated in bills.
- Review mandatory referral authorities under the planning scheme to incorporate all affected stakeholders, for example Viva / WAG.
- Further engage with Utility Stakeholders to confirm:
 - What infrastructure is required for full build out and where does this infrastructure need to be located in each precinct
 - How infrastructure will be delivered
 - Constraints and opportunities
- Develop 'Priority List' to allow MPA to focus efforts in the utility sector to facilitate redevelopment in the FBURA and Fishermans Bend Employment Zone.

Appendices

Appendix A – FBURA Stakeholder Questionnaire Responses



1. Questionnaire

Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
<p>1. What is the impact of the three development rate scenarios on the existing services?</p>	<p>The three areas which drive the cost of the assets in this area based on differing scenarios are:</p> <ul style="list-style-type: none"> - Infrastructure size - Difficulty of construction - Land costs <p>(especially in regards to network size and development/staging)</p>	<p>No significant impact on MW drainage infrastructure provided mandatory rainwater tanks specified in the SFP are implemented. No upgrade expected to be required to MW underground drainage system. Some developments may require re-alignment of drains (case by case arrangement).</p> <p>Local drains need to be built as required (Council drains).</p> <p>Retarding basins proposed earlier require land as previously advised (to be confirmed by currently ongoing MW/SEW project).</p>	<p>GasNet pipeline works including pre-development works.</p>	<p>Citipower & Powercor</p> <p>Existing supply for incremental and low level. Med and high level triggers upgrades/replacement of substations and new transformer req.</p> <p>AEMO</p> <p>Little impact on electricity transmission lines (voltage 132kV or higher) AEMO plans unless a DNSP (Distribution Network Service Provider), e.g. CitiPower, requests a new terminal station (transmission substation) supplied at transmission voltage.</p>	<p>CoPP</p> <p>Road upgrades and new roads are needed to service any of the development rate scenarios.</p> <p>CoM</p> <p>Intensive development in Lorimer not likely to have a significant impact on drainage infrastructure. However, Lorimer precinct is vulnerable to flooding (storm events). The re-development of Lorimer provide storm water storage to prevent flooding. (~ 300 kL of storage). Critical drains that take storm water out of the precinct may need to be upgraded (1 in 20 year storm events).</p> <p>Upgrades to utilities should have capacity for the build-out population of Fishermans Bend to avoid digging up roads in the future.</p>	<p>Optus</p> <p>Depending on the power pole relocation and extent of excavation, the impact will be significant. There is a major hub on the corner of Brady and Fennell St's that should be avoided. Relocation of this building will incur significant costs.</p> <p>Telstra</p> <p>Negligible difference.</p> <p>NBN</p> <p>No Impact to NBN Co New Developments as NBN Co builds on demand to New Development sites and is scalable</p>
<p>2. What would be the timing of planned works (upgrades, network augmentation, extensions, relocations, new infrastructure) required to support the three development rate scenarios?</p>	<p>South East Water has not yet completed Master Planning of the area. So is not in a position to give a detailed timing of all the planned assets in the area. Infrastructure to be built for the area will be triggered by one of two things: Connection or Demand. Some factors that complicate these items are:</p> <ul style="list-style-type: none"> - Out of sequence Development. - Funding of Demand Driven Assets. 	<p>Work on underground drains (Council and MW) that need to be upgraded, re-aligned or built will ideally have to coincide with timing of the roadwork. Timing of RBs will be independent on the roadworks.</p>	<p>Relocation works prior to road development works. No plans to duplicate or add extra pipelines.</p>	<p>Citipower & Powercor</p> <p>Citipower's approach to forecasting means timing of any network upgrades relies on accurate forecasts and understanding the cost of removing any potential constraints. At this stage not possible to provide any more detail than Fishermans Bend Infrastructure Assessment from December 2012.</p> <p>AEMO</p> <p>AEMO would plan any new electricity transmission needed in time to suit DNSP downstream needs – see 1. Lead time may be 5 years, or longer if planning permission difficulties arise.</p>	<p>CoPP</p> <p>Ideally roadworks should follow on after abutting land development is completed. However, in some cases new roads will be required before development begins to allow site access.</p> <p>CoM</p> <p>See response to Item 1.</p>	<p>Optus</p> <p>To relocate existing overhead cables we will need to co-ordinate these works with Citipower.</p> <p>For existing underground services it would take approx 4-6 months.</p> <p>Telstra</p> <p>Can be times to suit development profile.</p> <p>NBN</p> <p>As NBN Co build on demand to New Development sites, as long as the developers apply to NBN Co at least 9-12 months before the first service required date then this gives enough time for NBN Co Planning to design and subsequently construct the network necessary for each</p>



Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
						respective development within the precinct.
3. What plant / spatial requirements are there for required works? Where would major infrastructure be likely to be located?	<p>For water, sewer and 3rd pipe no special requirements. However for Sewer Mining Plant (if recommended) require estimated 7,000 m².</p> <p>Due to the high density nature of the development South East Water is expecting the vast majority of its assets to be located in road reserves.</p>	To be informed by MW/SEW project	Assets already in ground. The major gas infrastructure likely for the area would be a new city gate and location is determined by the gas distributor for the area.	<p><u>Citipower & Powercor</u></p> <p>Site for a future new zone substation (potentially the site originally identified for the Tri-Gen Plant on the corner of Graham St and Williamstown Rd.). If existing overhead infrastructure to be removed, require easements for cabling and pits as well as space for substations above/below ground. Provision for future network cabling in roads to be developed to avoid excavation of new roads.</p> <p><u>AEMO</u></p> <p>Any new transmission line is likely to use underground cable, connected to an existing transmission line or terminal station.</p>	<p><u>CoPP</u></p> <p>Road reserves usually also act as utility service corridors. New roads required to provide new utility service corridors.</p> <p><u>CoM</u></p> <p>Need to resolve the amount of water storage needed, and the location of storage tanks in the public realm or on private property.</p>	<p><u>Optus</u></p> <p>The Optus network needs to remain in common land for access purposes.</p> <p><u>Telstra</u></p> <p>Separation of electrical from gas and water (standards).</p> <p><u>NBN</u></p> <p>NBN Co use existing Telstra Pit and pipe where there is enough capacity to get the distribution network to the respective new development boundaries and will build as required. Hard to give specifics at this stage.</p>
4. Is staging necessary for provision of infrastructure to support redevelopment of the Fishermans Bend Precinct?	Yes. See other question responses	To be informed by MW/SEW project	N/A	<p><u>Citipower & Powercor</u></p> <p>Not a definitive but has the potential to provide a more cost efficient outcome.</p> <p><u>AEMO</u></p> <p>Refer to 2.</p>	<p><u>CoPP</u></p> <p>Staging and coordination of development is critical for the redevelopment of the precinct.</p> <p><u>CoM</u></p> <p>See response to Item 5.</p>	<p><u>Optus</u></p> <p>The impacted telecommunication infrastructure would be relocated as required.</p> <p><u>NBN</u></p> <p>No, need existing road reserve bounding at least one section of a New Development within the precinct.</p>
5. Is 'out of sequence' development an issue? What is considered out of sequence development for Fishermans Bend? (e.g. is a particular area more or less difficult to service?)	South East Water does not consider out of sequence development as a critical problem, (well established procedures- established and based primarily on green field developments).	Out of sequence development does not (providing reserved storage is provided).	N/A	<p><u>Citipower & Powercor</u></p> <p>Less efficient, higher costs, more works.</p> <p><u>AEMO</u></p> <p>N/A</p>	<p><u>CoPP</u></p> <p>Out of sequence development will lead to poor outcomes – inefficient use of resources, disruption to services etc.</p> <p><u>CoM</u></p> <p>Need to consider how new roads will be delivered if incremental development occurs (i.e. where a new road split between two properties along a property line and only one side is developed).</p>	<p><u>Optus</u></p> <p>We have existing services in the ground and on the poles, we will relocate them as required.</p> <p><u>Telstra</u></p> <p>Out of sequence is inefficient. Gaps in infrastructure to be filled alter/on interim basis and require attention.</p> <p><u>NBN</u></p> <p>No. NBN Co build on demand.</p>
6. What might the triggers for service	Infrastructure to be built for the area	N/A	New Roads and Re-	<u>Citipower & Powercor</u>	<u>CoPP</u>	<u>Optus</u>



Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
upgrades be?	<p>will be triggered by one of two things:</p> <ol style="list-style-type: none"> Connection: To be occupied a building requires connection to the potable and sewer networks. Reticulation and most distribution assets will be built to meet this requirement. South East Water and developers share the cost of these assets. Demand: In order to ensure that the connected customers are supplied sufficient water for their needs. Transfer, supply and some distribution assets are built when demand begins approaching existing supply. Assets normally delivered by South East Water or Melbourne Water. <p>2 pieces of critical demand driven Infrastructure*:</p> <ol style="list-style-type: none"> Sewer Mining Plant Preston reservoir transfer upgrade 		development of roads crossing the pipeline will likely trigger pipeline upgrade in the form of recoating and physical protection requirements to comply with Australian Standards.	<p>See Q2 response. Also the asset would either need to be close to the end of its life or a sufficient amount of customer load would need to be deemed 'at risk' for distribution network upgrades to be justified under the current regulatory framework. Large upgrades will also require a Regulatory Investment Test for Distribution (RIT-D) to be undertaken which will add additional time.</p> <p>AEMO</p> <p>Refer to 2.</p>	<p>Development over a minimum threshold, requirements to future proof investment, and availability of land/resources.</p> <p>CoM</p> <p>No response provided.</p>	<p>We have existing services that will be relocated, if our design department determine a greater capacity cable is beneficial for the network then this may result in an upgrade. If any businesses require an Optus service this may also result in an upgrade.</p> <p>Demand for services</p> <p>NBN</p> <p>No issues as NBN Co build capacity that is scalable and has plenty of redundancy to cover proposed growth in a development corridor such as this.</p>
7. What land is required for future infrastructure?	See Q.3		Appropriate buffers along existing APA pipelines for protection to mitigate future pipeline integrity breaches. For the city gate ~ 50m x 50m of land required.	<p>Citipower & Powercor</p> <p>Not possible to define specifics at this stage (see Q2 and Q3).</p> <p>AEMO</p> <p>Refer to 2 for a new terminal station. Two 220 kV underground cable transmission lines, each requiring a 13m wide easement, may be needed to reliably connect a new terminal station. If these lines connect to existing overhead lines "underground/overhead" transition stations are also needed at ground level, each with a fenced plan area of notionally 25mx45m.</p>	<p>CoPP</p> <p>Open space, road reserves, widening of existing road reserves, utility reservations, potential use of private building envelopes.</p> <p>CoM</p> <p>Need to resolve the amount of water storage needed, and the location of storage tanks in the public realm or on private property.</p> <p>MWC</p> <p>See Q1</p>	<p>Optus</p> <p>Common land to relocate cables, if a relocation is required.</p> <p>Telstra</p> <p>Land required for at least one telecomms hub and need land to site mobile infrastructure (antennae).</p> <p>NBN</p> <p>None at this stage but NBN Co will work with respective developers as to the requirements to service their site.</p>
8. How would you manage any potential	See Q. 6 as well as... Due to uncertainty with population, end use patterns and development sequencing.	No major issue expected as/if the development controls are implemented.	N/A	<p>Citipower & Powercor</p> <p>Capacity constraints from a low development rate would be managed</p>	<p>CoPP</p> <p>Road network – congestion and delays will occur in and</p>	<p>Optus</p> <p>Optus has contractual agreements with customers regarding any disconnections.</p>



Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
shortage/capacity constraint during augmentation works lead times?	These assets can only be forecasted within a certain range of timeframe.			<p>in the short term through load transfers within CitiPower's existing distribution network, although development of new distribution infrastructure to service a high development rate will have a significant lead time. Under the current regulatory framework, only when upgrades are economically justifiable, with sufficient load at risk, can development of new capacity be considered. This has the potential to limit the rate of development.</p> <p>AEMO Refer to 2.</p>	<p>around precinct.</p> <p>CoM No response provided.</p>	<p>If we are working to the 4-6 month relocation timeframe then this will not be an issue. If an urgent relocation was required and the infrastructure was in place we could reduce this time to 6 weeks.</p> <p>Telstra Fixed line telephone shortfalls managed by use of mobile phone tech.</p> <p>NBN NBN Co will manage with the respective Developers and any other relevant stakeholders on a case by case.</p>
9. What is the impact of proposed road network on existing services? Do road widenings/realignments result in a need for relocations or easements?	<p>The impact of the proposed road layout are: More road generally equal more space for assets & The lot layout is more critical than the road layout in determining the number of assets required.</p> <p>South East Water's existing assets in the area are at different ages, materials and condition. They are unlikely to be of sufficient to meet the expected demands. So if/when road widening/realignment occurs we want to be notified in sufficient time to allow for proposed action on a case by case basis. We can then carry out realignments, relocation or renewal as required.</p>	In designing roads, they will still need to think about overland flow paths and the future sea level rise.	Proposed road networks will impact on APA's high pressure transmission pipeline. Construction methodology must be sensitive to high pressure pipeline assets.	<p>Citipower & Powercor</p> <p>The indicative cross-sections provided show no allowance for any of the existing overhead electricity distribution assets to be retained so road widening / road realignment requires relocation or undergrounding of existing overhead assets.</p> <p>AEMO Any needed underground transmission line may need to be located (notionally 1m) under a road.</p>	<p>CoPP New road type sections will require re-location of utilities e.g. underground power lines. New roads provide adequate space for service conduits under the road reserve e.g. footpath or traffic lanes.</p> <p>CoM Please note that Figure 1 (Fishermans Bend Proposed Road Network) above does not show proposed north-south 12 metre streets and potential laneways in Lorimer (see http://www.mpa.vic.gov.au/wp-content/uploads/2014/07/PLA-N-5-LORIMER-Precinct-Plan_140620-WEB.pdf)</p>	<p>Optus The Optus assets are primarily located underground and on power poles in footpath reserves and also cross under roads, depending on the extent of the road widening and excavation depths would determine if a relocation was required.</p> <p>Telstra Road widening generally causes shifted infrastructure, however widening of Plummer St not a huge issue (existing cables small).</p> <p>NBN Relocation works for most of this area would be managed through Telstra as they own the pit and pipe infrastructure and if they are notified of any such works would work with all telco's including NBN Co to manage outages on a case by case basis. As long as appropriate Land Access processes are followed then there should be no issue.</p>
10. Do proposed cross sections work from a servicing perspective?	Overall South East Water is concerned that the cross section have not considered below ground infrastructure. The water and sewer codes indicate specific requirements that must be met for asset built by or	See Q.9	APA to be involved in design plans for proposed transmission pipeline assets.	<p>Citipower & Powercor</p> <p>Cross sections provided show no overhead or underground assets. It has been assumed that it is intended to have all electricity distribution assets underground. More detailed</p>	<p>CoPP All road cross sections provide sufficient width for services. Consideration of waste collection vehicles must continue to be thought through</p>	<p>Optus ?</p> <p>Telstra No difficulties</p>



Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
	<p>on behalf of South East Water.</p> <p>There does not appear to be sufficient space for above ground stormwater infrastructure, such as swales.</p> <p>(detail incl. cross sections, provided in SEW ppt presentation)</p>			<p>assessments would be required to understand the amount of space that would be needed in each road proposal.</p> <p>AEMO</p> <p>N/A</p>	<p>in developing detailed designs.</p> <p>CoM</p> <p>Should these be consistent with appendix 1 in the Strategic Framework Plan (SFP)? What are the reasons for the changes?</p> <p>Some road carriageways shown are wider than in the street sections in the SFP. They should be no wider than the carriageways in the SFP to allow more space for footpaths or landscaping.</p> <p>Utilities infrastructure should be planned to meet demand of the built-out population of FBURA to avoid the need for servicing.</p>	<p>NBN</p> <p>Unlikely to be a major issue but cannot say until specific works are commenced.</p>
<p>11. Is HV power undergrounding information still valid?</p>	<p>It will be important for all asset owners to ensure that assets are built with the acceptable clearances.</p>	<p>N/A</p>	<p>Proposed cross-sections of utilities and services crossing the APA GasNet assets must be approved by APA.</p>	<p>Citipower & Powercor</p> <p>The original statement that CitiPower has no plans to underground any of the electricity distribution assets within precinct still correct. Relocation or undergrounding of existing assets as a result of changes to the road network would need to be covered by council. It is still CitiPowers intention to keep any distribution network upgrade works limited to a voltage level of 11kV.</p> <p>AusNet Services</p> <p>The information previously provided for transmission lines can still be used for planning purposes, but was a desktop study to provide indicative cost estimates and options to underground or relocate the 220 kV transmission lines in the area. Transition stations inside the precinct will still be required for the underground options.</p> <p>AEMO</p> <p>N/A</p>	<p>CoPP</p> <p>N/A</p> <p>CoM</p> <p>No response</p>	<p>Optus</p> <p>N/A</p> <p>NBN</p> <p>Unknown</p>



Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
12. Is it possible to underground powerlines and overhead telecommunications infrastructure generally throughout the precinct and how can this be achieved (e.g. regulatory controls, charging zones etc.)?	It will be important for all asset owners to ensure that assets are built with the acceptable clearances.	N/A	Refer to 9.	<p>Citipower & Powercor</p> <p>CitiPower has no plans to underground any of the existing electricity distribution assets. The majority of the assets in the area are overhead, although it is possible to underground the majority of this infrastructure. The costs and time required to perform this work will be substantial.</p> <p>AusNet Services</p> <p>The undergrounding of the 220 kV overhead lines is expected to be extremely costly and will have to be funded by the developers.</p> <p>AEMO</p> <p>N/A</p>	<p>CoPP</p> <p>Yes</p> <p>CoM</p> <p>No response</p>	<p>Optus</p> <p>An agreement would need to be undertaken between Optus and Citipower in regard to the utilization of a shared trench arrangement. The shared trench arrangement can have substantial cost savings for the project.</p> <p>Telstra</p> <p>Yes open trenches.</p> <p>NBN</p> <p>All New Developments install the NBN Co infrastructure underground and it is unlikely that there will be any overhead infrastructure in this area. However if this is required then NBN Co's relocations department would work with your relevant stakeholders to manage this.</p>
13. How will Coode Island Silt be dealt with?	Coode Island silts may lead to movement of pipe infrastructure with time, the quality of installation is very important.	Need to be guided by EPA requirements. Sufficient cost factor will be allowed in the cost estimation of required works.	N/A	<p>Citipower & Powercor</p> <p>CitiPower and Powercor maintain internal processes and work instructions to manage waste in-line with Victorian regulations and Australian Standards</p> <p>AEMO</p> <p>N/A</p>	<p>CoPP</p> <p>N/A</p> <p>CoM</p> <p>Needs to be funded through DCP</p>	<p>Optus</p> <p>It will be tested. All contaminated soil will need to be sent to a treatment plant for processing.</p> <p>Telstra</p> <p>Consult experts</p> <p>NBN</p> <p>N/A</p>
14. How will contamination (solid & groundwater) be dealt with?	Contaminated ground will be handled by the deliver contractor, but it is expected that the costs of delivering assets will be higher as a result. The high ground water level incentivises above ground and shallow assets. So any large infrastructure (sewer mining, pump stations) may have to be built above ground to be built in a cost efficient manner. A regional based contaminated ground strategy would be welcomed.	Need to be guided by EPA requirements. Likely to be not applicable for MW drainage works.	N/A	<p>Citipower & Powercor</p> <p>CitiPower and Powercor maintain internal processes and work instructions to manage waste in-line with Victorian regulations and Australian Standards</p> <p>AEMO</p> <p>N/A</p>	<p>CoPP</p> <p>N/A</p> <p>CoM</p> <p>Needs to be funded through DCP</p>	<p>Optus</p> <p>All contaminated soil and water will need to be sent to a treatment plant for processing.</p> <p>Telstra</p> <p>Consult experts</p> <p>NBN</p> <p>If Pit's/manholes need to be pumped they will be pumped out and disposed of in line with all Australian Standards and EPA regulations as required</p>
15. What measures need to be taken to protect existing	South East Water's existing assets will be protected from damage via the Dial Before You Dig service and the	N/A	No large trees < 5 m of APA assets, re-coating of pipe, no compaction or	<p>Citipower & Powercor</p> <p>Root barriers to stop roots spreading and damaging cables. A minimum</p>	<p>CoPP</p> <p>Risk management – mitigation options e.g. relocate assets,</p>	<p>Optus</p> <p>Optus have a document dealing with anyone working within the vicinity of</p>



Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
network assets (e.g. from flooding, tree roots and excavation)?	requirements set out in the Water Code (e.g. clearances).		vibratory equipment to be used in vicinity, no shock piling construction methods to be used, all plans/designs 'MUST' be approved by APA GasNet prior to works commencing. An APA Pipeline Operator 'MUST' be present to supervise works within vicinity of pipeline.	separation will also be required between the power cables and the root for future routine maintenance and fault repairs. Flood and water table levels are considered in the design of both indoor and outdoor zone substations. AusNet Services Terminal Station control room has to be above flood levels. All assets to be clearly identified prior to major excavations. AEMO N/A	common trench, foot barriers, appropriate tree species. CoM No response	assets. A 'dial before you dig' should be undertaken before any work is started. Telstra No known problems. If development interferes with existing infrastructure then consequences need to be imagined from the outset. NBN Each new development will be dealt with on case by case basis and it is difficult to provide this detail in general.
16.How would you like to be engaged by MPA (e.g. level/type/timing of engagement)?	Currently the MPA sits on a coordination group for water related issues. South East Water is happy with this level of engagement, at this stage. With an eventual transition to BaU work in the area we would be looking for: <ul style="list-style-type: none"> Continued engagement and discussion if changes/clarification are needed to be made with the strategic framework plan Establishment of some type of online/GIS system where information on developments, designed assets and work activities can be coordinated across the authorities/MPA/Councils 	We would like to explore whether MPA and/or Council can administer accounting for drainage infrastructure work required, as a part of processing of the planning permit application.	Any works/development proposals/design of Wirraway (Plummer St) Montague / Lorimer and Sandridge Precincts is completed with APA.	Citipower & Powercor Early engagement and open communication to allow CitiPower to forecast future supply constraints with greater accuracy. Understanding of the type, size and timing of new developments. In the first instance, engagement may be better achieved through telephone or email updates on a regular basis. As development rates increase quarterly meetings could be held, with the frequency of meetings adjusted on an as needs basis. AusNet Services On a needs basis/on receipt of new planning information. AEMO Similar to now during current development stages.	CoPP Open and frequent collaboration – two way, partnership approach. A formal PCG for infrastructure delivery should include CoPP and CoM, as we have a strong interest and role. CoM No response	Optus As much information as soon as possible always helps. Telstra Telstra needs to be advised of impending developments in good time in order for it to plan infrastructure investment and commit adequate resources. NBN NBN Co only needs to be engaged by individual Developers who are building a new development within the precinct at this stage as NBN Co will build on demand.
17.How will the uncertainty of new technologies affect the provision of new infrastructure	<ul style="list-style-type: none"> Digital metering will become the norm. Household water demands may continue to decrease due to more efficient appliances. Some new construction techniques may be developed that reduce the overall cost of 	Not predictable but unproven technologies like smart release tank are not to be relied upon at this stage as flood control measures.	N/A	Citipower & Powercor Not expected to materially impact new infrastructure. AEMO If non-network services such as embedded generation and demand side participation become economically viable solutions for	CoPP N/A CoM No response	Optus With the NBN rolling out in the new areas (green sites) Optus would only look to relocate existing services unless a commercial customer set up in the new area and required an Optus service. Telstra (excluded telstra comments)



Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
	<p>assets.</p> <ul style="list-style-type: none"> Changes in treatment technologies (nano technologies or new membranes) may reduce the size and running costs of the proposed sewer mining plant. South East Water has developed a technology product called tank talk (http://www.iota.net.au/water/tank-talk/) which may become important in balancing the rainwater objectives listed in the SFP, objective 7.1 guideline 2 and 3. 			<p>addressing network constraints, it may reduce the need to procure new transmission infrastructure.</p>		<p><u>NBN</u> NBN Co is building current infrastructure to new developments that is developed to move well into the future.</p>
<p>18. What should be included in a Development Contributions Plan (DCP) if implemented in the area?</p>	<p>In some cases (such as the proposed sewer mining plant) small portions of the customer base will be the sole beneficiary of the asset. South East Water will be considering its options for cost recover after completion of the FBOE work. Two methods that might be considered are:</p> <ul style="list-style-type: none"> New customer contribution charge (Section 1.3.2 of the Land Development Policy) Requesting MPA/Councils to collect as part of any developer contributions plan. <p>Cost of land will be a critical item that SE Water would want to see a mechanism for cost recover for.</p>	<p>DCP should contribute to retarding basins if these are feasible. If pump and sump provision means that retarding basins are not required, DCP should contribute to the associated infrastructure (to be confirmed by MW/SEW study).</p>	<p>Re-coating (and slabbing if applicable) of sections of the APA GasNet high pressure transmission pipelines particularly at road crossings.</p>	<p><u>Citipower & Powercor</u> If a Development Contributions Plan is used as a mechanism to levy contributions for precinct wide infrastructure, this could be used to fund the cost of undergrounding the majority of the pre-existing overhead infrastructure as the majority of these costs would need to be met by a 3rd party. <u>AEMO</u> Refer to 2 & 3.</p>	<p><u>CoPP</u> Provision and development of open space, road widening. Cost of infrastructure new/upgrades (subject to sufficient DCP revenues) <u>CoM</u> Audit of drainage infrastructure (the City of Melbourne may undertake a CCTV audit of drains in catchment 21, which includes Lorimer, in 2015-16). Upgrade of drainage infrastructure (including tidal flaps for drains discharging in the Yarra River as req.). Drainage infrastructure for new streets. Storm water storage tanks. Shortfall between new open space identified in the SFP and open space provided by 8 % open space contribution. Additional open space identified by the forthcoming Lorimer Structure Plan. Streetscape upgrades for Lorimer Street, Graham Street,</p>	<p><u>Optus</u> ? <u>Telstra</u> (excluded telstra comments) <u>NBN</u> Potentially upgrading of Telstra's Pit and Pipe network where necessary.</p>



Question	SEW*	Melbourne Water	Gas(APA)	Citipower & Powercor / AusNet Services / AEMO	CoPP / CoM	Optus / Telstra / NBN
					<p>Ingles Street, Rogers Street and Hartley Street. The DCP needs to include funds to manage soil contamination due to Coode Island Silt or the use of Fly Ash in existing road bases. Design and construction of new streets.</p> <p>Street lighting in new streets and lighting in parks.</p>	
19. Is there a potential cost saving if infrastructure was installed based on projected growth in the Fishermans Bend Precinct as a whole, rather than incremental increases due to site scale redevelopment?	Yes – see responses to other questions/ppt presentation	Not for MW infrastructure.	No	<p><u>Citipower & Powercor</u></p> <p>Envisaged that cost savings could be made by installing in-ground ducting infrastructure for the expected ultimate growth of each precinct at minimal cost. This would reduce the time required for the provision of new connections to all services in future and should reduce long term costs.</p> <p><u>AEMO</u></p> <p>Not anticipated, but reserving easement for any anticipated transmission line is expected to provide potential cost saving and reduce later community dislocation.</p>	<p><u>CoPP</u></p> <p>From a practical viewpoint, it would be far more cost efficient to undertake works across the whole precinct or in major stages (precinct by precinct).</p> <p><u>CoM</u></p> <p>No response</p>	<p><u>Optus</u></p> <p>It would prove more cost effective to undertake the relocation work all up rather than incremental.</p> <p><u>Telstra</u></p> <p>(excluded telstra comments)</p> <p><u>NBN</u></p> <p>Maybe in the main trunk routes but not too much more than this as NBN Co build on demand.</p>
20. How would policies and regulations affect infrastructure upgrades (e.g. energy efficiency, standards for precinct design, open space provision etc)?	<p>Policies affected: Strategic Framework Plan, Green Star/Nabers, Development Front, Precinct Level Design & Worksafe Policy on Asbestos Cement Pipes.</p> <p>(see ppt presentation for details on change and impacts)</p>	Need more specific questions on this. In general, greater amount of planned open space will provide flexibility in availability and location of flood storage and hence are likely to provide reduced flood risk. Ideally, flood prone land should be mainly left alone as open space and easements.	Open space provision along the pipeline corridor to provide a buffer. A Safety Management Study (SMS) must be completed under the Australian Standard- AS2885 on the development in relation to the APA GasNet pipeline.	<p><u>Citipower & Powercor</u></p> <p>Increased energy efficiency may reduce the demand which may act to delay the onset of any network constraints.</p> <p><u>AEMO</u></p> <p>Incremental effect is anticipated. Viewed another way timing may advance or recede.</p>	<p><u>CoPP</u></p> <p>Rules and regulations have a better chance of achieving energy and water efficiency, standards. Put in place as soon as possible and allow infrastructure providers to design/plan infrastructure accordingly.</p> <p><u>CoM</u></p> <p>No response</p>	<p><u>Optus</u></p> <p>Optus need to comply with all existing Government regulations regarding working within common ground. Optus need to be mindful of, Heritage, Aboriginal, Environmental and Council requirements.</p> <p><u>Telstra</u></p> <p>The type of infrastructure Telstra needs supports these ideals and is largely non-obtrusive from a visual perspective (e.g. underground plant, mobile towers in parks, etc.).</p> <p><u>NBN</u></p> <p>No foreseen issues.</p>



2. Additional Comments

Additional Comments / Advice / Information	Organisation
It is not clear how utilities infrastructure planning will take into account sustainable built form and open space scenarios, and their impact on demand; localised renewable energy generation and rollout of district systems such as stormwater harvesting/use, third pipe systems, district heating/cooling/generation. How will utilities infrastructure facilitate the sustainability goals of a low carbon city; water sensitive city; climate adept city; connected and liveable city; and a low waste city as per the Strategic Framework Plan?	City of Port Phillip
SEW acknowledges the likely high costs of installing deep gravity sewers and will be investigating opportunities that may exist with pressure systems. SEW would also like to reemphasize the requirement for all our sewerage assets to be built in the street and not at the rear of properties. *SEW has provided an extensive ppt presentation addressing the above in greater detail	South East Water
Having a contacts checklist for any New Developer developing in this precinct to ensure they cover all services such as having a contact for NBN Co on a register that Developers can call to meet and discuss NBN Co offerings in the area.	NBN
APA has restrictions relating to proximity of electrical assets from APA transmission pipelines.	APA
EPA only responded to 13 & 14. 13. Coode Island Silt - Seek advice from a geotechnical consultant on suitability of soils for proposed development. EPA has waste management policy for acid sulfate soils. See link http://www.epa.vic.gov.au/about-us/legislation/waste-legislation/waste-management-policies#acid 14. Land and groundwater contamination – Legislation in this link http://www.epa.vic.gov.au/about-us/legislation/land-and-groundwater-legislation . In addition, a groundwater quality assessment works for Fishermans Bend is underway. The aim of this project is to collect baseline groundwater quality data across Fishermans Bend to potentially be able to declare a 'region wide' groundwater quality restricted use zone.	EPA

Appendix B – Fishermans Bend Employment Precinct Stakeholder Responses



Employment Precinct Comments	Organisation
<p>The transmission of natural gas involves transporting gas through pipelines from extraction to reticulation processing facilities at city gates or field regulators, and direct supply to major customers, including distribution businesses. APA GasNet is the transmission pipeline network asset owner.</p> <p>Gas is depressurised at city gates and field regulators to appropriate pressures for the distribution of gas to final users which can include commercial and industrial users as well as residential users. Gas is transported in smaller volumes and at lower pressures through the distribution networks than along the transmission pipelines.</p> <p>The asset manager organisation Zinfra is responsible for the gas distribution assets in the Fishermans Bend Precinct on behalf of Multinet Gas, the asset owner.</p> <p>There are no gas transmission pipelines within the Lorimer Street Precinct.</p> <p>A 150 mm diameter gas transmission pipeline extends along Boundary Street to the old Symex site. From Boundary Street, a 750 mm diameter transmission pipeline extends along Buckhurst Street and then runs south along Railway Place to the edge of the precinct. A gas transmission pipeline also crosses the easternmost corner of the Montague Precinct along Cecil Street.</p> <p>In the Fennell Street Precinct, a gas transmission line extends along Boundary Street from the south to approximately fifty metres north of Munro Street.</p> <p>In the Plummer Street Precinct, a 750 mm diameter gas transmission pipeline runs along the extension of Howe Parade through the Melbourne Grammar Sportsground, extending along what would be the extension of Howe Parade, then along the same alignment as the overhead electricity cables to the west. This gas transmission line bisects the south west corner of the Plummer Street Precinct. This pipeline is protected by an easement within the privately owned sportsground property; however there is no APA GasNet easement in the municipal reserve bounded by Williamstown Road and Howe Parade.</p> <p>The 750 mm diameter gas transmission main that passes through the Montague and Plummer Street Precincts is a major APA GasNet asset that provides gas supply to approximately one third of Melbourne customers, as well as Ballarat, Bendigo and Geelong. This asset was constructed in the late 1960s. Where an easement is registered on title or the gas transmission main is located within Crown Land, APA GasNet has the right to review/approve any development proposals under the Pipelines Act.</p> <p>This pipeline is considered by APA GasNet to be a major asset and pipeline protection works may be required for asset integrity and public safety reasons.</p> <p>These gas transmission pipelines have sufficient capacity to meet future growth planning for the Employment Precinct typical of urban development, the asset does not have excess capacity for large loads or gas fired generation and significant networks upgrades would be required to meet such a large demand.</p>	<p>APA</p>
<p>There are no major servicing or utility issues to be addressed unless existing assets need to be relocated. We do have an exchange on the corner of Fennell & Brady St's which needs to be kept in mind with any design that could result in it needing relocation as it will be an expensive exercise.</p> <p>The future growth for the area will depend on the demand for new services; this will be driven by company's looking to connect to the Optus network.</p>	<p>Optus</p>
<p>Telstra's concerns are unchanged from those portrayed in the questionnaire we responded to.</p>	<p>Telstra</p>
<p>Q0 Has there been any revision to the original proposal not considering the employment area?</p> <ul style="list-style-type: none"> • The expected land take of the potential sewer mining plant has gone from 7,000 m2 to 12,000 m2 • Costs have been refined (Final numbers not yet available but are in the same magnitude) <p>Q1 In terms of what differences the employment area has on our previous response?</p> <ul style="list-style-type: none"> • Key items raised in the first response and in the SFP development process earlier remain the same <ul style="list-style-type: none"> – Land/money for infrastructure works will need to be made available for some works or a requirement on developments for on lot controls. – Certainty around population/employment numbers and the expected land use will be critical for planning. – Certainty around on lot efficiency targets – Certainty around provision of the 3rd pipe in lots. – The provision of RW to the area will depend on the outcomes from a study currently rapping up for the original Fishermans Bend Area. – Anything that reduces SEW's exposure to land cost will be beneficial – Coordination of works (especially with road construction) will help reduce overall costs. – It is important that streetscapes consider underground services when determining reserve widths. – The allowance for on street flood control (e.g. swales) is also important • Impacts of the new area on the old could be: <ul style="list-style-type: none"> – More expenditure in the original area due to larger infrastructure needs going to the employment area through the proposed area. – Alternative Water proposals may or may not be more viable due to increased concentration of development areas. <p>Q2 Any major servicing and utility issues that will need to be addressed in the early consideration of future growth planning for the Employment Precinct, and</p> <ul style="list-style-type: none"> • On lot controls will need to form part of any framework plans for the new area (like the SFP for the original area): 	<p>SEW</p>



- In building 3rd pipe
- On lot rainwater capture and reuse
- Requirement to notify authorities when road works are occurring.

Q3 What factors are likely to inform its potential capacity or the future timing or staging of any growth, such as the need for major network upgrades.

- Population/employment numbers over time and ultimate.
- Type of land use
- If industrial the type of industry heavy water users (Kraft factory) or not (warehouse).

At a high level the addition of this new development area and a doubling of the whole development plan will, if it proceeds, accelerate the rate at which new electricity capacity will be required in the area. Our comments provided in response to the workshop questionnaire will therefore still hold true although with an accelerated timeframe. The new precinct contains our existing Fishermans Bend ('FB' & 'E'), West Gate (WG) and Docklands (DLF) zone substations. This means that, at present, there is supply capacity in the vicinity which would make new connections easier to achieve.

In general, we recommend that consideration be given to the ultimate requirements for utilities in the area at an early stage. If these requirements can be incorporated into any road re-development at the outset of development then it will avoid the need to open the roads continually in order to run cabling as new connections are requested. We see this consolidated approach as providing the most cost effective solution for development of a large precinct in the long term, rather than a piecemeal approach to new utilities connections and distribution upgrade.

With regards to any rezoning of the area. In order to safeguard supply, both in the short term and for the ultimate development, we recommend that any changes to zoning for the area ensure that all existing land for utilities (i.e. water, gas, electricity) is zoned appropriately (i.e. PUZ1). We are aware that our DLF zone substation, located on the 90 Turner Street block, is currently zoned as IN1Z rather than PUZ1. This is inconsistent with the other zone substation in the area which are PUZ1. At this stage it does not pose a problem to us but, should the precinct be re-zoned wholesale to the Capital City Zone, this could create issues for us retaining use of the site in future.

Citipower/Powercor

Appendix C – 2012 Infrastructure Report Key Findings

Sector	Findings
General	<p>Consultation with key utility provider and asset owner stakeholders throughout the master planning, design and construction phases is recommended</p> <p>Co-ordination of construction of utility assets with other underground services may reduce project costs</p> <p>Relocations of major transmission and trunk assets, if required and attributable to developers, could prove prohibitive due to the high likely costs</p> <p>Developer Contribution Plans for the installation, relocation and upgrade of utility networks, road and tram infrastructure are recommended to be established as early as possible. This is of particular importance for any precinct wide servicing strategies</p>
Stormwater Drainage & Flooding	<p>Contaminated ground conditions are likely to increase costs associated with upgrade and asset duplication works</p> <p>New Special Building Overlays are being prepared by CoPP and MWC and are anticipated to be in place by mid 2013</p> <p>The extent of flooding, particularly within existing overlays in 5 year storm events, may not be considered acceptable to developers</p> <p>MWC would like to see no impact on stormwater flows due to any increase in impervious areas for established areas</p> <p>Stormwater and rainwater harvesting should be considered</p> <p>The scale and risk of inundation due to the effects of climate change in the Fishermans Bend Precinct is not certain but MWC, CoPP and CoM are likely to consider climate change and risk mitigation measures in their planning for future scenarios</p>
Water Supply	<p>South East Water has upgrade works planned in the medium term to increase supply to the Fishermans Bend Precinct</p> <p>The timing and density of redevelopment may trigger or increase the capital expenditure required for these upgrade works</p> <p>An additional connection to the MWC main in Punt Road may be required for the low, medium and high density redevelopment scenarios</p> <p>An underground storage / balancing tank may be required to support supply required for the medium and high density redevelopment scenarios</p> <p>Developers will be required to make standard regulated development contributions as well as fund the construction of the water reticulation network within developments</p>
Sewerage	<p>There is expected to be adequate capacity in the trunk sewerage network to support redevelopment</p> <p>Developers will be required to make standard regulated development contributions as well as fund the construction of the sewerage network within developments</p> <p>New reticulation pipelines and ancillary infrastructure may be more expensive to install than in other areas due to the contaminated and poor ground conditions</p>
Integrated Water Management	<p>City of Port Phillip, City of Melbourne, South East Water and Melbourne Water are all supportive of an Integrated Water Management strategy being developed for the Fishermans Bend Precinct.</p> <p>It is recommended that The Office of Living Victoria (OLV) is consulted as part of the conceptual and feasibility stages of the Fishermans Bend Precinct.</p> <p>It may be possible to defer or decrease the depth of new infrastructure or upgrade works due to the implementation of an IWM strategy</p>
Electricity	<p>New 11kV feeders and local substations to match the load generated by redevelopment are likely to be required. The costs of these assets are typically attributable to developers.</p> <p>The majority of electricity assets within the Fishermans Bend Precinct are overhead, with the exception of underground lines in Lorimer Street. The costs associated with undergrounding electricity lines are expected to be borne by developers.</p> <p>CitiPower and SP AusNet have significant upgrade works planned in the area. Works at the zone or terminal substation level and in the transmission network are unlikely to be attributable to developers.</p>

Sector	Findings
Gas Supply	<p>Zinfra has reported that the establishment of an overall servicing strategy for the Fishermans Bend Precinct as early as possible would maximise efficiency of construction for required gas assets and reduce long term costs</p> <p>Typically provision of gas is at a lower cost to the asset owner for areas where high pressure gas mains are present or in close proximity and the cost of reinforcements for smaller consumers (typically residential developers fall into this category) is borne by the asset owner (MultiNet Gas)</p> <p>The financing of extensions of the gas network are economically feasibility tested and costs may be attributable to the developer who requests the extension</p>
Energy Initiatives	<p>Zinfra and CitiPower have suggested that energy efficiency and innovative opportunities could be considered for the Fishermans Bend Precinct</p> <p>The impacts of a co or tri generation scheme on the electricity and gas networks should be considered for any building or precinct wide distributed energy systems</p>
Shell and BP Pipelines	<p>A 24" WAG Shell fuel pipeline in located parallel to the gas transmission pipeline in the Wirraway Precinct</p> <p>Clearance of three metres is required to gas and fuel pipelines under Section 120 of the Pipelines Act 2005. In practice, a clearance distance of six metres is considered by Shell to be more appropriate where this can be achieved</p>
Tele - communications	<p>Clearances to Telstra assets are required to be maintained in redevelopment scenarios.</p> <p>There are likely to be significant costs associated with the relocation of existing Telstra assets if required</p> <p>A temporary NBN solution may be required to support redevelopment prior to the rollout of the permanent network</p> <p>The scale and density of development in the Fishermans Bend Precinct may result in it being granted priority in future rollout planning and may require NBNCo to allocate greater capacity to the area</p>

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