

4.7 Summary of Flood Risk as a Result of the Development

This section reviews the ongoing risk to the site, the risk due to the construction and any change in risk due to the proposed permanent works, and is summarised in Table 3.

The primary source of flooding to the site is fluvial, due to the site's proximity to the River Irk. The permanent works are not expected to have an impact on fluvial flood risk (apart from a minor positive impact from reduced overflows from the CSO into the river). The temporary ground level raising to facilitate the temporary bridge abutments and access track, would likely temporarily reduce floodplain storage capacity by up to approximately 42.5m³. Based on model data available (Table 2 Modelled water level and flow upstream and downstream of the development site, it is not possible to prove whether this reduction in floodplain capacity is within Flood Zone 3b (functional floodplain) or not, although EA data suggests the area is only at risk of flooding during events with between 1 % – 0.1 % AEP; so the area is likely outside of Flood Zone 3b. The impact of this temporary reduction in floodplain capacity is likely to be a minimal increase in flood risk, for example flood depths, surrounding the open space around the site rather than elsewhere, as the water would be displaced. The kiosk and pressure relief column could reduce floodplain capacity by around 4m³, which is considered negligible, and this area is also likely outside of Flood Zone 3b. Access to the site would be restricted during the 1% AEP fluvial event as some of the site would be expected to flood. However, this is unlikely to impact the construction or operation of the site as the detention tank would still be expected to function and access is not expected to be required during times of flooding.

The site is at high risk of surface water flooding on the north bank and if ground levels are temporarily raised there to accommodate a compound, surface water could be displaced and pond around the properties to the north of the compound off Boothroyden Road if left unmitigated, however this risk will be avoided through the implementation of temporary drainage. The proposed temporary compound and access track could increase the impermeable area by up to 1,015m². Any change in surface water risk around the compound is expected to be mitigated through temporary drainage; the access track is already at low risk, but any overland flow would be directed towards the river, where the track leads to. The kiosk and pressure relief column would increase the impermeable surface area on site by approximately 4.5m², so would likely have very minimal impact on surface water flood risk to the site or elsewhere. If a combined fluvial and surface water flood event occurred simultaneously during construction, the increase in flood risk within the site boundary could be significant, although it is expected that works would cease during a flood event so access to the site would not be necessary.

The risk of sewer flooding to the site itself is not expected to change and will still be possible due to the presence of sewer infrastructure and potential for failure. However, the proposed works are expected to reduce the risk of sewer flooding to surrounding properties and infrastructure as the storm water detention tank will improve the sewer network capacity. It is assumed that development would be designed in a way to minimise any risk of sewer flooding to the site so additional mitigation would not be necessary.

Groundwater flooding is considered unlikely and the proposed development is not expected to impact the risk of groundwater flooding, to the site or elsewhere. Groundwater ingress during excavation would be addressed by de-watering.

Similarly, the risk of flooding from an uncontrolled release of water from reservoirs is considered unlikely. If this risk did occur during construction when river levels were also high, the risk to the site and surrounding land may be slightly increased due to the temporary reduction in floodplain capacity as a result of the temporary ground raising. However, this is very unlikely to occur during the 11-month construction.

During the 50-year lifespan of the development, climate change is likely to increase the frequency and severity of rainfall events. Therefore, the risk of flooding to the site from fluvial and surface water sources will likely increase over time which could mean the site is more regularly inaccessible due to being flooded. The proposed development is water compatible and automatically operated though, so access during a flood is not expected to be necessary.

Recommendations to help mitigate the residual risks to and from the proposed development are detailed in Section 5.

Table 3 Summary of Flood Risk

Flood Source & Phase of Development	Existing Risk to the Site	Future Risk to Development	Mitigation Measures Required
Fluvial – Construction	High	High	Yes
Fluvial – Operation	High	High	Yes
Surface – Construction	High	High	Yes
Surface – Operation	High	High	Yes
Sewer – Construction	Medium	Medium	No
Sewer – Operation	Medium	Medium	No
Groundwater – Construction	Low	Low	No
Groundwater – Operation	Low	Low	No
Reservoir – Construction	Low	Low	No
Reservoir - Operation	Low	Low	No
Other Sources: Tidal & Canals - Construction	Low	Low	No
Other Sources: Tidal & Canals - Operation	Low	Low	No

5. Conclusions and Recommendations

5.1 Conclusions

As discussed in Section 2.1.2, according to the NPPF, essential infrastructure or water-compatible infrastructure within Flood Zone 3b (functional floodplain) should be designed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage; and
- not impede water flows and not increase flood risk elsewhere.

Although based on available data (Appendix H) it is not possible to prove whether the proposed development is within Flood Zone 3b or not, taking a conservative approach and assuming it is within the functional floodplain, this FRA has concluded that:

- The proposed development would remain operational in times of flood. Access would likely be restricted during 1% AEP fluvial events (or surface water flood events during construction) due to part of the site being flooded. However access is not necessary during a flood and operational measures will be used to reduce the risk of maintenance staff being on site during a flood event;
- The proposed permanent works are not expected to notably impact floodplain storage capacity. Temporary works, including ground level raising to facilitate the access bridge abutments and access track, would likely temporarily reduce floodplain storage by approximately 42.5m³. However, this land is likely outside of Flood Zone 3b and the loss would be for a maximum 11-month construction period, so given the small volume of loss and relative levels, would likely have minor impact to flood levels in open areas rather than impact properties or infrastructure; and
- The proposed permanent works are not expected to impede water flows or increase flood risk elsewhere. Temporary works, including the bridge, access track, and compound, may temporarily increase flood risk to the site and immediate surrounding area, although steps can be taken to mitigate any increase in risk, as detailed below.

5.2 Recommendations

In order to ensure that the proposed temporary works do not negatively impact flood risk on site or elsewhere, the following actions are recommended:

- Weather forecast monitoring and subscription to the Environment Agency's Flood Warning Service. In the event of a Flood Alert or Flood Warning, work should cease where possible, with materials, equipment and people removed from the floodplain. Any materials left should be secured in order to reduce the risk of being washed downstream.
- Temporary surface water drainage around the proposed compound, particularly to prevent runoff from flowing towards the properties at the back of Boothroyden Road.
- Detailed design should minimise any temporary reduction in floodplain storage e.g. through minimising the surface area of ground level raising to accommodate the temporary bridge abutments (as much as feasible whilst prioritising structural stability of the bridge)
- Riverbanks and associated flood defences in the vicinity of the site should be regularly monitored, and any defects reported to the Environment Agency. Natural banks should be safeguarded and reinforced (with relevant permissions) where necessary to maintain its stability. Banks should be reinstated to their previous condition (as a minimum) after the works are completed, including re-seeding banks where necessary to provide erosion protection.

- Although mapping indicates the groundwater flood risk to be negligible there is likely to be shallow perched groundwater bodies in the alluvium and glaciofluvial sheet deposits. Groundwater management may be required during construction of the CSO due to potential shallow groundwater levels recorded in the area. If dewatering is required this will need to consider discharge to the river and stability of any flood defences at the site.
- Where temporary works are being carried out, e.g. temporary compound and vegetation clearance, after works are completed, the area should be re-instated to its original condition (or improved as appropriate), for example through re-seeding.
- Safe Systems of Work (SSoW) and appropriate Risk Assessment and Method Statement should be produced in advance of the works. These documents should reflect the risk and provide mitigation for working nearby to a CSO and existing bridge, and above sewer network infrastructure, to reduce the risk of infrastructure damage.

Additionally, to ensure the site will remain operational and safe for users in times of flood, the following actions are recommended:

- Prior to attending site, staff should check the EA's Flood Warning Service for any Flood Alerts or Warnings issued to ensure staff do not try and attempt to access the site when it could be flooded.
- The ventilation louvre on the kiosk should be built no lower than 69.18mAOD, to provide a 300mm freeboard above the 1% AEP flood level to help prevent floodwater from entering the kiosk.
- Permanent site drainage could be considered during detailed design to prevent any localised mounding of surface water or groundwater.

6. References

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Appendix A. Flood Map for Planning

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
385035/405006

Created
18 Mar 2024 16:08

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

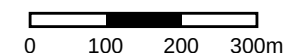
Your reference
<Unspecified>

Location (easting/northing)
385035/405006

Scale
1:10000

Created
18 Mar 2024 16:08

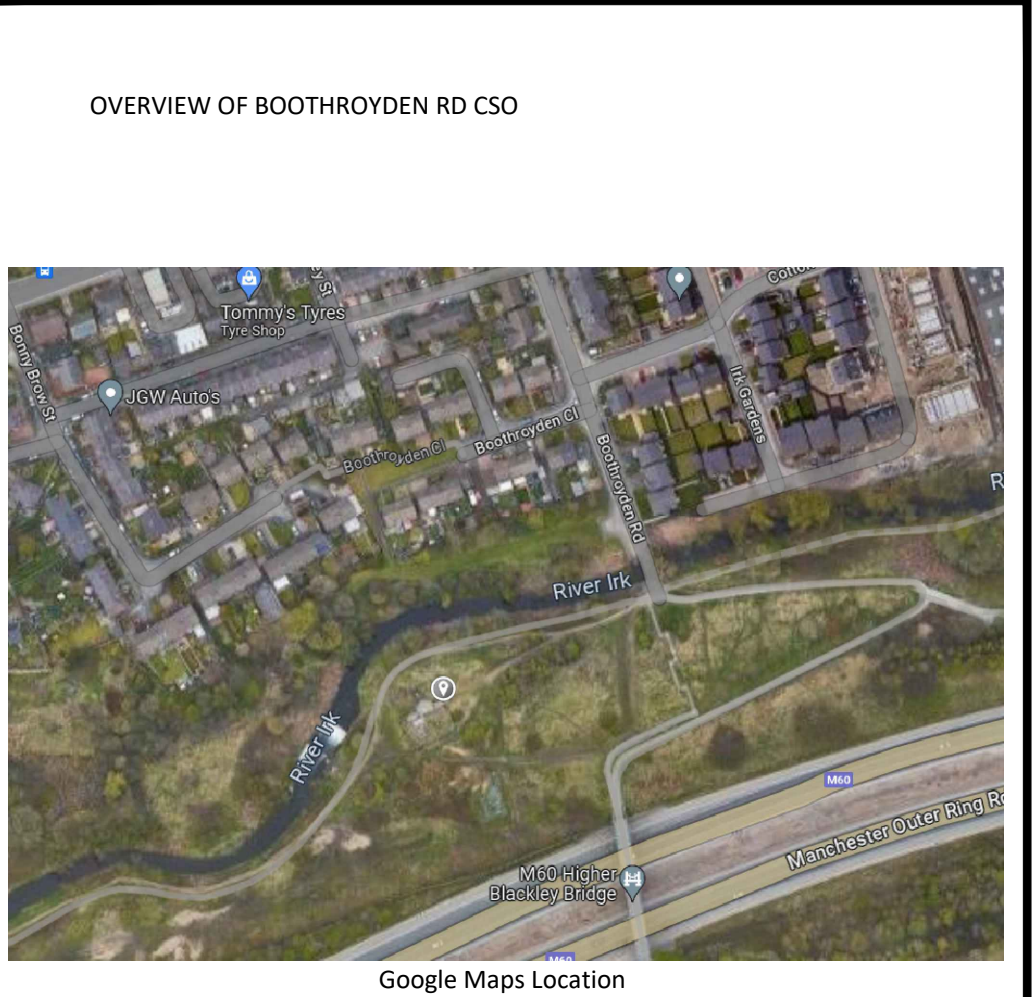
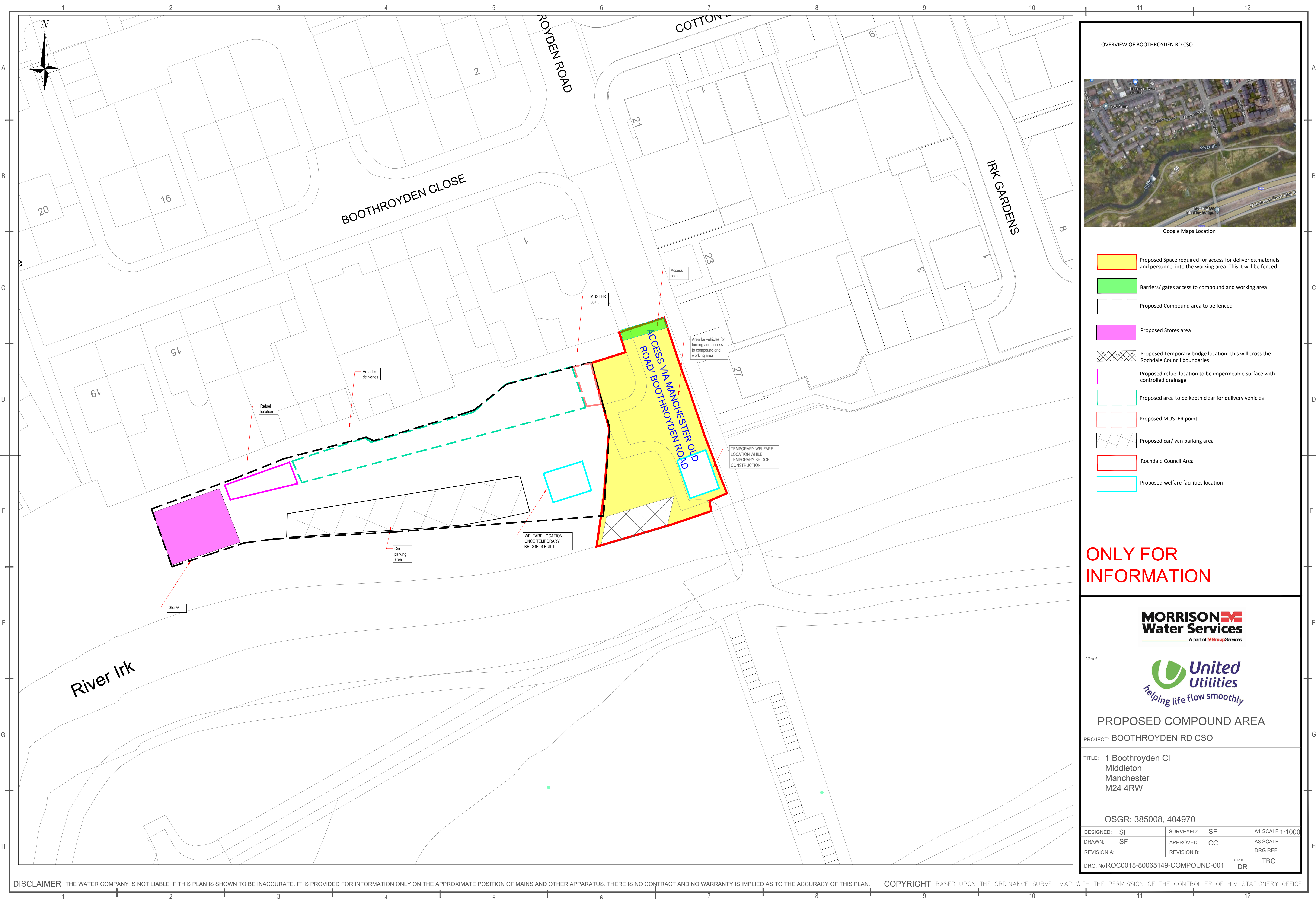
- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area



Appendix B. Site Plan



Appendix C. Proposed Compound Area



- Proposed Space required for access for deliveries, materials and personnel into the working area. This it will be fenced
- Barriers/ gates access to compound and working area
- Proposed Compound area to be fenced
- Proposed Stores area
- Proposed Temporary bridge location- this will cross the Rochdale Council boundaries
- Proposed refuel location to be impermeable surface with controlled drainage
- Proposed area to be kept clear for delivery vehicles
- Proposed MUSTER point
- Proposed car/ van parking area
- Rochdale Council Area
- Proposed welfare facilities location

ONLY FOR INFORMATION



MORRISON Water Services
A part of MGroupServices

Client:



United Utilities
helping life flow smoothly

PROPOSED COMPOUND AREA

PROJECT: BOOTHROYDEN RD CSO

TITLE: 1 Boothroyden Cl
Middleton
Manchester
M24 4RW

OSGR: 385008, 404970

DESIGNED: SF	SURVEYED: SF	A1 SCALE 1:1000
DRAWN: SF	APPROVED: CC	A3 SCALE
REVISION A:	REVISION B:	DRG REF.
DRG. No ROC0018-80065149-COMPOUND-001		STATUS DR TBC