Assessment of Filling for Biofilter

Background

During 2015 Elf Farm Supplies has submitted an application to modify the Part 3A project approval (2012) for the company's mushroom substrate plant at 84 Mulgrave Road, Mulgrave. The application seeks approval to install and utilise newer technology in the process of substrate production and emissions management. A critical element of the modification is to install a biofilter as part of the odour processing system to treat all captured emissions from the plant.

The footprint of the proposed biofilter, while remaining within the defined area of the substrate plant[1], extends beyond the land currently approved for development. The 2015 application to modify the project has sought approval for importing additional approved fill to create the extended platform area between the dam and the railway boundary required for the biofilter.

The Department of Planning and Environment has requested a brief assessment of the impact of filling the land affected by the biofilter footprint.

Work Details

The area of extended filling for the biofilter is approximately 0.16 hectares. At an average depth of seven metres the quantity of fill material emplaced to create the level platform for the biofilter when complete is estimated to be between 11,000 and 12,000 cubic metres. This material has been obtained by diverting fill material otherwise destined for the north west part of the site where previously approved filling to extend the site platform remains incomplete.

The batter to the filled area will be compacted, topsoiled and stabilised with vegetation to deter erosion and screen the batter from view. The final appearance will be similar to other completed batters around the filled platform where mature native vegetation has become established serving to screen the site. To compliment revegetation of the biofilter extension batter Elf Farm Supplies has planted a consistent corridor of screening vegetation along the site boundary linking the batter with existing vegetation on the site and enclosing the dam. This tree corridor has been recently planted after preparing the surface with a low mound

[1] The substrate plant site was defined in the original Part 3A application in 2010 and is shown on the attached figures 2.3 and 2.4 from the environmental assessment for that application (Perram & Partners 2010). These figures show the site incorporating all aspects of the plant including the dirty water dam in the south west and the stormwater retention basin No 2 in the north west.

to provide a growing bed and promote drainage. The tree corridor is a routine land management measure that does not form part of the project modification.

The location of the biofilter with its westerly extension immediately south of the dam is shown on the attached plant layout.

Assessment

1. Extent of Filling

The part 3A project approval (2012) authorised placement of fill to extend the substrate plant platform to suit the development which, as described in the 2010 EA, was then estimated to cover a further 1.6 hectares of the site. In the period since the project approval was received filling approved in that document has progressed and is almost complete. More recent measurements of the area undergoing filling have shown that the area actually filled (when complete) will amount to about 1.1 hectares, or about 0.5 hectares less than the area initially estimated and approved.

With the addition of approximately 0.16 hectares filling required for the biofilter, as indicated above, the area of actual filling will still be less than that envisaged in the 2012 project approval.

2. Previous Site Surveys

The land affected by the biofilter platform extension has previously been disturbed associated with former rural activities and construction of the adjacent dam.

The environmental assessment for the current modification (Perram & Partners 2015) observed that the substrate plant site including the balance of rural land on the property extending to South Creek had previously been surveyed for both flora and fauna and indigenous and non-indigenous heritage at the time for the 2010 Part 3A application. Both surveys observed that the entire property had been disturbed.

The flora and fauna survey noted that surface vegetation beyond the (then) filled platform was primarily exotic grasses and herbs for grazing with some weed species. No useful animal habitat was observed on the site and no threatened species were recorded.

The heritage survey did not discover any items of indigenous or non-indigenous heritage on the property.

3. Flooding

The flooding assessment provided in the 2010 EA was an update of a more extensive flood study of South Creek and the Hawkesbury River. The author of the flooding assessment has provided a letter (attached) indicating that having regard to the total extent of fill being less than that approved in 2010 and its placement for the biofilter being in the lee of the railway embankment, the conclusions of the flood study in the 2010 EA remain valid. The filling for the biofilter does not affect the 1% AEP peak flood level.

4. Visual Impact

The fill batter of the biofilter extension extends to approximately the western edge of the dam, providing the opportunity to screen both the dam and the batter with a consistent corridor of vegetation which is being extended to link with existing vegetation to the north. This work will provide improved screening of the development from the west and the railway, thereby further reducing the visual impact of the development.

Conclusion

It is therefore concluded that the extension of the filled platform by approximately 0.16 hectares to create a level base for the biofilter will have no significant effect on the environment.

Prepared by

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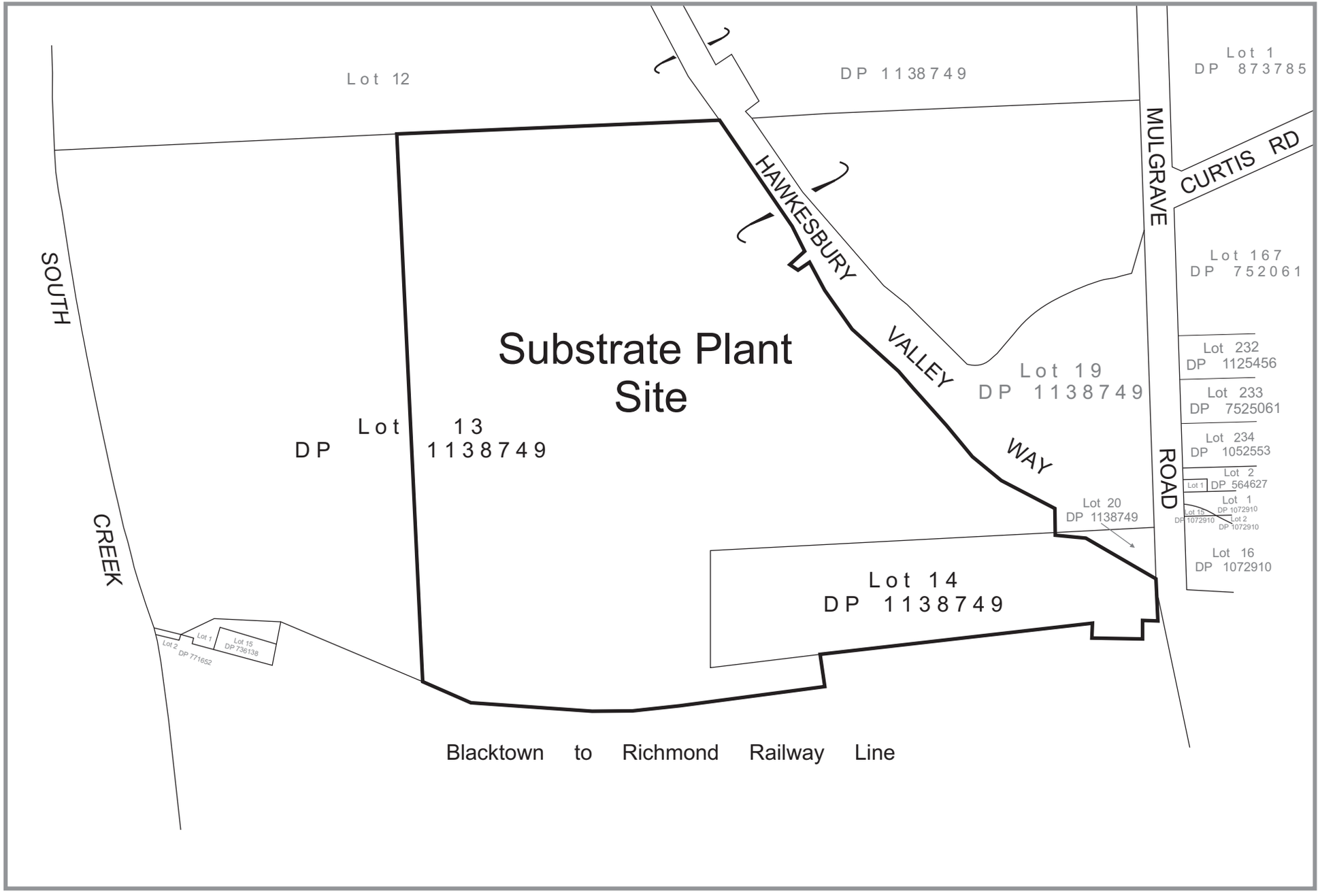

FIGURE 2.3 Substrate Plant Site

FIGURE 2.4 Mulgrave Area Land Use


M.G.A. NORT
RIPARIAN CORRIDOR
ndary - South Creek
10m FLOOD PLAIN
WETLANDS
DAM
Biofilter 2
EXISTING TREES
SHED 4
HARDSTAND
BLOCKING SHED
LOADING DOCK
TRACTOR SHED
PIT
CORNER CONCRETE
existing trees
Existing phase II extraction
Extraction during process: 126.000 m3/h
Tunnels in process: 7x 18.000 m3/h
New phase I working area
Extraction during operation: 111.700 m3/h
Air changes during operation: 5x
Extraction during non-operation: 22.300 m3/h
Air changes during non-operation: 1x
Pre-wet shed
Extraction during operation: 112.000 m3/h
Air changes during operation: 5x
Extraction during non-operation: 22.400 m3/h
Air changes during non-operation: 1x
Existing phase I working area
Extraction during operation: 84.250 m3/h
Air changes during operation: 5x
Extraction during non-operation: 16.850 m3/h
Air changes during non-operation: 1x
Existing phase I process air
Extraction during process: 24.000 m3/h
Bunkers in process: 3x 8.000 m3/h
Cross conveyor area
Extraction during operation: 11.100 m3/h
Air changes during operation: 10x
Extraction during non-operation: 1.100 m3/h
Air changes during non-operation: 1x
Existing phase I process air
Extraction during process: 39.000 m3/h
Bunkers in process: 3x 13.000 m3/h
Biofilter
Max. load: 420.000 m3/h
Machinery / chicken manure
Extraction during operation: 70.000 m3/h
Air changes during operation: 5x
Extraction during non-operation: 14.000 m3/h
Air changes during non-operation: 1x
STORAGE SHED
Boundary
BLACKTOWN
GIN IN TREE
5-meter line
PARKING
WEIGHBRIDGE
GENERAL ACCESS ROAD
GATE
EXISTING HOUSE
CYCLONE WIRE FENCE
EMERGENCY ACCESS RO
WINDSOR
HAWKESBURY VALLEY WAY
RTA SERVICE ROAD
SYDNEY
DAM

Client: Elf Farm Supplies

Project: P132710

Subject: Visual air P&ID

Date:	Name:	Scale: 1:
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Mr Rob Tolson
ELF Farm Supplies Pty Ltd
108 Mulgrave Road
MULGRAVE NSW 2050

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January 21st 2016

Attention: Mr R Tolson

Dear Mr Tolson,

Re: Earthworks at 108 Mulgrave Road Mulgrave NSW 2050

This letter provides comment on the flood impact of earthworks carried out at the above referenced subject site. The location of the earthworks is toward the western side of the existing plant. Figure 1 attached shows the earthworks in question (hatched).

BACKGROUND

Development in addition to existing facilities on the site has previously been approved and this relates primarily to an upgrade of the existing plant and surrounding facilities. The proponent has subsequently slightly modified the detail of the proposed development by filling in areas not previously specified, but well within overall approved fill area restrictions. This letter makes comment on the flood impact of the altered earthworks layout. Note additional filling works are still to occur, although no net increase is envisaged relative to the approved fill area.

The site and the general vicinity is flood liable, with peak flood levels caused by events that combine Hawkesbury River and South Creek flooding. Due to the flood liability the proposed development was required to be assessed for potential flood impact. WMAwater previously produced a report (WMAwater, 2009) that documents work done to assess the flood impact of the proposed works. This formed part of a 2010 Environmental Assessment. WMAwater's modelling work looked at 1.6 hectares of filling (equating to an estimated fill volume of approximately 58,000 m^3).

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SITE VISIT

Modified earthworks (as noted by the hatched area in Figure 1) were inspected on December 3rd 2015. The following observations were made:

- An area proposed for a bio-filter has been filled to a height of ~ 7 m above natural surface. This area is located in the lee of the railway embankment and so does not in any way impede South Creek flows as they move toward the Hawkesbury River. Impact is limited to a minor loss of floodplain storage; and
- Another area west of the higher fill area and downstream of the dam, that links planted areas on the downstream face of the railway embankment with remnant vegetation on the site, has been filled to a minor extent in order to facilitate the planting of native trees. This will link existing site vegetation and aid screening of the plant equipment.

DISCUSSION

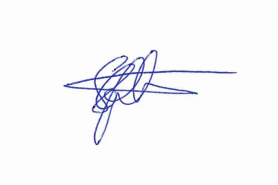
WMAwater's work of 2009 examined the impact of filling works with a total area of approximately 1.6 ha and an estimated volume of 58,000 m^3. The impact of these works on peak flood level was found to be 0.00 m.

Whilst works considered herein vary from those specifically approved, the overall area of floodplain filling carried out, which is the key issue here in regard to flood level affectation, is less than that approved. An estimate of the total area filled to date is approximately 1.1 ha. Note much of the filling has also occurred in areas where less fill depth is required to reach the required level, and as such the actual volume of fill put in place to date will be substantially less than that approved.

As such WMAwater's work of 2009 remains pertinent. The filling earthworks carried out are less than as assessed in 2009 and as such do not impact on peak 1% AEP flood levels.

Should you have any queries or require further clarification please do not hesitate to contact me on 9299 2855 or varga@wmawater.com.au

Yours Sincerely,
WMAwater



Stephen Gray
Director

FIGURE 1

NORTH