

Baldivis substation landscaping & screening design community workshop #2

Meeting date: Tuesday 25 May 2010

Meeting no: 2

Start time: 6 pm

Finish time: 7.45 pm

1. Meeting attendees

The workshop was attended by a total of 12 people, 4 Western Power representatives and 7 community/stakeholder representatives and 1 representative from land developer Australand.

2. Introduction/Overview

Western Power hosted the second in a series of landscaping and screening design workshops on Tuesday 25 May 2010, to discuss the landscaping and screening design for the proposed Baldivis substation.

The workshop ran from 6 pm – 7.45 pm and was facilitated by independent facilitator Carol Whish-Wilson.

Invitations for the workshop were letter-dropped to around 400 residents in the local area, and invitations were also extended to key project stakeholders who have been involved in the project to-date. Advertising was undertaken in local papers, and information made available on the website.

Attendees were provided with an information pack which is available on the 'Projects' section of the Western Power website, www.westernpower.com.au. Hard copies of these materials are available on request.

3. Purpose

Building on the previous meeting, the workshop purpose was:

- For Western Power to provide the community with an update and information about landscaping and design;
- To identify a preference for a wall/fence option from the photo montages;
- Seek ideas, comments and preferences from community members to move forward to landscape design, and
- Answer any queries the community may have.

4. Meeting agenda

Key agenda items for the session were:

- Welcome, introductions, overview
- Project timing and update

- Draft concepts and implications
- Next steps

Meeting attendees were given the opportunity to ask questions and make comment throughout the session.

5. Previous Actions

Kathy Craig reported back on Actions from previous meeting. A summary is provided below.

- *Western Power to engage with the City of Rockingham regarding improvement of plantings along Eighty Rd – Western Power has commenced this discussion, with a hope that plantings may be able to happen in the next few months in order to get the winter rains. Western Power will pass on the request from a community member to City of Rockingham and the private landowner to plant on both sides of the road. Note: Since the meeting these plantings have been undertaken. On 10 June 2010, Western Power planted tress in the road reserve between Eighty Road and Teasdale Way. This was done in response to concerns raised by residents earlier in the year. As the plants mature they will help to screen the view of the substation which will eventually be blocked by the future development of the market garden area. To address the views from other properties Western Power will be ordering tubestock which will be given to surrounding properties to plant on their own property. The new Project Coordinator, Nick Cullen, will contact residents regarding this in the near future.*
- *Western Power to investigate use of “wall décor” as seen on underpass walls on the Kwinana Freeway extension/Forrest Freeway. Western Power to investigate potential of incorporating artwork in the design – Western Power will investigate this further when the timing is right. Once we know the screening/fencing solution, then this would be the appropriate time to investigate, if relevant. One community member noted that there was still no graffiti on the freeway wall, which is a good result.*
- *Boundary fencing for further consideration in next workshop – yes- up for discussion at this workshop.*
- *Western Power to make more noise information available on the website –done.*
- *WP to consider painting silver reflective surfaces on substation infrastructure, on request of participants. Note: Western Power has investigated this possibility since the workshop and determined that it would not be an appropriate solution for a number of reasons, being:*
 - *Technical – painting would require additional procedures and jumpers between the structures to carry fault currents; earthing of painted structures require additional treatment.*
 - *Painting the equipment would cause maintenance issues as the paint would wear over time, and result in increased maintenance regimens.*
 - *Galvanised surfaces, although shiny at first, tend to fade over time which helps them become less prominent.*

6. Community comment session

Carol Whish-Wilson opened the meeting, summarising some of the key outcomes from the previous session, being:

- A community preference for no fully-solid fence to avoid a block-like structure
- Would like to see weld mesh and possibly combination fencing to hide some of the more visible locations, and potentially mitigate noisier equipment
- Plantings around the substation to soften visual impact
- Potential for mounds to allow for planting level variation, and blend the vegetation in more effectively.

Kathy Craig provided a brief update from Western Power's perspective, noting:

- There is great benefit in the community being involved throughout this design phase, to see it as it changes and evolves
- There will be a third workshop in September, with final draft plans for comment and tweaking
- With the extra time now available to the project, it is a great opportunity to get as much community input as possible.

A summary of the key discussion points and comments raised is provided below.

6.1 Site Levels

- Western Power confirmed that the site is likely to be approximately 0.8 metres below the previously designed level.
- Participants agreed that this is a positive for minimising site visibility. However, it is possible that future developments on the site boundary may then overlook the site and therefore have a greater view of the site infrastructure.

Action: Western Power to consider the impacts of a lower site level on future developments along the site boundary potentially overlooking the site.

6.2 Noise

Community members raised some concerns and queries about noise from the substation, including:

- Concern that Western Power will only do the 'bare minimum' in terms of noise mitigation.
- Would a solid wall be a better solution for noise and what other solutions may be a good result for noise?
- When does a substation make the most noise?
- Western Power should attempt to do as much as possible to reduce noise.
- One attendee commented that it should be noted there will be minimal noise, particularly when you consider background noise generally existing anyway.
- It should be noted that there are a number of noise mitigation techniques which will be considered as the design progresses. We will keep the community informed of this process.
- Once final design is known we will engage a noise consultant to undertake preliminary noise estimates, so that any tweaks can be made to design to ensure noise levels comply with regulations.
- Western Power also takes noise readings once a substation is operational to ensure we comply with standards, and is happy to organise for noise readings to be taken on request of landowners, if they feel noise levels are unacceptable. This is not a common complaint from people who live next door to our substations.

Additional comment provided after the workshop from Western Power's noise expert is provided below:

- The Department of Environment and Conservation (DEC) regulate noise emissions in Western Australia through the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations). The Noise Regulations set noise limits to ensure that noise received at premises is kept to an acceptable level. The basis for the assigned levels (noise limits) within the Noise Regulations is the land use where the noise is received. This method recognises and protects the quiet surroundings people enjoy, whilst recognising the influence of industry, commerce and transport on the noise environment. The assigned noise levels are the levels of noise allowed to be received at a premise at a particular time of the day or night. These assigned levels are adjusted based on the proximity to industrial, commercial area and major roads.
- In a location such as the future Baldivis Substation, the substation must be constructed to comply with an assigned level of 35dB(A) at night and 45dB(A) during the day at the property boundary of all the affected noise-sensitive premises (residential properties in this case). Given that noise reduces as the distance increases from the noise source, only properties directly adjacent to the substation will receive the maximum noise level of 35dB(A). A noise level of 35dB(A) is equivalent to the noise observed within a library.
- Given the proposed future residential development around the Baldivis Substation, noise mitigation will be required to reduce the noise emissions from the substation to comply with the Noise Regulations. The noise mitigation techniques available for the Baldivis Substation include solid boundary walls, large earth mounds or enclosures/walls around the transformers. These noise mitigation options will need to be evaluated taking into account: (1) requirements of site security, (2) technical constraints, (3) visual amenity, (4) future maintenance issues and (5) costs. The selected mitigation technique will achieve compliance with the Noise Regulations and then be incorporated into the overall design. This may reduce the noise levels received at adjacent residential premises to below the required night-time assigned level (35dB(A)). A noise assessment will be conducted once the substation design has been finalised to confirm the requirements for, and effectiveness of, noise mitigation options. A noise assessment will also be completed once the substation is operational.
- The Noise Regulations are designed to provide a 'fair and reasonable' level of noise at all premises, based on the location. Therefore, complying with the Noise Regulations will provide 'a fair and reasonable' level of noise at all premises surrounding the substation. The noise levels we are talking about at the property boundary is equivalent to the background levels of noise found in a library. It has been estimated that inside the house levels would be at least another 5dB(A) quieter.
- Publications regarding noise are available on the Department for Environment and Conservation website: <http://www.dec.wa.gov.au/content/view/3427/1958/>

6.3 Electromagnetic Fields (EMF)

There was a request for more information regarding EMF. Comments included:

- Can materials/structures/walls be installed to reduce EMF? No EMF can not be insulated by walls or other materials. As it is a field which circulates the source, it significantly decreases with distance, so safe electrical clearances inadvertently act to reduce the level of EMF outside the substation boundary.
- A request was received for Western Power to provide EMF reading estimates for this substation site at various points and under various loads. Western Power noted that we could provide indicative readings, based on experience at other substation sites.
- Western Power can provide readings for current sites, which will provide an indication for the community.
- It should be noted that EMFs occur wherever electricity is used. They are a natural by-product of electricity and occur around household wires and electrical appliances. They are also present near distribution lines, transmission lines and substations. EMFs bear no relationship to radiation. By nature they circulate the source as a 'field' and do not 'radiate out'.

- Western Power is committed to following the recommended safe limits of exposure for workers and the public. These recommended safe limits are recommended by the World Health Organisation (WHO) and the National Health and Medical Research Council of Australia (NHMRC). We design, construct and operate our infrastructure in compliance with these guidelines – in fact they are substantially below the guidelines.
- These guidelines are – 1, 000 milliGauss (mG) for continuous 24 hour exposure
- 10, 000 mG for a few hours per day (i.e. occupational purposes)
- Some typical emissions are shown below:
 - Toaster – 5 – 30 mG
 - Hair dryer – 10 – 70 mG
 - Modern 30 cm TV – 0.2 – 2 mG
 - Computer – 2-20 mG
 - Distribution line (directly under the line) – 2 – 20 mG
 - Transmission line (directly under line) – 10 – 200 mG
 - Transmission line (at edge of easement) – 2 – 50 mG
 - Substation (within the substation boundary) -
 - Substation (at boundary fence) – Generally around 2-5 mG
 - Substation (15 metres from boundary fence)
- We recommend that if you are concerned about EMF, you visit some of these sources independent of Western Power for more information and advice –
 - Energy networks Association – www.ena.asn.au
 - Australian Radiation Protection and Nuclear Safety Agency – www.arpansa.gov.au
 - World Health Organisation – www.who.int
 - National Health and Medical Research Council of Australia – www.nhmrc.gov.au

6.4 Fencing type

- Graffiti remained a key concern of many local residents
- Most attendees expressed a preference for a non-block style wall to avoid the visual impact of a solid fence
- The preference of most attendees was for weld mesh, but with the clear message that noise needs to be mitigated as much as possible. A suggested solution for this was for Western Power to look at noise mitigation solutions within the substation (walls etc), and noise bunds. There was also the opportunity to use a mix of wall and weld fencing, with walls to be located in areas of key noise impact or visual areas.
- One attendee expressed an interest in Western Power still considering a solid wall.

6.5 Transformer and cooling fan noise

- A participant noted the potential for acoustic fencing (noise mitigation).
- Western Power confirmed that noise reduction measures would be focussed within the site (around the transformers and cooling fans) to ensure minimal noise levels at the boundary.
- Western Power confirmed that its policy is to use low noise/choose the quieter options in cooling fans and transformers.
- Western Power confirmed that it does receive complaints about noise. They are few and each is fully investigated and acted on where necessary. Complaints have not been received in relation to the new substations which contain newer and quieter transformers.

6.6 Landscaping design

- Community suggested that Western Power take into consideration the fact that the community has a preference for a cheaper fencing option, and use some of the money saved for better quality landscaping.
- Participants confirmed their preference for native, low maintenance, dense plantings, with significant variation in heights and shrubs.
- Participants endorsed Western Power's liaison with David Krane regarding local vegetation.
- Participants endorsed Western Power's intention to ensure plantings are in line with other public native plantings around roadways and public spaces in the area.

Action: Western Power to liaise with David Krane regarding planting.

6.7 Design layout

- It is likely that the infrastructure within the site will be essentially flipped in terms of layout, to allow for the infrastructure to be dropped by one metre.
- This is a positive outcome in terms of visual amenity as the gantry (most visible piece of equipment) will sit around 1 metre lower.
- Will electrical clearances be maintained with original power line heights? Yes.

6.8 Earth Mounds

- Suggestion that Western Power consider varying the earth mounds around the substation, to provide a more effective screening finish.
- Western Power confirmed proposed mounding 1 m high to optimise plantings. Any steeper and it is difficult for plants to take.
- Western Power advised that there is a distance of 3 m between the fence and the mounding. It is planned that mounding will be constructed on all sides except where the substation driveway is located.
- Participants were interested in the option of having mounds running in parallel diagonals from the site boundary, to see if such may further reduce the visual impacts of site/increase the attractiveness of the plantings.

6.9 Fence/Wall Topping

- Participants confirmed that topping is not desired.

6.10 Initial and final configurations

- Western Power confirmed that all development of substation infrastructure would be contained within the current site.
- Western Power confirmed that all distribution cables that feed homes and businesses are intended to run to Pike Road. However, if new roads are constructed as part of future developments, cables will be run directly to these. It is important to note that one purpose of a road reserve is to accommodate utility infrastructure. Each utility service has an allocated alignment for their infrastructure for this purpose. In this case, the alignment for a distribution cable is 0.5 metres from the property boundary.
- Western Power confirmed that there are no plans to drop the existing transmission line, located on Pike Road, below ground.

Action: Western Power to bring samples of transmission cables to the next workshop for community interest.

A substation of this kind is designed to accommodate a total of three transformers and includes two transmission line circuits. The first and second transformer will use the existing transmission line however once a third transformer is required (due to increased electricity demand in the area) a second transmission line will be required. The date for the additional

transformers and second line are unknown at this time and are reliant on the rate at which the area grows. Future assessments may result in the second transmission line being installed as an underground cable in order to locate it in the road reserve and reduce impact on surrounding properties.

6.11 Internal substation infrastructure - surfaces

- Western Power confirmed the use of tilt panels and tin roofing for the switchrooms and control room to minimise the view of substation infrastructure.
- Participants supported further investigation of painting galvanised and aluminium surfaces to minimise reflection. A participant raised the likelihood of salt corrosion of metal surfaces, and the benefits of powder coating to reduce this.
- Western Power noted that it was still investigating the potential for painted metal surfaces. The primary issue is that of the effects on the aluminium conducting structures – the busbars. A participant noted that powder coating or painting load carrying structures can increase the heat generated. Western Power noted that the most visible objects are the gantries and other support infrastructure.
- Participants acknowledged that metallic surfaces will fade, but that painting them is preferred to reduce visual impacts from the time of construction.

Action: Western Power to provide information regarding the possibility of painting/powder coating galvanised and aluminium surfaces.

6.12 Safety & security

- A question was raised as to the best fencing method in terms of safety and security. Kathy advised that from Western Power's perspective, the weld mesh fence would be most desirable, as it allows for a better view from a security perspective, and is designed so it can't be easily climbed.

6.13 Next steps and next meeting

Actions summary – Western Power to:

- Discuss the possibility of plantings on both sides of Eighty Road
- Continue to consider the potential for wall décor
- Boundary fencing to be discussed at the next workshop
- Advise whether the measuring point for decibel levels will be at the site boundary or at the boundary of future developments around the site
- Provide its Environmental Officer's comments on design and noise mitigation and to endeavour to have that Officer at the next workshop
- Provide a chart showing EMF levels across a typical substation
- Consider the impacts of a lower site level on future developments along the site boundary potentially overlooking the site
- Liaise with David Krane with regard to local native plants
- Continue investigating the possibility of painting/powder coating galvanised and aluminium surfaces
- Bring samples of cables to the next workshop.

Next steps:

- Participants can pass on any further ideas/comment to Western Power by contacting Nick Cullen on (08)9326 4148 or nick.cullen@westernpower.com.au.
- Participants are also encouraged to visit our blog site www.youhavethepower.com.au and post comments

- A final draft of a proposed concept, based on input received to-date, and Western Power requirements, will be presented at our final session, scheduled for September. We will keep you informed of progress in the meantime, and make any information available online a week prior (or more if possible).
- If you would also like to receive a hard copy of any information provided, please contact Kathy Craig.
- A Development Application will be submitted in late 2010/ early 2011.

Report prepared by Carol Whish-Wilson, Workshop Facilitator & Lisa Hamblin, Nick Cullen and Kathy Craig, Western Power

July 2010.