Bioscience

Integrating Resource Management

Nutrient and Irrigation Management Plan: Lot 101 (No. 132) Boomerang Road, Oldbury

Bradley & Lisa Walton
PO BOX 364 Byford
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September 2020

Nutrient and Irrigation Management Plan
Lot 101 (132) Boomerang Rd, Oldbury

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Document Control

Issue	Date	Author	Reviewer	Approved
1	20/03/2020	D. Alanoix	P. Keating	P. Keating
2	02/09/2020	D. Alanoix	P. Keating	P. Keating

Contents

Addendum Issue 1 Addressing RF9830-01 & PA034131

DWER's Comments	Bioscience's Reply
Native Vegetation Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations).	The nursery footprint has been amended. The proposal does not lie within any vegetated areas. A clearing permit will not be required.
Wastewater Management As identified in the Government Sewerage Policy (Western Australian Government, 2019), this site is located within a 'sewage sensitive area'. If the site is unable to connect to a reticulated sewerage scheme, on-site effluent disposal shall utilise secondary treatment systems with nutrient removal for any new buildings and amenities.	Any new amenities (e.g. staff toilets if required) will utilise secondary treatment unit systems as per the GSP 2019.
Peel Harvey Coastal Plain Catchment The proponent is be advised that the proposal is located within the Peel-Harvey catchment and the provisions of State Planning Policy 2.1 – The Peel-Harvey Coastal Plain Catchment and Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992 shall apply. Therefore the proposed nursery should incorporate best management practices outlined in the Water Quality Protection Note No. 3: Nurseries and garden centres (DWER, 2018) and Water Quality Protection Note No 90: Organic material – storage and recycling (DWER, 2011) and include the following: 1. Nursery operations shall be contained on impermeable surfaces to prevent the leaching of nutrients and contaminants into the groundwater. Gravel, rolled limestone or forestry by-products over plastic film may be used for walking paths and under plant benches. 2. Any wastes should be contained in a purpose-built, weatherproof storage container, skip or on an impermeable sheltered surface until removed offsite to an authorised waste disposal facility. 3. Water according to the plant development requirements, seasonal evaporation losses, variations in plant water needs and the water-holding capacity of the potting media. 4. Any runoff may drain towards a settling pond for reuse or recycling, or into vegetated swales. Wastewater and clean stormwater should be kept separate. Uncontaminated stormwater should be managed as recommended in the Stormwater Management Manual for Western Australia (DoW, 2004-2007). 5. Nursery operators should minimise nutrient losses by only applying fertiliser amounts required by the	1. The nursery operations will be contained on an impermeable surface made of rolled limestone. This layer will be 100 mm thick (Figure 12 of this NIMP). 2. Any wastes would be contained in an impermeable sheltered surface until removed offsite to an authorised waste disposal facility (Figure 10 of this NIMP). 3. Irrigation of the plants will be in accordance to the development requirements, seasonal evaporation losses, variations in plant water needs and the water-holding capacity of the potting media. The used of moisture probes is an envisaged option to optimise irrigation. 4. As seen on Figure 12 of the NIMP, runoff from the nursery will be directed to a vegetated swale. Uncontaminated stormwater will be kept separate from the nursery area through the establishment of gently raised 200 mm limestone bunds. 5. The nursery operator will minimise nutrient losses by only applying fertiliser amounts required by the plant at various stages of its development cycle and adopting measures to reduce leaching. Slow release fertilisers are deemed adequate for such a management practice.

plant at various stages of its development cycle and adopting measures to reduce leaching. 6. Pesticides, fertilisers, manures and soil amendment materials should be stored on impermeable surfaces that are weatherproof and exclude stormwater runoff from other areas. 7. As detailed in the Nutrient and Irrigation Management Plan, groundwater quality monitoring will be carried out on-site. However, no detail has been provided regarding the proposed trigger values, contingency actions if triggers are breached and the submission of monitoring results to the Shire	6. Pesticides, fertilisers, manures and soil amendment materials will be stored on impermeable surfaces that are weatherproof and exclude stormwater runoff from other areas (Figure 10 of this NIMP). 7. This is further discussed in Section 9 of this NIMP
Transport Depot - Best Practice Management	Discussed in the provided Stormwater and Spill Management Plan
Groundwater The subject lot and proposed development area is located within the Serpentine Groundwater Area (Jandakot Mound 2 sub area) which is proclaimed under the Rights in Water and Irrigation Act 1914. Any groundwater abstraction would be subject to licencing by the DWER. There is a current groundwater license for the property for the purposes of stock watering and household garden (GWL174986). An amendment to this current licence would be required for the use of groundwater for nursery and transport depot operations.	The current 11,000 kL of GWL 174986 is deemed appropriate to start the nursery production. Upon development approval, an application to change the current land use of the groundwater licence will be lodged. The Jandakot Mound 2 subarea of the Serpentine groundwater area currently has 72,000 kL remaining unallocated in the Superficial aquifer. An application for an additional 10,000 kL will be submitted to DWER upon lodgement of this NIMP. This additional allocation will be sufficient for the full development of the proposed nursery.

1 Summary of the Land Use Proposal

Proponent's name: Bradley & Lisa Walton

Contact details: Lisa Walton 0412 888 467

Site location: Lot 101 (No. 132) Boomerang Road, Oldbury

Project description:

The proponent is proposing to conduct a nursery operation at 132 Boomerang Road, Oldbury (Appendix A). In 1997 the Shire granted approval for a nursery on the subject land. Copies of the original development plans and nutrient management plan (NIMP) have been lost. To redress this, Bioscience was commissioned to draft a NIMP (this report).

The proposed nursery is 1.3 ha and consists of an impervious rolled limestone hardstand area where eucalypts and another native trees are planned to grow in pots to an advanced stage (3 years old) prior to sale; wholesale only. Runoff from the nursery is to be directed into a vegetated swale.

Hours of nursery operation will be from 7:00 am to 5:00 pm Monday to Friday however, intensity of operations will be very low with maintenance operations being the predominant activity.

Timetable:

Production on site will start as soon as the NIMP is approved and the go-ahead is given by the Shire. Operations will last over 30 years.

2 Project Setting

The site is located around 28 km south east of Perth CBD (Figure 1) and consists at its surface of sandy soil from the Bassendean dunes formation.

The site is zoned “rural”, under the Metropolitan Regional Scheme and the Serpentine-Jarrahdale Local Planning Policy.

3 Land Use, Nutrient Application, Staff and Livestock

3.1 Land Use and Nutrient Application

As mentioned previously, the proponent proposes to grow native trees, mostly eucalypts, in pots to an advanced stage of 3 years old for wholesale sale. At full development, the nursery will grow 1000 potted trees on a limestone hardstand of 1.3 hectares. Irrigation of each pot will be via drip irrigation for half the year between October and April. Watering will occur via natural rainfall the remaining months.

Nutrient will be applied solely by the application of slow release, low P analysis commercial fertilisers specifically developed for native trees. Fertilisers will be added into the potting mix consisting of organic rich-sand.

3.2 Staff and Livestock

A horticulturalist or equivalent specialist will be employed on a contract basis.

No livestock will be allowed on the nursery site.

4 Local Rainfall, Evaporation and Interception

The climate of the area is characterized by Mediterranean climate comprising cool wet winters and hot dry summers. Temperature ranges from cool to cold (i.e. 1 degree) during winter months (May to August) and could reach up to 42 degrees during summer months.

Average annual rainfall (Bureau of Meteorology) recorded at Anketell weather station (located 6.4 km away) is 647.8 mm, with the majority of rain falling between June and September. Table 1 shows the monthly average rainfall at Anketell weather station.

Evaporation is likely to be similar to the Perth area, which has an annual evaporation of 1716mm and exceeds the annual average rainfall by a factor of 2.61. Monthly rainfall typically only exceeds evaporation for 4 months, from June to August.

Surface soil on site consists mostly of medium to coarse textured sand (Geological Survey of Western Australia). Infiltration in such soils is in the order of 10^{-4}- 10^{-5} m sec^{-1}(Lock 2007). This translates to the capacity of soil to handle rainfall in excess of 36 – 360 mm per hour.

Accordingly, in heavy rainfall events (1h 20 year ARI), rainwater in the undeveloped parts of the property will infiltrate soils and not lead to runoff. In the heaviest events (1h 100 year ARI), water may transiently pool before infiltration.

Table 1: Rainfall and Evaporation at Pearce RAAF Weather Station (Bureau of Meteorology)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average Rainfall (mm)	11.0	0.4	11.4	30.1	20.7	208.4	128.8	129.4	43.2	37.1	22.8	4.5	647.8
Average Evaporation (mm)	257	218	195	120	78	57	71	102	99	148	189	253	1716

5 Soils and Landform Description

5.1 Land Contours

Overall, the site gently slopes towards the east, from an initial elevation of 24 mAHD on the western side of the site to 15 mAHD near the eastern boundary (Figure 2).

5.2 Soil Type

The Geological Survey of WA's Environmental Geology Map (Serpentine, sheets 2033 & 2133 describes the site geology as S8, i.e. Bassendean Sand (Figure 3).

5.3 PRI

Bassendean sands system is known to have very low PRI, ranging between 2 and 5 within the vicinity of the site (Safstrom and Short 2012). To prevent any potential leaching of phosphate to groundwater, pots will rest on an impervious rolled limestone hardstand.

5.4 Acid Sulphate Soil

The ASS Risk Map defines the area as Class 2 - moderate to low risk of ASS for depths within 3m below natural ground (Figure 4).

5.5 Proposed Earthwork Details

This report is part of a retrospective application. Substantial earthworks were done in the past. The limestone hardstand is already present on site. Compaction of the existing hardstand will be required for the infiltration rate to be lower than 10^{-9} m/s. Additional limestone might be required to achieve a 100 mm thick layer and a 2% gradient towards the south.

5.6 Imported Soil Amendments

Trees will grow in a media consisting of organic-rich sand conforming to AS4419. This media will be brought on site prior to commence planting.

6 Water Resources Description and Use

6.1 Sensitive Water Resources

6.1.1 Wetlands

The site is located near five geomorphic wetlands (Figure 5):

- UFI 15785 – Multiple use wetland, located 100 m E;
- UFI 14856 - Resource Enhancement wetland, located 1000 m SE;
- UFI 14857 - Conservation wetland, located 1200 m SE;
- UFI 14858 - Conservation wetland, located 900 m SE; and,
- UFI 14859 - Conservation wetland, located 1200 m SE 35 m.

6.1.2 Groundwater Users

Existing groundwater users in the area were assessed through the Department of Water's Water Register database. Figure 6 presents the location of other groundwater users within the vicinity of the site.

One groundwater licence user, associated to GWL 170729, is located immediately south of the proposed development and might be a sensitive receiver in the unlikely event of nutrient leaching.

6.2 Seasonal or Occasional Flooding

As seen on Figure 7, flooding will not occur within the immediate vicinity of the site.

6.3 Groundwater Description

6.3.1 Aquifer Description

Within the vicinity of the project site, groundwater of the Superficial aquifer naturally occurs between 1 to 5 m below ground depending of the seasons.

Past DWER groundwater drilling and logs have revealed the Superficial aquifer is separated from the Leederville Aquifer formations by Guildford clay.

The Superficial Aquifer saturated thickness varies from 10 to 15m (Davidson 1995). Hydraulic conductivity for Bassendean Sands ranges between 8.2 to 16.5m/d and as low as 0.8 to 4.1m/d in Guildford Clay (Marillier et al. 2012). Transmissivity is estimated to range between 16 and 330m^2/day depending of the soil profile; but averages, according to Davidson (1995), around 120 m^2/d.

6.3.2 Groundwater Flow, Discharge and recharge

The flownet of the Superficial Aquifer is in a south easterly direction (Figure 8), with a hydraulic gradient of about 3m per kilometre.

The groundwater in the Superficial aquifer is recharged by direct infiltration of rainfall, with peak groundwater levels occurring between August and October. The recharge by rainfall of the superficial aquifer is about 14% (Davidson,1984) while discharge occurs in tributaries of the Serpentine River, and vertically in the Leederville aquifer.

6.3.3 Groundwater Level

As described above, within the vicinity of the project site, groundwater of the Superficial aquifer naturally occurs between 1 to 5 m below ground depending of the seasons.

Maximum groundwater levels were derived from nearest DWER long-term monitoring bores (Figure 9). As seen on the Figure, there is a 0.75 to 4 m separation distance to the maximum predicted groundwater level within the nursery area, from the south section to the north respectively. This separation distance is deemed suitable to protect the groundwater resource from any potential adverse effect of the nursery.

6.3.4 Groundwater Quality

At this stage, groundwater quality was not tested, however, given the vegetation present within and around the site, we expect a chemistry suitable for the irrigation of native trees.

6.4 Source of Irrigated Water

The site is associated with a groundwater licence, GWL 174986, allowing the abstraction of 11.000 kL/annum. The current allocation is deemed appropriate to start the nursery production.

Upon development approval, an application to change the current land use of the groundwater licence will be lodged.

The Jandakot Mound 2 subarea of the Serpentine groundwater area currently has 72,000 kL remaining unallocated in the Superficial aquifer. An application for an additional 10,000 kL will be submitted to DWER upon lodgement of this NIMP. This additional allocation will be sufficient for the full development of the proposed nursery.

6.5 PDWSA

The site is situated around 6.4 km away from the nearest Public Drinking Water Supply Areas. This area is a Protection Area P1 and it is located north of the site. As this P1 area is located up-gradient of the proposed development (in regards to groundwater flow), there won't be any impacts on the PDWSA..

7 Site Management

7.1 Irrigation System

As mentioned previously, the proponent proposes to grow advanced eucalypts in pots for wholesale once the trees reach around 3 years old. The planned proposed development is shown in Appendix A.

At full development, the nursery will grow 1000 potted trees on a limestone hardstand of 1.3 hectares. Depending of their age, trees will be organised in 3 sections and grown in pots of 3 different sizes, 20, 50 and 100 L depending of their age (Figure 10). Young trees will grow at the rear of the nursery and moved to the middle section once they reach one year old. Two to three years old trees will be placed in the front section of the nursery, ready for wholesale.

Irrigation of each pots will be via drip irrigation for half the year between October and April (Figure 11). The system will deliver up to 10 L/day/tree through regular bursts of 15 minutes. The number of emitters (hence the exact daily water allocation) will vary depending of the size and age of the tree.

Drip irrigation was selected as it minimises fertiliser and nutrient loss due to the localised and efficient water application. In addition, as moisture within the root zone can be maintained at below field capacity, drainage water is minimal to none and weed growth is lessened.

7.2 Nutrient Application

Nutrient will be applied solely by the application of slow release, low analysis commercial fertilisers specifically developed for native trees. Fertilisers will be added into the potting mix consisting of organic rich-sand.

8 Drainage and Contaminant Leaching Control

8.1 Drainage Management

Under warm conditions, drainage water leaving the pots is likely to minimal if any. At times some water runoff is unavoidable, for example during heavy winter rains. Although the risk is low, any phosphorus leaving the pots via runoff will be captured by the vegetated swale located downgradient of the nursery area (Figure 12).

8.2 Contaminant Leaching Control

8.2.1 Fertiliser Use Efficiency

On site, the proponent will use the following best management practices to improve fertiliser use efficiency:

- Fertiliser applications will be based on soil slow release granules in media with high water holding capacity and ion exchange capacity.
- Fertiliser applications will be recorded to assist future fertiliser management decisions.

The slow release granules will be applied only to the plant root zone at transplanting to larger containers to ensure that plant nutrient uptake is maximised.

8.2.2 Water Use Efficiency

On site, water use efficiency will be based on the following:

- As mentioned, irrigation will only occur between October and April, when rain is scarce. The decision of when and how much to irrigate will be based on moisture levels, plant requirements and the grower's experience.
- Small volumes of water will be applied frequently rather than occasional heavy applications.
- The grower will regularly inspect the irrigation and will ensure that repairs are carried out promptly should they be needed.

9 Protection of Natural Water Resources

9.1 Proposed Monitoring

Given the nature of the work, prospects for any outside impacts are minimal, however, to ensure no nutrient leaching, nor undesired impacts on sensitive receivers occurs, permanent

groundwater monitoring bores will be installed up-gradient and down-gradient of the production.

The proposed monitoring bore locations are provided in Figure 13. Bores MB1 and MB2 will be screened for 2 m around the annual minimum groundwater levels in the Superficial aquifer. The bores will be installed as per DWER's WQPN30 *Monitoring Bores*. Bores will be monitored quarterly as a condition of groundwater licensing, with data also reported to DWER.

Monitoring will follow the below commitments (Table 2).

Table 2: Monitoring Commitment

Commitment	Location	Frequency
Groundwater level measurements	MB1, MB2	Quarterly
Sample and water analysis	MB1, MB2	Quarterly
Annual summary to DWER and the Shire	n/a	Annually

Water quality analyses will be carried out by Bioscience and will test the following:

- pH
- EC
- TDS
- Iron
- Potassium
- Calcium
- Magnesium
- Nitrate N
- Ammonium N
- Total N
- Reactive P
- Total P
- Sodium
- Chloride
- Sulphate

Note that the monitoring of nutrients will be undertaken as a requirement of the NIMP on advice from the Department of Water and Environmental Regulation

9.2 Contingency

The objective of contingency planning is to provide assurance that the *Water quality improvement plan for the rivers and estuary of the Peel-Harvey system - phosphorous management (*EPA 2008) will not be compromised because of the site development.

The attainment of this objective cannot be judged without reference to existing groundwater nutrient values due to past and existing usage of the site and surrounding land. Water quality data will be collected from the monitoring bore upstream of the site (MB1) for reference purposes.

Comparing upstream and downstream monitoring bores will provide data about the nursery's influence on nutrients in groundwater. Therefore, nitrogen and phosphorous concentrations from the upstream and downstream monitoring bores will be compared. Nutrient levels should be the same or lower than upstream levels, to show the site is not leaching nutrients. It is noted that within the region (based on data obtained from other premises), nutrient spikes seem to occur randomly without the influence of fertiliser input.

Once a year of upstream monitoring data is collected, a significant increase (two standard deviation units) of nutrient levels from the annual mean will be set as a trigger value. For the first year the mean of collected data will be calculated at each monitoring. If a measured N or P value exceeds the mean by two standard deviation units, monitoring will be repeated within two weeks. If the particular nutrient remains high, the source of nutrient spikes will then be investigated through intensifying of monitoring and assessing elements of the nursery which provide direct information about nutrient input and possible leaching.

Table 3 lists the trigger levels and the associated contingency actions.

Table 3: Contingency Actions

Monitoring	Trigger levels	Contingency actions
Upstream Bores	Data collection only	Data collection only
Downstream Bores	Nitrate or phosphate two standard deviations from annual mean	Check limestone hardstand for possible cracks promoting leaching to groundwater. Check the efficiency of the vegetated swale. Review infiltration rate. Amends the bottom of the swale with high PRI soil.
Downstream Bores	Consecutive monitoring: Nitrate or phosphate two standard deviations from annual mean	Stop using fertiliser until cause is determined and rectified

10 Contaminant Transport Model

Given the size and the nature of the development, a contaminant transport model is not required.

11 Vegetation Management

Clearing will not be required. The cleared limestone hardstand already exists on site.

12 Pesticide and Storage Use

The use of pesticides in Australian agriculture is regulated through the Australian Pesticides and Veterinary Medicines Authority. The increasing trend in registration of products is to restrict the use of insecticides, fungicides and fumigants which have half lives of more than a few days. Environmentally persistent pesticides have been progressively deregistered and removed over the last 20 years.

The proponent currently adopts integrated pest management (IPM) systems. Generally pesticide use is avoided wherever possible. The major disease pressure is from foliar fungal pathogens in winter. This is managed by protective foliar sprays, and by constant, low dosing of irrigation water with copper ions (produced by electrolysis). The major pest pressure is insects, particularly thrips in summer. This is managed by targetted application of synthetic pyrethroid insecticides.

All use of chemical pesticides adheres to industry best practice principles:

- Follow regulations set by the Australian Pesticides and Veterinary Medicines Authority governing the use, storage, and disposal of pesticides and fungicides and training of applicators and pest control advisors.
- Follow manufacturers' recommendations and label directions.
- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule) and use the minimum amount of chemical needed for the job.
- Do not mix and prepare pesticides within 30m of any well, stream or pond.
- Do not get rid of unused pesticides by washing them down drains.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Clean pavement and sidewalk if chemicals are spilled on these surfaces.

All chemicals are stored in a locked area (concrete floor) (Figure 10). All applications of chemicals are entered into a log book.

All remaining mixtures are disposed of according to label instructions. All equipment used for pesticide preparations will be triple rinsed both inside and out to minimize pesticide residues.

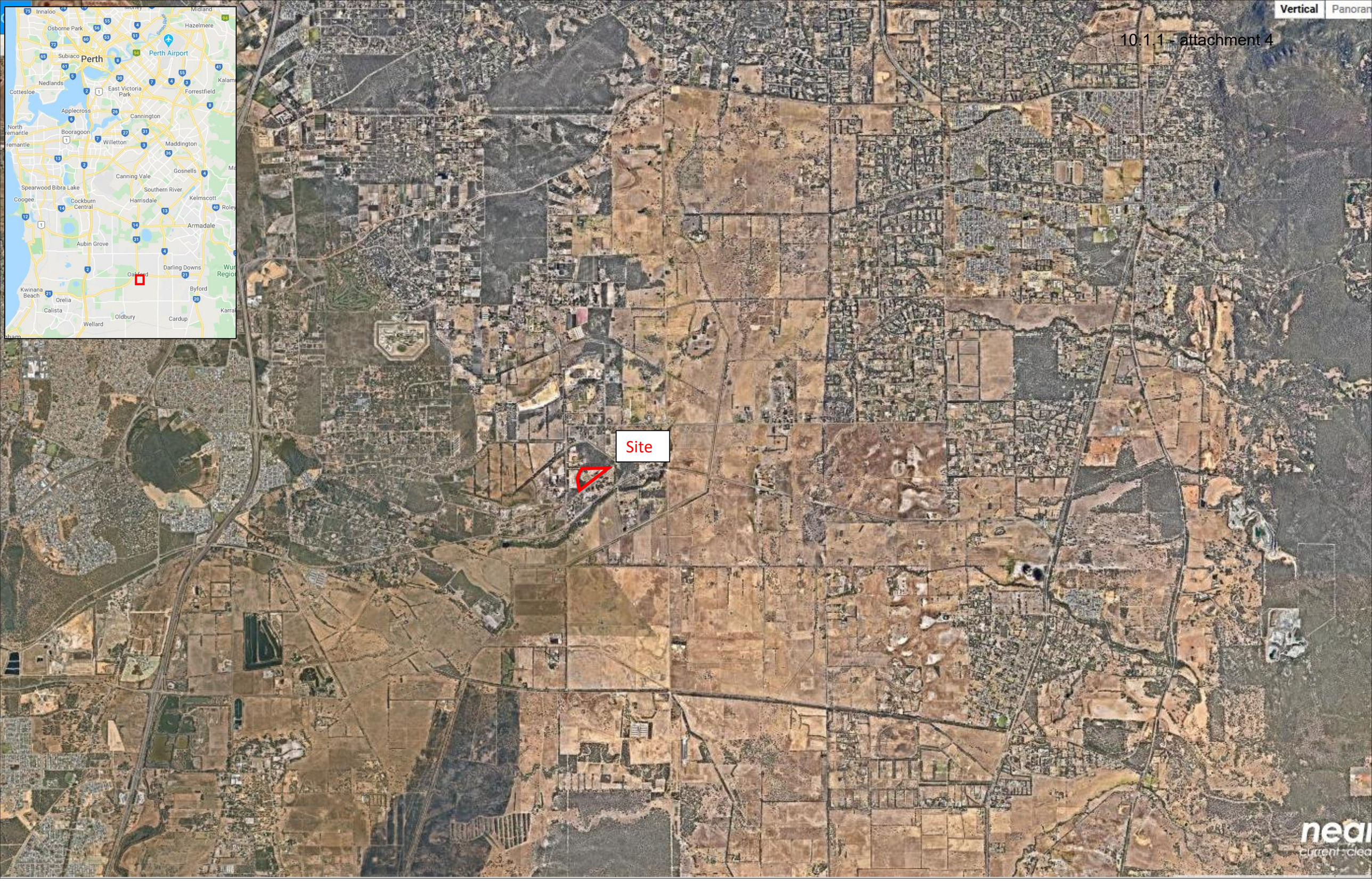
References

Davidson W.A. 1995 *Hydrogeology and Groundwater Resources of the Perth Region, Western Australia*, Western Australia Geological Survey, Bulletin No. 142.

Lock, B. L. (2007) *Handbook of Geotechnical Investigations and Design Tables, Taylor and Francis Group, London UK*

Safstrom R. and Short N. 2012. Agriculture Futures: Potential Rural Land Uses on the Palusplain. Department of Agriculture and Food.

Figures



Vertical | Panoramic

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FIGURE 1. Site Location

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: NEARMAP (17/02/20 aerial picture)

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FIGURE 2. Topography

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: DWER – may 2008

Legend

- Spc — CLEYEY PEATY SAND – grey to black; quartz sand with variable organic content
- Sp1 — PEATY SAND – grey to black, fine to medium grained moderately sorted quartz sand
- S8 — SAND- white to play grey at surface, yellow at depth
- S10 — SAND- as S8 over sandy clay to clayey sand of Guildford
- Cs — SANDY CLAY – white, grey to brown, fine to coarse, sub-angular to rounded, clay of moderate plasticity

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FIGURE 3. Surface Geology

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: DWER – may 2008

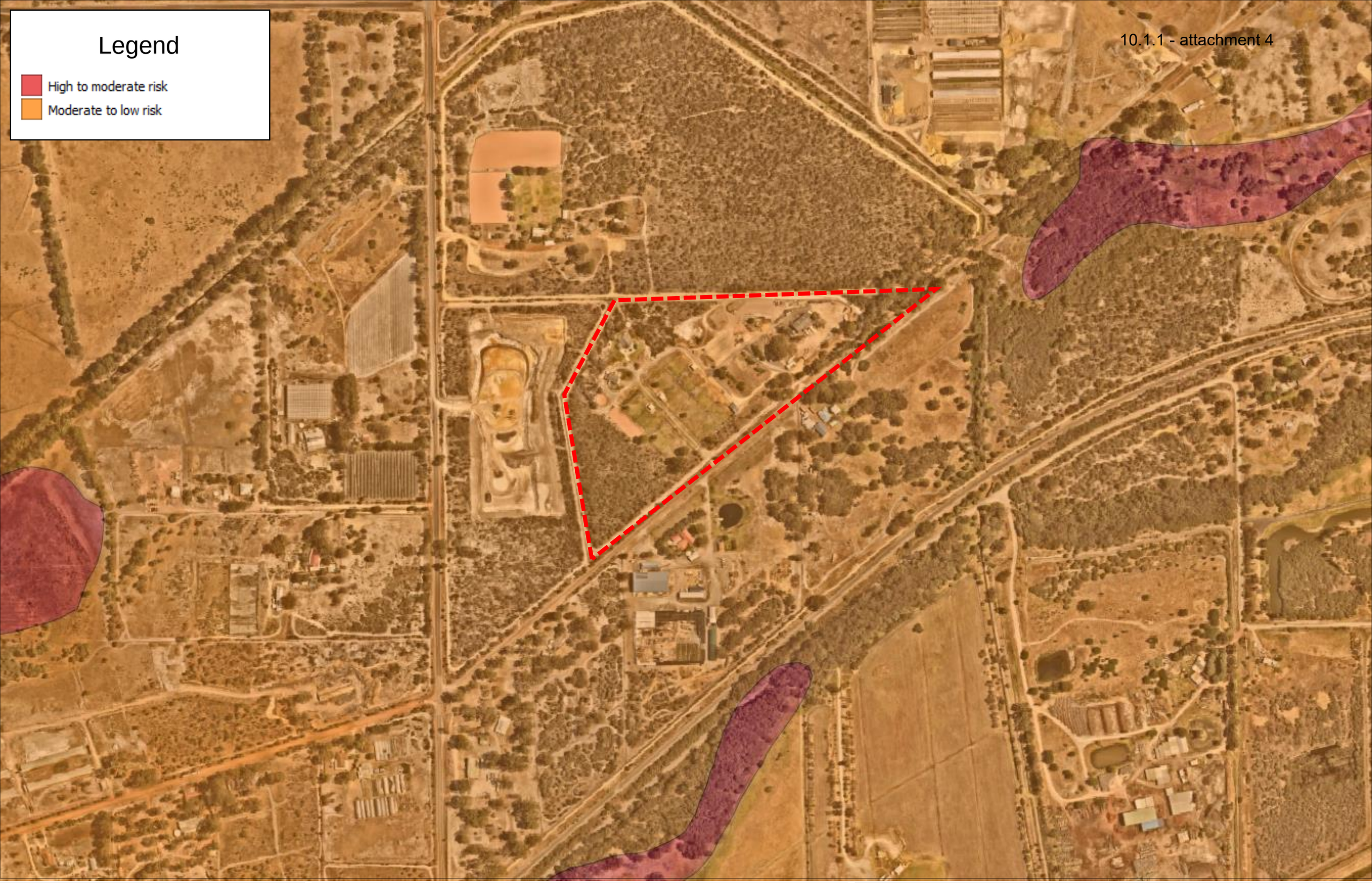

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FIGURE 4. ASS Risk Map

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: DWER – may 2008

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FIGURE 5. Geomorphic Wetlands

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: DWER – may 2008

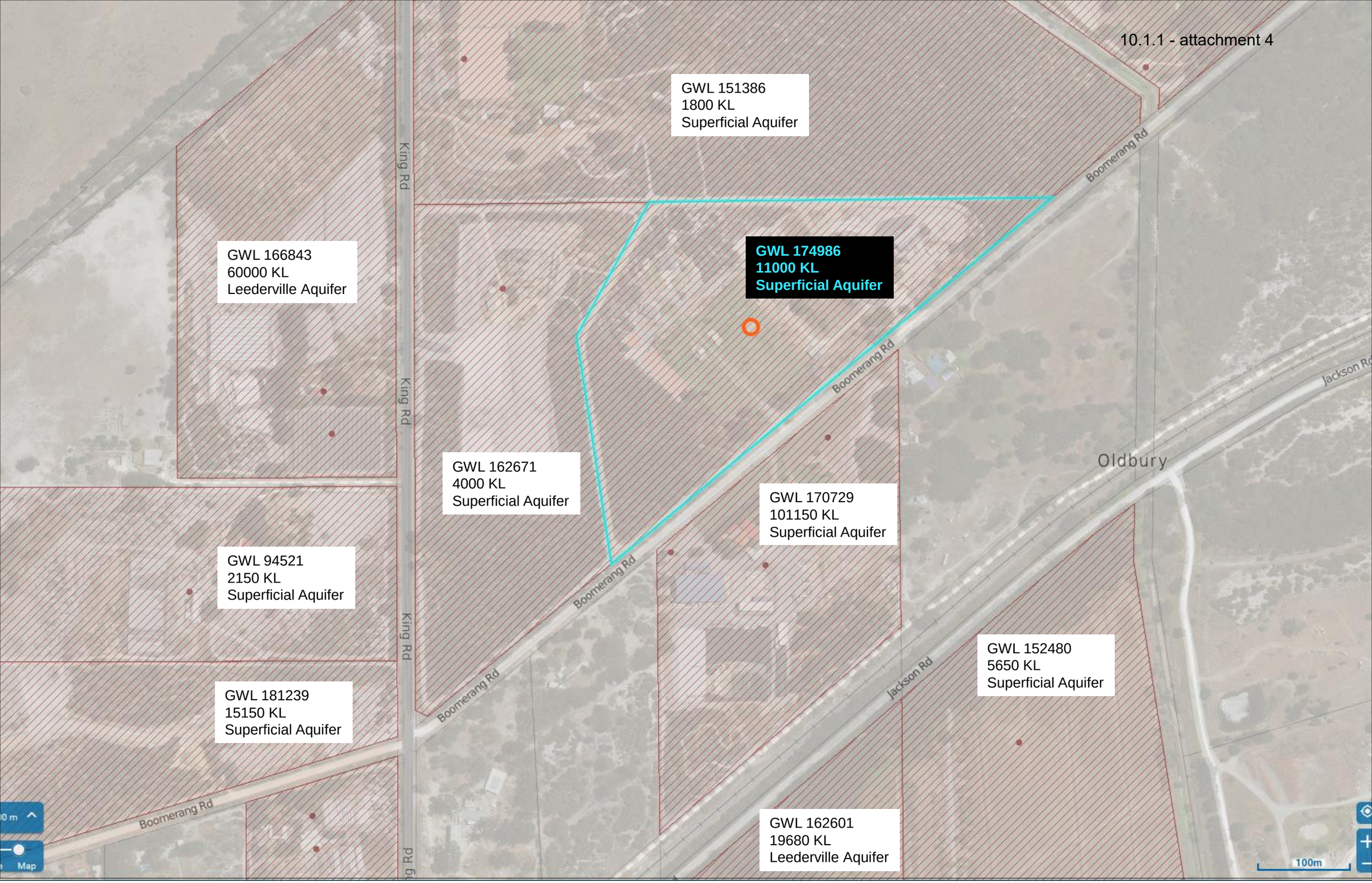

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FIGURE 6. Groundwater Users

132 Boomerang Rd, Oldbury WA 6121, Australia
Ordinary Council Meeting - 14 December 2020

SOURCE: DWER & Zonum

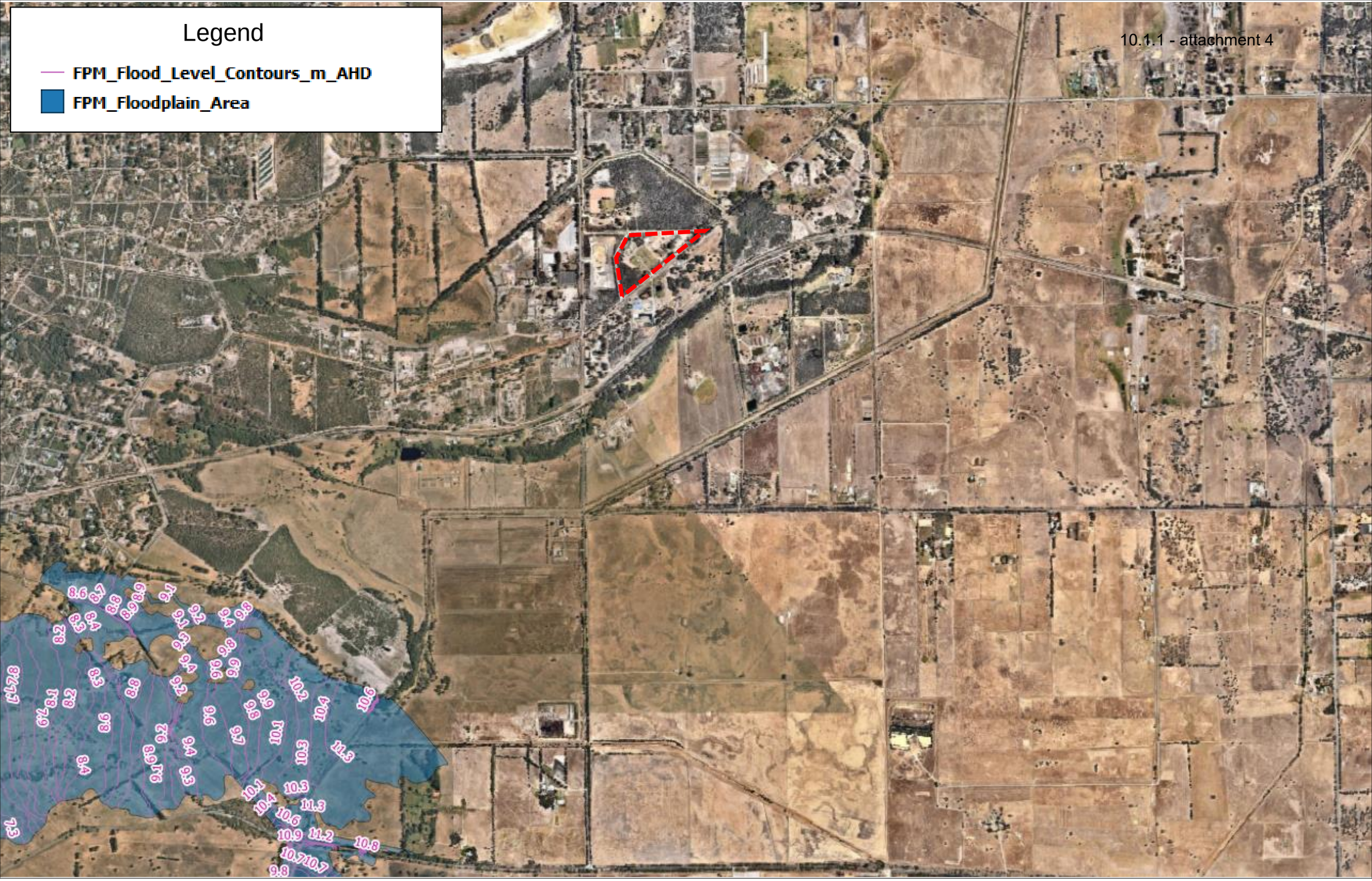

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FIGURE 7. Floodplain Mapping

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: : DWER – may 2008

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FIGURE 8. Groundwater Contours

132 Boomerang Rd, Oldbury WA 6121, Australia
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SOURCE: DWER – may 2008

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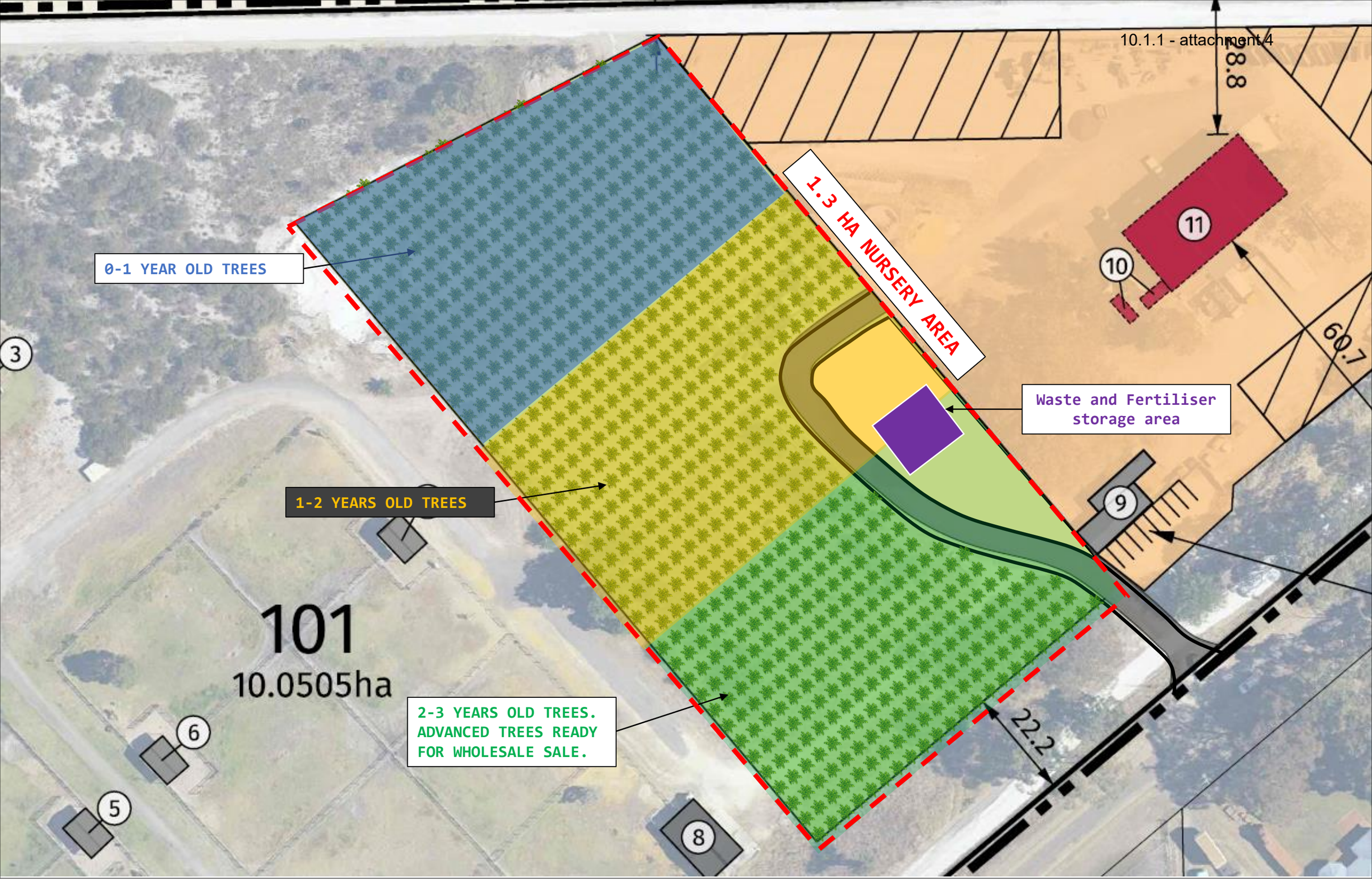
FIGURE 9. Separation Distance to Maximum Groundwater Level (Interpolated)

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: Bioscience Interpolation



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Client: Brad and Lisa Walton
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FIGURE 10. Example of Growth Arrangement

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: Abstracted from Harley Dykstra's development site plan

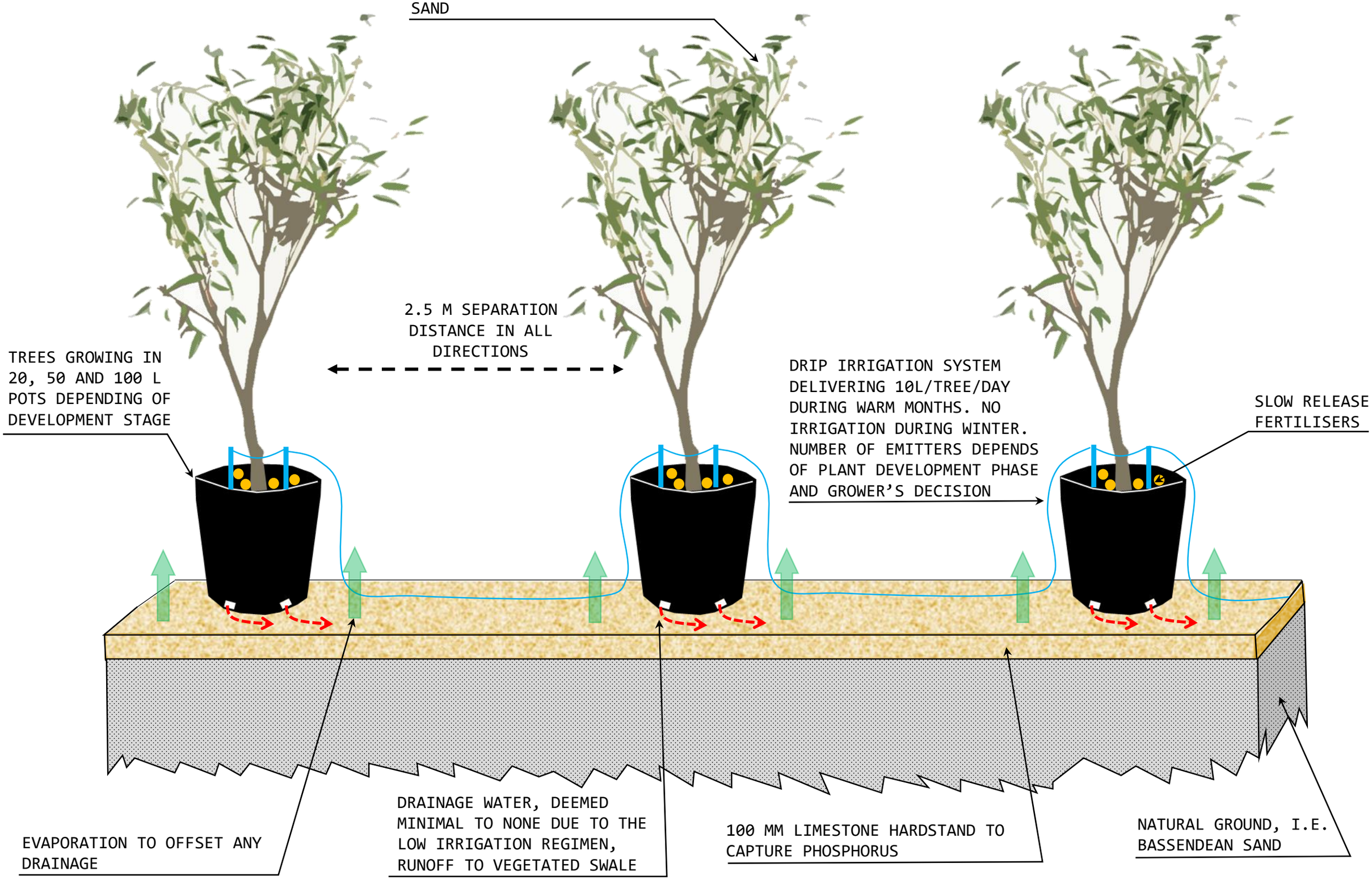

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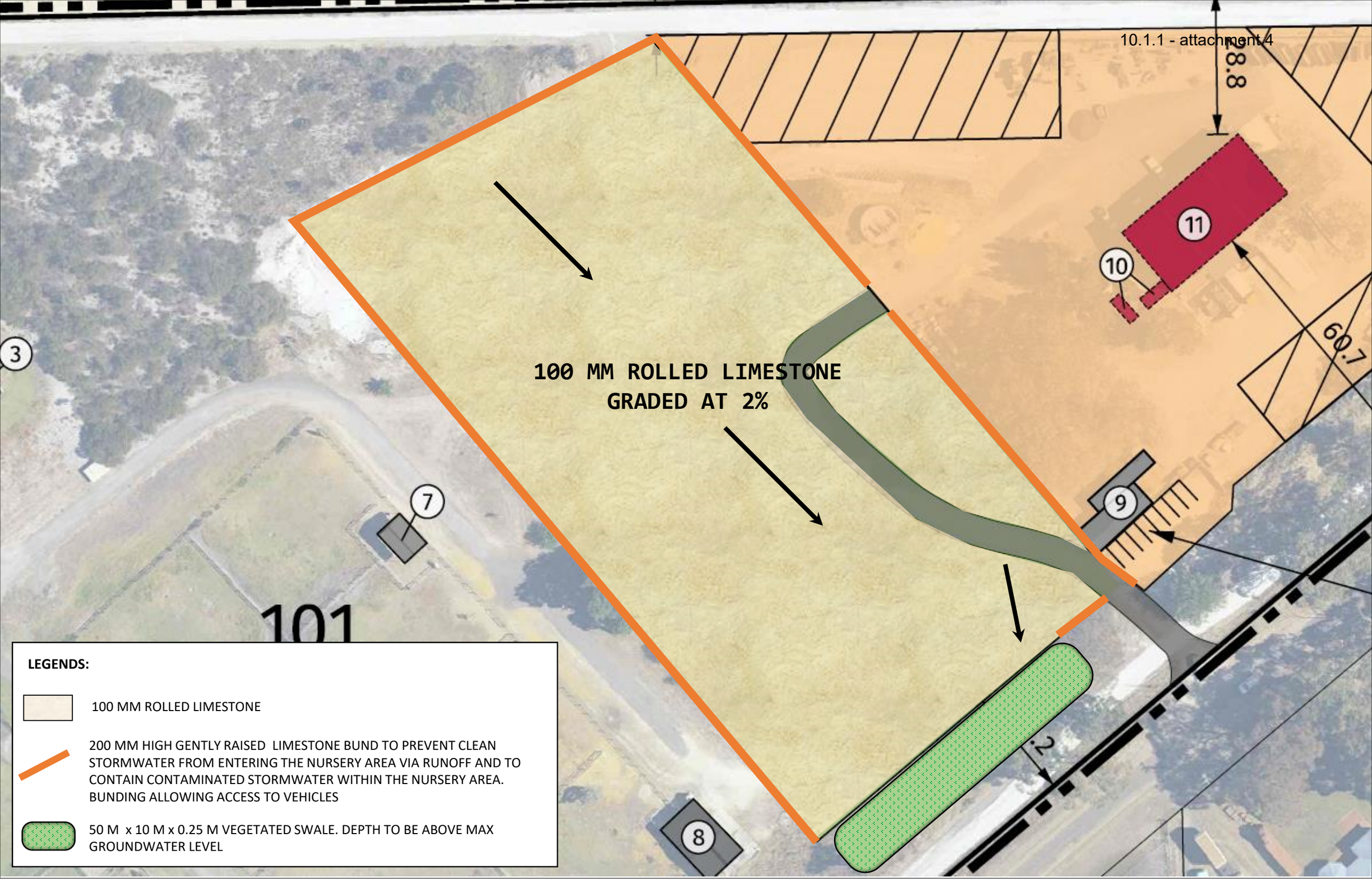
FIGURE 11. Typical Irrigation System

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: Bioscience



LEGENDS:

100 MM ROLLED LIMESTONE

200 MM HIGH GENTLY RAISED LIMESTONE BUND TO PREVENT CLEAN STORMWATER FROM ENTERING THE NURSERY AREA VIA RUNOFF AND TO CONTAIN CONTAMINATED STORMWATER WITHIN THE NURSERY AREA. BUNDING ALLOWING ACCESS TO VEHICLES

50 M x 10 M x 0.25 M VEGETATED SWALE. DEPTH TO BE ABOVE MAX GROUNDWATER LEVEL

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FIGURE 12. Runoff and Stormwater Management Within Nursery Area

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: Abstracted from Harley Dykstra's development site plan

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Client: Brad and Lisa Walton
Date: 01/09/2020
Drawn: DA
Checked: PK
Revision: B

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FIGURE 13. Proposed Monitoring Bore Locations

132 Boomerang Rd, Oldbury WA 6121, Australia

SOURCE: Bioscience Proposal

Appendix A: Development Site Plan

427

102

101
10.0505ha

53

2

BOOMERANG ROAD

6.4

28.8

60.7

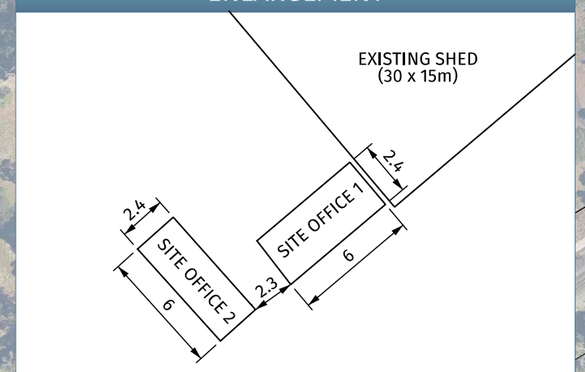
22.2

Staff/Visitor Parking

BUILDINGS / STRUCTURES SUMMARY

NUMBER	DESCRIPTION
1	Dwelling
2	Water Tank
3	Gazebo
4	Shed
5	Paddock Shelter
6	Paddock Shelter
7	Paddock Shelter
8	Stable/Shed
9	Shed/Staff Amenities
10	Transportable Offices
11	Shed

ENLARGEMENT



See drawing 2231-01 for site office details

LEGEND

- Subject Land (10.0505ha)
- Proposed Hardstand/Parking (1.1847ha)
- Proposed Nursery (1.2324ha)
- Commercial Vehicle/Machinery Parking
- Proposed Buildings & Structures sujbect to this application
- Existing/Approved Structures
- Driveway

DEVELOPMENT SITE PLAN

Lot 101 (No. 132) Boomerang Road OLDBURY

Plan No. | 22031-01
Date | 05/06/20
Drawn | NP
Checked | BdR
Revision | E

Scale | 1:2000@A3

0 20m 40m 60m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

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