



## Joint Development Control Committee - Cambridge Fringes

Date: Wednesday, 20 March 2019

Time: 10.30 am

Venue: Committee Room 1 & 2, The Guildhall, Market Square, Cambridge, CB2 3QJ

Contact: democratic.services@cambridge.gov.uk, tel 01223 457000

## Agenda

## Member Development Programme

9.30 to 10.30 AM - Committee Room One

Greg Kearney, Environmental Health Officer: Odour considerations in the planning process

- 1 Apologies
- 2 Declarations of Interest
- 3 Minutes (PAGES 3 6)

### All Committee Members may vote on this item

4	18/1195/REM - Lot S3 North West Development Site	(PAGES 7 - 74)
5	New Odour Assessment of Cambridge Water Recycling Centre	(PAGES 75 - 134)
6	Meeting Dates 2019/20	(PAGES 135 - 136)

Joint Development Control Committee - Cambridge Fringes Members: Cambridge City Council: Cllrs Blencowe (Chair), Bird, Page-Croft, Sargeant, Smart and Tunnacliffe, Alternates: Holt, Nethsingha, Moore and Thornburrow

**Cambridgeshire County Council:** Cllrs Bradnam, Harford, Hudson and Richards, Alternates: Cuffley, Kavanagh, Kindersley, Nethsingha, Whitehead and Wotherspoon

**South Cambridgeshire District Council:** Cllrs Bygott, Chamberlain, Hunt, de Lacey (Vice-Chair), Sollom and Williams, Alternates: Allen, Cone, Ellington, Howell, Cheung Johnson, Topping, Waters and Van de Weyer

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JDC/1

## JOINT DEVELOPMENT CONTROL COMMITTEE - CAMBRIDGE FRINGES

23 January 2019 10.35 - 11.52 am

**Present**: Councillors Blencowe (Chair), Bird, Page-Croft, Sargeant, Smart, Tunnacliffe, Harford, Richards, Hunt, de Lacey (Vice-Chair), Sollom and Williams

## **Officers Present:**

Committee Manager: Sarah Steed

## **Developer Representatives:**

Project Director Cambridge University, Heather Topel Cambridge Univerity: Brian Nearney DRMM: Tonia Tkachenko DRMM: Jonas Lencer SACO / LOCKE: Charles Cresse SACO Apartments: Phil Pamphilon SACO Project Manager: Keir Freestone Aecom: Melissa Robertshaw Robert Myers Associates: Robert Myers

## FOR THE INFORMATION OF THE COUNCIL

## **19/1/JDCC Apologies**

Apologies were received from County Councillors Bradnam and Hudson and SCDC Councillor Bygott.

## **19/2/JDCC** Declarations of Interest

Councillor	Item	Interest
SCDC Councillor de	19/46/JDCC	Personal: He was
Lacey		the SCDC
		representative for
		Girton and this
		development was on
		the edge of the
		village.

#### **19/3/JDCC Minutes**

The minutes of the meetings held on the 24 October 2018 and 21 November 2018 were agreed and signed as a correct record.

## 19/4/JDCC Proposed hotel and aparthotel, Eddington

The Committee received a pre-application presentation on the proposed hotel and aparthotel in Eddington. This followed a previous pre-application briefing on the 21 November 2018 (minute reference 18/38/JDCC), which raised the following issues:

- Basement and grade level parking
- Cycle parking

Members raised comments/questions as listed below. Answers were supplied, but as this was a pre-application presentation, none of the answers were to be regarded as binding and so are not included in the minutes.

- 1. Asked how many staff would be on site at any one time.
- 2. Asked if there would be any contribution to fund bus services to Cambridge North Station (through NIAB site).
- 3. Asked if the applicant would seek to recruit employees from the local area.
- 4. Asked if the electric grid could support the number of electric car charging points being provided.
- 5. Commented that there were 22 parking spaces for staff and asked if any of these were accessible staff parking spaces.
- 6. Asked if the proposed mini-bus would be accessible.
- 7. Asked how many of the hotel rooms had wet rooms.
- 8. Asked about a taxi drop off point.
- 9. Asked how many car parking spaces were being provided that were not electric car charging spaces.
- 10. Asked if the hotel development did not come forward whether any other development would come forward for example residential.
- 11. Raised concerns about displacement of parking in the area and asked how the parking provision figures had been calculated.
- 12. Asked for clarification about what assistance would be given to employees to help them find a place to live.
- 13. Asked to see the parking survey results.
- 14. Commented that the application had improved since the previous preapplication presentation.
- 15. Asked how many cargo bike parking spaces were proposed.

- 17. Asked for further details regarding the specifications for the slow charging points.
- 18. Questioned what measures would be in place to prevent petrol/diesel cars parking in an electric car parking space.
- 19. Asked if the parking data covered both the longer stays (in the aparthotel) as well as the shorter hotel stays.
- 20. Asked what the hotel would do if there was insufficient parking available on site for their customers.
- 21. Asked for clarification what the short stay cycle parking was for.

The meeting ended at 11.52 am

## CHAIR

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# Agenda Item 4

## JOINT DEVELOPMENT CONTROL COMMITTEE (CAMBRIDGE FRINGE SITES)

## Report by: Head of Planning Services

Date: 20 March 2019

Application Number	18/1195/REM	Agenda Item	
Date Received Target Date	9 August 2018 Eot 25 March 2019	Officer	John Evans
Parishes/Wards	Castle		
Site	Market Lot S3, located Road, Madingley Ro Cambridge, Cambridges	d within Land B bad, and the shire	etween Huntingdon M11, Eddington,
Proposal	Reserved matters ap 13/1402/S73 for constru- road, cycle parking, ca associated ancillary stru	oplication pursu uction of 186 resi ar parking, lands uctures.	ant to application dential units, access caping, utilities and
Applicant	University of Cambridge	9	
Recommendation	Approve with conditions	i	
Application Type	Reserved Matters	Departu	' <b>e:</b> No

SUMMARY	The development accords with the Development Plan for the following reasons:	
	<ol> <li>The scheme accords with the outline parameter plans.</li> </ol>	
	<ol> <li>The height and mass of the proposed development is contextually appropriate in its setting.</li> </ol>	
	<ol> <li>A high quality scheme of distinctive character will provided, which prioritises cycling through its design.</li> </ol>	
	4) Car and cycle parking is successfully	

	incorporated into the layout.
RECOMMENDATION	APPROVAL

#### 0.0 INTRODUCTION

- 0.1 This report relates to a reserved matters application within the Cambridge City Council (CCC) boundary. The applications is part of the wider North West Cambridge Development Site (NWCD) now known as Eddington.
- 0.2 The wider site sits to the northwest of Cambridge, and to the south of Girton Village, between Huntingdon Road and Madingley Road. The Cambridge Local Plan 2018 recognises North West Cambridge as an Area of Major Change through the North West Cambridge Area Action Plan. (NWCAAP 2009). The NWCAAP is a joint document adopted by both Cambridge City Council and South Cambridgeshire District Council. Both the Cambridge Local Plan 2018 and the NWCAAP together form the policy basis for the assessment of any planning application on this site.
- 0.3 Outline permission was granted and the S106 signed on 22 February 2013. In November 2013 two Section 73 applications (S/2036/13/VC and C/13/1402/S73) were approved to the outline permissions, which allowed for a variation in heights within some local centre locations. (This does not relate to Lot S3). The outline applications required Environmental Impact Assessment (EIA).
- 0.4 The approvals relating the entire site are for a mixed-use development and comprise up to 3,000 dwellings (of which 1,500 are to be affordable key worker units), 2,000 student bed spaces, 100,000sqm of employment floor space (of which at least 60,000sqm will be academic employment space), a primary school, open space, recreational facilities, and a local centre which includes retail and community facilities, a hotel, police office, health facilities, senior living accommodation and an energy centre.
- 0.5 The Joint Development Control Committee (JDCC) has since determined a number of strategic conditions, namely; a Site Wide Phasing Plan (Condition 5) the Design Code (Condition 7), a Youth and Play Strategy (Condition 9), the Site Wide Drainage Strategy (Condition 26) and Construction Environmental Management Plan (Condition 52). In addition, a number of other strategic conditions have been approved relating to the whole site.
- 0.6 Detailed reserved matters have been progressed for Phase 1 of the site, of which Lot S3 is a part. The first phase is based around the local centre and provides for a mix of key worker housing, market housing, student accommodation as well as the community facility, primary school and local centre uses such as food store, café and hotel. Construction is nearing completion with approximately 700 homes occupied. Lots M1 and M2 to the north of the site are still under construction.

0.7 This proposal has been discussed with officers as part of comprehensive preapplication work on Phase 1, as well as presentations to the Cambridgeshire Quality Panel, Disability Panel, the JDCC and the North West Community Forum.

#### 1.0 SITE DESCRIPTION/AREA CONTEXT

- 1.1 The application site is a rectangular shaped plot situated at the southern end of Eddington. It is situated around 100m north of Madingley Road Park and Ride site. The entire 0.71ha site falls within Cambridge City Council jurisdiction. In the context of the masterplan, the scheme forms a market residential parcel within the local centre character area, as defined in the Design Code.
- 1.2 The site itself is currently flat and featureless, with construction hoarding at the boundaries as the site awaits development. There is a change in level of 2300mm across the length of the site, the lowest point at the west end. The site slopes up for around three quarters of the development length and gently down to the eastern end at Eddington Avenue. There is a more significant gradient north to south, with higher levels on Turing Way and lower levels to the green corridor.
- 1.3 Lot S3 is situated to the south of Turing Way. The new context to the north of Turing Way is Lot 1 (Wilkinson Eyre) and Lot 3 (Mecanno) residential developments. These recently completed developments are now occupied. Beyond Lots 1 and 3 is Sainsbury's supermarket, Market Square and other residential apartments which make up the local centre.
- 1.4 To the east of the site is Eddington Avenue, the principal access into Eddington from Madingley Road. Beyond which is the ridge and furrow field and the detached dwelling houses of Lansdowne Road and the northern part of Conduit Head Road.
- 1.5 To the south west of the site is a green corridor, a planted landscaped area which forms a part of the green spaces network of Eddington. Beyond this is Madingley Road Park and Ride site, separated from the application site by tree planting and the Washpit Brook. At the north west end of the green corridor is the Southern Utilities Cluster, a single storey brick building.
- 1.6 The site is not located within a Conservation Area, although it will be seen from the Conduit Head Road Conservation Area. No protected trees are within the application site, but there are mature specimens on the boundary with the Washpit Brook. The site is adjacent to the Cambridge Green Belt (the open space of the western edge) and situated to the south west of 'Travellers Rest' a Geological Site of Special Scientific Interest (SSSI). The SSSI is situated around 500m from the site at Storeys Field.

#### 2.0 THE PROPOSAL

- 2.1 The application seeks consent for the erection of five buildings accommodating at total of 186 market apartments. The blocks contain predominantly four levels of accommodation, with a basement car park.
- 2.2 The buildings are orientated north east to south west, with the primary entrances to the north off Turing Way. Block A is a fully enclosed block with an internal courtyard. In the centre of the site are three S shaped blocks B, C and D which have interlocking gardens and terraces. At the eastern end of the site is the L shaped block E. Each block stands approximately 13.5m in height which reduces to 13m at the lowest point of the sloped roof profile. The courtyard amenity spaces are 14m in width from the flank wall of each block.
- 2.3 The materials of construction are predominantly glazed brickwork, turquoise in colour. The windows are relatively large, with floor to ceiling glazing and regular piers in between the window planes. The window apertures have a glazed plane and an attenuated louvre panel for ventilation. The north Turing Way elevation has projecting balconies from all of the blocks. The southern elevation of all blocks have inset balconies within the footprint of each building. The entrances have bronze coloured panels. The balustrades and metal work will be made from dark grey coloured metal woren rods.
- 2.4 Each block has a communal foyer on the ground floor which is a co working amenity space for residents. These are flexible spaces with seating, kitchen facilities and an accessible toilet.

Summary of housing mix

2.5 A mix of market apartment types are proposed from studio units to larger three bed units. This is summarised in table 1 below:

Unit size	No. of units	Mix
Studio	51	27%
		2170
One bed	55	30%
Two bed	73	39%
Throo hod	7	10/
		470
Total	186	100%

Table 1: Apartment mix

Car parking and access

2.6 Access into the basement car park is via the ramp at the south west corner of block A.

- 2.7 A total of 186 car parking spaces are provided for residents (ratio of 1:1 per dwelling). Of these spaces 20 are equipped for E-charging. Ten spaces are suitable for disabled people, including eight which have E-charging.
- 2.8 Six visitor car parking spaces are provided at ground level to the western end of the block A. A further one space is available within the basement.
- 2.9 A pedestrian footpath runs north to south through the site linking Turing Way with the green corridor to the south.

#### Cycle parking and access

- 2.10 A total of 543 cycle parking spaces are provided across the development. This includes 20 off gauge spaces (for large cycles) 50 visitor spaces and 195 accommodated within internal apartment storage.
- 2.11 The reserved matters application is accompanied by the following documents:
  - 1. Design and Access Statement
  - 2. Planning Statement
  - 3. Daylight and Sunlight Report
  - 4. Biodiversity Survey and Assessment
  - 5. Noise Insulation Scheme
  - 6. Transport Statement
  - 7. Surface Water and Foul Water Drainage Strategy
  - 8. Utilities Statement
  - 9. Site Waste Management Plan
  - 10. Sustainability Statement
  - 11. Energy Strategy
  - 12. Piling Risk Assessment
  - 13. Wind Desk Based Assessment
  - 14. Sample Overheating Assessment
  - 15. RECAP Waste Toolkit

#### Amended and additional information

- 2.12 The following information has been received:
  - Response to height and massing queries, including additional verified views.
  - Response to landscape officer comments, including provision of an access ramp.
  - Response to Camcycle comments including amendments to the gradient of the basement ramp; cycle parking to the north of the basement; car stopping areas in the basement and integration of contrasting coloured tapered kerbs.

- Additional drainage information.
- Apartment layout changes to meet new Local Plan internal space standards. Amended plans to increase the internal floor space of eight apartments and the addition of balconies to 22 apartments.

#### 3.0 SITE HISTORY

Reference	Description	Outcome
Strategic Approvals		
11/1114/OUT & S/1886/11	Outline for 3,000 dwellings; up to 2,000 student bedspaces; employment floorspace, including commercial and academic floorspace; retail floorspace; Senior Living; Community Centre; Indoor Sports Provision; Police; Primary Health Care; Primary School; Nurseries; Hotel; Energy Centre; and associated infrastructure including roads, pedestrian, cycle and vehicle routes, parking, drainage, open spaces and earthworks.	Approved
13/1402/S73 and S/2036/13/VC	Section 73 application to vary condition 69 (Drawing Numbers) of 11/1114/OUT and S/1886/11.	Approved
'Lot' Approvals		
13/1400/REM and S/2044/13/RM	325 post graduate bed spaces, part of strategic green corridor, part of strategic cycle and pedestrian route and associated infrastructure.	Approved
13/1828/REM	Community centre and nursery, including public realm and associated ancillary structures.	Approved
14/1722/REM	264 key worker units comprising 100 one bedroom units, 161 two bedroom units and 3 four bedroom units, 1,983sqm of commercial uses A1, A3 and A4, flexible social space and ancillary estate office, alongside car and cycle parking, landscaping, public realm, utilities and associated ancillary	Approved

	structures, pursuant to outline approval	
	13/1402/S73.	
17/0285/REM	Market Lot M3, 106 market residential	Approved
	units, and 416 square metres of	
	commercial space (Use Class D1).	

## 4.0 **PUBLICITY**

4.1	Advertisement:	Yes
	Adjoining Owners:	Yes
	Site Notice Displayed:	Yes

## 5.0 POLICY

## 5.1 **Development Plan Policy**

PLAN		POLICY NUMBER
Cambridge Plan 2018	Local	Policy 4: The Cambridge Green Belt Policy 8: Setting of the City Policy 14:Areas or major change and opportunity areas Policy 28: Carbon reduction, community energy networks, sustainable design and construction and water use Policy 33: Contaminated Land Policy 34: Light Pollution Control Policy 50: Residential space standards Policy 50: Residential space standards Policy 51: Accessible homes Policy 55: Responding to context Policy 57: Designing new buildings Policy 59: Designing Landscape and the Public Realm Policy 67: Protection of Open Space Policy 69: Protection of sites of Local Nature Conservation Importance Policy 70: Protection of Priority Species and Habitats Policy 71: Trees Policy 80: Supporting sustainable access to development Policy 82: Mitigating the transport impact of development Policy 82: Parking management

PLAN	POLICY NUMBER
North West Cambridge Area Action Plan 2009	NW1 Vision NW2 Development Principles NW4 Site and Setting NW6 Affordable Housing NW7 Balanced and Sustainable Communities NW9 Employment Uses in the Local Centre NW10Mix of Uses NW11 Sustainable Travel NW16Public Transport Provision NW17 Cycling Provision NW17 Cycling Provision NW18 Walking Provision NW19Parking Standards NW21 A Local Centre NW24 Climate Change and Sustainable Design and Construction NW25 Surface Water Drainage NW26 Foul Drainage and Sewage Disposal NW28 Construction Process NW30 Phasing and Need

5.2 Relevant Central Government Guidance, Supplementary Planning Documents and Material Considerations

Central	National Planning Policy Framework 2018
Government Guidance	National Planning Policy Framework – Planning Practice Guidance March 2014
	Circular 11/95
	Technical housing standards – nationally described space standard – published by Department of Communities and Local Government March 2015 (material consideration)
Supplementary	Sustainable Design and Construction (May 2007)
Planning Guidance	Cambridgeshire and Peterborough Waste Partnership (RECAP): Waste Management Design Guide Supplementary Planning Document (February 2012)
Material	City Wide Guidance
considerations	Biodiversity Checklist for Land Use Planners in Cambridgeshire and Peterborough (March 2001).
	Cambridgeshire Quality Charter for Growth (2008)

	Cycle Parking Guide for New Residential Developments (2010)
	Air Quality in Cambridge – Developers Guide (2008)

#### 6.0 CONSULTATIONS

#### Cambridgeshire County Council (Transport Assessment Team)

- 6.1 <u>No objections</u>. The development overall is consistent with the outline permission. The provision of cycle parking is consistent with the NWCAAP.
- 6.2 The analysis in the Transport Assessment demonstrates that sufficient car parking is being provided for residents for expected car ownership levels and this complies with the maximum standards in the NWCAAP.

#### Cambridgeshire County Council (Highways Development Management)

6.3 <u>No objections</u>. Please add a condition to any permission that the Planning Authority is minded to issue in regard to this proposal requiring that all the proposed access points off Turning Way be constructed so that their falls and levels are such that there is a positive gradient, of not less than 1:40 away from the back edge of the footway along Turning Way into the proposed development to prevent private water from the site draining across or onto the proposed adopted public highway.

#### **Environmental Health**

6.4 <u>Support.</u> This application has been the subject of pre-application workshops. We have no objection in principle to this reserved matters application, subject to imposition of the conditions in addition to any conditions that remain relevant under the outline variation permission approval ref. 13/1402/S73.

#### Artificial lighting

6.5 All artificial lighting (not just street lighting) full vertical and horizontal isolux contour maps and an assessment of artificial light impact on existing and proposed residential premises both on and off site (including neighbouring lots) should be carried out. This is secured by a condition on the outline.

#### Indoor Noise

6.6 The AECOM Noise Insulation Scheme Report, June 2018 is very thorough and comprehensive. Predicted indoor ambient noise levels achieve the requirements of outline planning condition 50 following installation of a noise insulation scheme / mitigation as appropriate for all the scenarios assessed.

6.7 Vehicles using the car park ramp are not predicted to significantly increase ambient noise levels above those that would already be apparent due to the M11 and the Primary Street.

#### Air Quality

6.8 Section 5.7 of the Planning Statement produced by Aecom and dated July 2018 confirms that electric vehicle charge points will be installed in 29 car parking spaces. Based on the information submitted there are no objections on air quality grounds.

#### **Refuse and Recycling**

- 6.9 <u>No objections.</u> Paper is no longer collected separately on the Eddington (or anywhere in the District/City) site. We are moving away from the provision of community 'bring site' recycling points.
  - Bin distances need to meet RECAP guidelines so that residents are not walking further than is acceptable.
  - There needs to be a strategy for management of organic waste. It is possible to collect this waste stream but this would require an additional vehicle to do so. Alternatively communal bins should be considered. Either way developers need to make it clear how organic waste will be managed.

#### Urban Design and Conservation Team

Comments on application as amended

- 6.10 <u>Support.</u> Overall, there is much to commend about the proposed scheme for Lot S3 at Eddington. The submission is of high quality and the comprehensive Design and Access statement clearly sets out the evolution of the scheme and the compliance with the Design Code. The proposal received a favourable assessment from the Cambridgeshire Quality Panel.
- 6.11 Heights and massing The overall approach to form and massing is supported. The interlocking form of the five proposed buildings, allows for this lot to respond to key contextual and place making opportunities, by creating a strong active frontage onto Turing Way and visual and physical connections to the green corridor to the south. The L and S-shape forms in particular, create appreciable gaps between the buildings, which successfully break down the massing of the proposal when viewed from areas south of the lot.
- 6.12 Whilst the design code suggests '3-storeys generally for this Lot', in our view the proposal accords with the more overarching principles set out on page 31 of Design Code relating to urban hierarchy and legibility and is considered appropriate for this location as a key gateway into the wider development.
- 6.13 Internal Space standards and provision of private amenity space revised plans show all units meet the minimum standards and provide an external private space. This is supported.

6.14 We believe the proposal has the potential to create a high quality and welldesigned scheme that will complement Phase 1 of Eddington. The proposal complies with the approved parameter plans and key aspects of the design code. Subject to the clarification of materials on the submitted elevations, the application is supported in Urban Design terms.

#### Senior Sustainability Officer (Design and Construction)

6.15 <u>Support.</u> The sustainability strategy is formulated around the 13 sustainability principles established at outline stage which are based on the Bioregional One Plant Living measures, an approach which is welcomed. It is clear from both the sustainability and Energy Statement and the Design and Access Statement that these requirements have been used to inform the design of Lot S3.

#### Access Officer

6.16 See Disability Panel comments.

#### Head of Streets and Open Spaces (Landscape Team)

Comments on application as amended

6.17 <u>Support.</u> Overall the proposals are acceptable and well considered however conditions are required to confirm specific planting conditions and irrigation.

#### Comments on application as submitted

- 6.18 <u>Support.</u> Overall, the proposals are acceptable and well considered however we require some clarifications prior to providing full support for the application.
- 6.19 Coordinated technical engineer's and landscape sections are needed through the courtyard landscape areas to understand the depths of soils for all the various types of beds. Ideally, through the deepest and shallowest beds so that we can understand their make-up and consider their suitability.
- 6.20 The illustrative landscape sections through the thresholds shown in the DAS are concerning where the landscaped areas are shown with steep and curved mounding. All the beds should be terraced or more flat in nature to allow for retention of water and mulch on the beds or both soils.
- 6.21 Confirmation of automatic irrigation for all planting areas on the podium is required. These areas will be vulnerable to weather conditions and must be irrigated to maintain healthy landscape beds.
- 6.22 There is a concern over the lack of inclusive access for the public path which crosses the site between Blocks A and B. It is considered that there is scope to include an accessible ramp adjacent to the steps to accommodate this change in level.

6.23 Overall, the planting strategy is acceptable, however we have concerns over the use of Quercus palustris. This is a 'thirsty' tree which prefers acidic, moisture rich soils. We feel this is not an ideal choice for a podium where soils are shallow and will often be dry.

#### Head of Streets and Open Spaces (Walking and Cycling Officer)

- 6.24 <u>Support.</u> Agree that three of the spaces are rendered unusable by the column and that the end spaces next to car parking space 71 look in danger of having the car using this space damaging parked cycles. The length needed for a parked cycle at 45 degrees is 1.5m.
- 6.25 Strongly agree that the ramp should accord with the City Council's Cycle Parking guide which does state that ramps should not exceed 7% (1 in 14) gradient and that there should be a rounded transition at each end (p34 of the guide).
- 6.26 It is agreed that the minimum height clearance should meet guidance which is 2.4m.
- 6.27 It is agreed that 2.15m is narrow for 2-way cycling particularly where there is an upstand either side. If no widening is possible tapering the kerbs as suggested would at least provide a little more space.
- 6.28 Regarding marking of the off-gauge cycle parking, these should be marked with a cargo-bike symbol.

#### Cambridgeshire County Council (Flood and Water Management)

6.29 <u>No objection</u>, subject to compliance condition.

#### Head of Streets and Open Spaces (Sustainable Drainage Officer)

Comments on application as amended

6.30 <u>Support</u>. The additional material is acceptable. There are no surface water flooding or drainage issues associated with the proposals subject to a compliance condition.

Comments on application as submitted

6.31 The submitted hydraulic calculations are not complete and do not include all of the proposed structures. Calculations to show the performance of the system (including all pipes and attenuation features) for a range of summer and winter storm durations for all durations up to the seven day storm event should be provided. The calculations should prove that the water can be contained within the system for a 1 in 30 year event and that there is no

internal property flooding for a 1 in 100 year event + 40% an allowance for climate change. The reference numbers of all features should be consistent to the ones shown in the drainage layout.

6.32 The submitted maintenance plan does not cover all the proposed features (e.g. green roofs, pumping station and the petrol interceptor are not included). This plan should contain the maintenance schedule for all features of the proposed drainage layout.

#### Head of Streets and Open Spaces (Nature Conservation Officer)

6.33 <u>Support.</u> The proposals for Lot S3 are in accordance with the aims and objectives of the site wide Biodiversity Strategy.

#### Environment Agency

6.34 <u>No objections.</u> Subject to informatives relating to surface and foul water drainage and pollution.

#### Anglian Water

6.35 <u>No objections.</u> Anglian Water will take steps to ensure there is sufficient foul drainage capacity. No comments on the used water network.

#### Cambridgeshire Constabulary (Architectural Liaison Officer)

- 6.36 <u>No objections</u> or other comments and this application is supported. This office has had early consultation with the applicants in relation to a Secured by Design (SBD) application.
- 6.37 It would appear from the documents and Design and Access statement that the SBD measures suggested in that consultation will be implemented and we will consult further.

#### Cambridgeshire Quality Panel (Meeting of 2 May 2017, pre submission)

- 6.38 The conclusions of the Panel meeting(s) were as follows:
  - The Panel felt that the scheme has great character and liked the proposed lifestyle it was setting for bike conscious people. Generally they supported the cycle led strategy, but highlighted the need to explore a smarter carparking strategy.
  - Further thought about future climate and ventilation, particularly on the north western façade.
  - Consider alternative/additional social space, such as on the roof. The Panel encourage excellent Wi Fi and coffee to create culture.
  - Consider how to maximise the use of car parking spaces. There is a danger some people who own parking bays will not have cars, so consider a permit arrangement instead.
  - Consider alternative ground level bike store close to the lift and lobby.

6.39 The relevant section of the minutes of the panel meeting(s) are attached to this report as Appendix A.

#### Disability Consultative Panel (Meeting of 27 June 2017, pre submission)

- 6.40 Footpath through the site (with stairs) The Panel were disappointed that although the scheme was presented as having 'accessible routes throughout' the designers were proposing a series of steps to address the level change instead of a ramp. Wheelchair users or the ambulant disabled unable to climb these steps would potentially have to take a lengthy detour onto the pedestrian/ cycleway in order to navigate the site which could potentially lead to conflict.
- 6.41 The Panel would emphasise that routes should be accessible to all, including wheelchair users. Those with a disability would not purchase a property that did not suit their needs. However, this arrangement could result in those who acquire a disability feeling stranded. Should a ramp not be feasible, the Panel would stress that the steps would need to be large, shallow and with a handrail.
- 6.42 Accessible units The Panel note that all units were adaptable but no specific provision was being made for any wheelchair accessible units.
- 6.43 Accessible parking bays These should include electric charging points. The Panel would like to see the provision of basement mobility scooter charging points.
- 6.44 Lifts These may not be firefighting lifts but would need to have a secondary power supply for use in an emergency. The design team to include a comprehensive fire evacuation strategy as part of the submitted application.
- 6.45 Visitor parking The Panel were disappointed by the low number of visitor parking bays; particularly as there would be no routes/linkages provided with the neighbouring Park & Ride site.
- 6.46 Bathrooms The designers are recommended to accommodate wet room shower flooring and drainage in all bathrooms, as any future adaptions if required, would be more straightforward and therefore less costly. The main doors should be fully automated.
- 6.47 Bathroom doors For convenience and space-saving the Panel would recommend integrated sliding doors.
- 6.48 Communal area The Panel would strongly recommend the provision of WC facilities. Although the maintenance issue is understood, such provision would be greatly valued by those with mobility issues.
- 6.49 Generous corridor widths The Panel expressed some concern that these corridors could potentially become cluttered with bikes. A management plan

would need to include the requirement to keep the corridors clear for fire safety.

#### Conclusion

6.50 Some good access features are included here although as discussed, some further work would be recommended.

#### Cambridge Airport

- 6.51 <u>No objections.</u>
- 6.52 The above responses are a summary of the comments that have been received. Full details of the consultation responses can be inspected on the application file.

#### 7.0 REPRESENTATIONS

- 7.1 The owners/occupiers of the following addresses have made representations:
  - 3 Landsdowne Road 7 Lansdowne Road 8 Landsdowne Road 130 Turing Way
- 7.2 The representations can be summarised as follows:

#### Design

- The density is too high and not suitable for the edge of a village.
- Tall structures should be kept to the centre.
- The small windows give the impression of high density flats or office blocks, which is not in keeping with the edge of an urban area.
- Larger windows with fewer mullions would improve its appearance.
- The building is too high and uniform.
- Using different materials would help to break up the lattice effect. Possibly with use of cedar wood cladding.
- This plot is too dense and high and will affect the quality of life for Lansdowne Road residents and property prices.
- The flat line of the proposed block will further emphasise the very unattractive roofline currently presented from all angles of the new development.
- The block should have a more varied roofline.
- This is an opportunity to improve the cheap unattractive appearance of the entire University development.

#### Amenity

- The five storey building will overlook the gardens and some bedrooms of Lansdowne Road properties.

Sustainability

- Rain runoff should be improved.

Other

- Council tax query.

#### Camcycle

Comments on application as amended

7.3 Objection withdrawn. Amendments noted.

#### Comments on application as submitted

7.4 <u>Objection</u>. The application is contrary to policy 8/6 of the 2006 Local Plan and Policy 82 of the Local Plan 2014 based on technical flaws with the plans and sections.

#### Objection 1

- The swept path of cars parking in spaces 49 through 71 will potentially overlap with cycles parked in the row of diagonal cycle parking stands nearby.

#### Objection 2

- The slope of the basement ramp is not specified in the Transport Assessment, however our measurements based on the published diagrams estimate it to be approximately 7.5% to 8.0%. These numbers are in excess of the maximum 7% slope specified in the Cycle Parking Guide.

#### Objection 3

There is a place along the basement ramp where there is only about 2m between floor and ceiling, which is below minimum headroom for a cycleway. There is a section drawing which shows only 1.6m between floor and ceiling. IAN 195/16 table 2.5.2 specifies for covered cycleways an absolute minimum clearance of 2.2m and a desirable clearance of 2.7m.

#### **Objection 4**

 The cycleway on the ramp appears to be 2.15m wide between kerbs on either side each having a 12cm upstand. This is extremely narrow for a bidirectional path because people must maintain a safe distance from the kerbs in order to prevent inadvertent collisions.

#### Objection 5

- The car ramp is a single lane that we presume is controlled by a traffic signal, however no indication is made on the basement floor plan as to where an existing driver would wait. We are concerned that people cycling to and from the ramp may be caught in between cars using and waiting to use the ramp.

#### Proposed amendments

- The cycle parking needs to be kept clear of the swept path of cars. This may require some restructuring of the design. We believe that there is an excessive quantity of car parking provided (see discussion below), therefore one option is to reduce the number of car parking spaces in order to provide the manoeuvring space needed.
- The slope of the ramp should not exceed 7%. This seems to require a lengthening of the ramp by a few metres please ensure that there is at least 2.2m of clearance over the cycle ramp, preferably up to 2.7m.
- The ramp should be able to accommodate a tricycle going down must pass a tricycle going up. Furthermore, even the dynamic envelope of a person on only two wheels going up a steep ramp is much wider than usual, due to wobble, and that needs to be considered.
- Please ensure that the control mechanism for the ramp is made clear: showing the stop line and ensuring clear lines of visibility between people cycling and motorists using or waiting to use the ramp.
- The applicants have promoted the interesting idea of allowing and encouraging people to take their cycles to their flat. The lift is 1.85m by 1.4m according to the Transport Assessment, in order to fit a bicycle. However, this is barely enough room to fit a 'typical bicycle' and would not be sufficient for a tricycle, adapted cycle, cargo cycle or larger mobility scooter, which can often be up to 2.3m in length.
- We believe it would have been useful for the lifts to be able to fit these larger types of cycles, in order to support more diverse usage of cycles.
- We recommend that the applicants increase the number of 'off-gauge' cycle parking spaces, particularly at ground level and distributed across all the blocks, even if that means reducing the overall number of cycle parking spaces.
- We believe there is an excessive quantity of car parking for what is intended to be a site focusing on sustainable transport. Transport Assessment paragraphs 3.14 and 4.25 support our belief. In particular, the estimates based on Castle Ward car ownership show demand for only 142 car spaces out of the 187 in the design.
- 7.5 The above representations are a summary of the comments that have been received. Full details of the representations can be inspected on the application file.

#### 8.0 ASSESSMENT

- 8.1 From the consultation responses and representations received and from my inspection of the site and the surroundings, I consider that the main issues are:
  - 1. Principle of development
  - 2. Compliance with parameter plans and strategic conditions
  - 3. Affordable Housing
  - 4. Context of site, design and external spaces (and impact on heritage assets)
  - 5. Transport
  - 6. Renewable energy and sustainability
  - 7. Residential amenity
  - 8. Disabled access
  - 9. Refuse arrangements
  - 10. Public Art
  - 11. Third party representations
  - 12. Planning Obligations

#### Principle of Development

- 8.2 The principle of development for Lot S3 is established through the 2013 outline planning permission and the NWCAAP.
- 8.3 A number of strategic conditions attached to the outline permission have been discharged by the Joint Development Control Committee, which includes the Design Code, Phasing, Site Wide Drainage strategy, Strategy for Youth Facilities and Children's Play and Public Art strategy.
- 8.4 The applicant seeks the discharge of the following pre-commencement outline conditions:

Condition 1 – Reserved matters details

Condition 6 – Environmental Statement compliance

Condition 8 – Design Code Statement

Condition 11 – Landscape and trees

Condition 20 – Distribution of market and key worker units

Condition 22 – Lifetime Homes

- Condition 23 Code for Sustainable Homes
- Condition 27 Detailed Surface water drainage strategy

Condition 35 - Biodiversity Survey and Assessment

Condition 40 – Car parking for residential properties

Condition 41 – Car parking Strategy

Condition 42 – Car club strategy

Condition 43 – Cycle Parking

Condition 50 – Noise Insulation scheme

Condition 51 – Lighting Condition 54 – Detailed waste management plan Condition 55 – On site waste storage facilities for residential development Condition 65 – Fire hydrants

8.5 These matters are assessed in the relevant subsections in the report.

#### **Compliance with Parameter Plans and Strategic Conditions**

- 8.6 The parameter plans approved as part of the outline application (as amended by 13/1402/S73 and S/2036/13/VC), fix the key principles for the development. The Parameter Plans relevant to this application are:
  - Zone Parameter Plan 01A
  - Access Parameter plan 02A
  - Open Land and Landscape Areas 03A
  - Land Use (Built Development and Ancillary Space) Parameter Plan 04A
  - Urban Design Framework (3.6)
  - Development Building Zones 05A
  - Building Heights Parameter Plan 06A
  - Topography parameter 07A
- 8.7 The proposal complies with all of the parameter plans as approved under the section 73 outline approval ref: 13/1402/S73 and S/2036/13/VC.
- 8.8 The application will provide the key built frontage to primary street (Turing Way) as set out in parameter plan 02. There is no encroachment onto the green corridor to the south, an area reserved for open land under parameter plan 03.
- 8.9 This proposal falls under the 'Residential C3 and C4' area of the Land Use parameter plan 04, which allows for the residential use described.
- 8.10 The development complies with the height and frontage width criteria set out in Parameter plan 05 and 06. The application site falls within building zone J. The maximum building height for this plot is restricted to 15m. Ground level AOD is 17.3m which means block heights range from between 13.37m to 14.5m, well below the maximum 15m which is permitted. Building frontages do not exceed the maximum permitted and the unconventional S shaped footprint means that the depth of most wings of each block does not exceed 12m. Further analysis of building height is discussed below in the design section.
- 8.11 The proposal complies (or is not applicable) to all other Parameter Plans (01-Zones, 03- Open Space and Landscape, 07- Topography, 08- Huntingdon Road Utilities and 09- Madingley Road Utilities).
- 8.12 The proposed development sits within the first phase of Eddington as identified in the Phasing Plan approved under condition 5 of the outline consent.

- 8.13 There are no Youth and Play Facilities proposed through this application, but that is consistent with the site wide strategy approved under condition 9. Areas of play are located in close proximity in the green corridor to the south.
- 8.14 Compliance with other strategic conditions are assessed under the relevant sections below such as the Design Code (Condition 7) under the design section, and Surface Water Drainage (Condition 26) proposals within the drainage section.
- 8.15 The proposal is consistent with the description and quantum of development set out in the outline approval and is, in turn, compliant with policy NW5: Housing Supply, of the NWCAAP.

#### Affordable Housing

- 8.16 Policy NW6: Affordable Housing, along with the S106 requires 50% affordable housing across the entire site to meet the needs of Cambridge University and College key workers. Policy NW7: Balanced and Sustainable Communities, of the NWCAAP looks to achieve balanced and sustainable communities by ensuring that there is a suitable mix of housing types, sizes and tenure and that the affordable housing is mixed with the market housing.
- 8.17 It was agreed in principle at the outline stage that clustering of market and affordable units in certain areas of the site (generally around the local centre and fronting the Ridgeway) would not be possible within the mix derived from the University's housing need. Condition 20 was attached to the outline consent controlling clustering.
- 8.18 Several reasons were identified as to why clustering could be not be achieved for the local centre. This was due to the need to achieve Code for Sustainable Homes level 5 and for the proposed combined heat and power solution to be cost effective. The proposed mix of the key worker housing (deriving from the University's need) being skewed towards one and two bed units (82%) would also make clustering these properties amongst the market units difficult to achieve in design terms. This application for Lot S3 now fulfills part of the market housing provision approved at Eddington.
- 8.19 In the context of the entire first phase, there will be an overall mix of market and affordable (key worker) housing as well as commercial, employment and student uses. The delivery of such housing will ensure a mix of tenures on site from the early stages.
- 8.20 The proposal, while single tenure in terms of this particular application, must be seen holistically within the overall site and considered with the background of the outline consent. The scheme offers a range of apartment types to ensure a variety of potential occupiers. A mix of tenures is provided when considered holistically across the first phase. It is therefore considered to be compliant with policy within the outline approval.

# Context of site, design and external spaces (and impact on heritage assets)

8.21 The key design issue is the design and layout of the proposed new buildings in their setting, and the appearance and function of the landscaped areas. This section describes how Lot S3 complies with the Design Code requirements.

#### Overall Design vision

8.22 The scheme aims to deliver the highest architectural quality, in design and sustainability, at the southern edge of Eddington at its entrance from Madingley Road. This will be achieved through a warehouse building typology, which is considered by the design team as an ideal structure for contemporary lifestyles. This is because they offer adaptable, sturdy spaces suitable for work and cycle friendly apartments. Officers agree this is considered a positive design approach which will result in a distinctive development and well integrated with its surrounding context. Quality Panel also concluded the scheme to have high character through its integration of landscape and variety of place. The application therefore demonstrates accordance with the underlying design principles for Eddington, as set out within Polices NW1: Vision, NW2: Development Principles, of the NWCAAP and Cambridge Local Plan 2018 policy 55.

#### Site layout

- 8.23 The block structure and design follows guidance set out in the Design Code, in particular the principles established within 'Block Type 9 Linear Block'. The arrangement of the buildings provide well defined edges to adjacent streets and open spaces, with ground floor active uses overlooking key spaces and routes.
- 8.24 The Design Code sets out that Lot S3 should provide a continuous frontage length, similar to Lot 1 and 3 opposite. It should provide 'strong enclosure and overlooking to Turing Way'. In the view of officers the development successfully achieves this through the building type and boundary treatment for each of the courtyard spaces. This demonstrates a successful integration of buildings routes and spaces in accordance with Cambridge Local Plan 2018 policy 56.
- 8.25 The development takes the approach of five smaller blocks across the site, rather than a continuous building frontage. This achieves good daylight throughout the development and visual permeability into the garden courtyards from Turing Way. As a result, the scheme will have active frontages along Turing Way which will enhance the townscape and provide natural surveillance. This is because of the relatively large entrances into the cowrking amenity spaces of the building and public views into the inner courtyards through the cycle store fencing.

- 8.26 The co working spaces are intentionally positioned at the main entrance of each block so that all residents walk through the 'working foyer' to reach the lift and stair core. This follows the live-work concept upon which the building is based, to create spaces to enable chance encounters, gatherings and communal amenity, to an otherwise private residential scheme. This is considered a positive design response to Eddington with a positive community focus, in accordance with NWCAAP policy NW2 and Cambridge Local Plan 2018 policy 56, part f.
- 8.27 At the western end of the site Block A is a four sided courtyard which is semi private, with access from Turing Way. All units on the ground floor of Block A are dual aspect and have landscape thresholds providing a buffer to windows in the courtyard. The block has direct access down to the basement through four lift cores which are sized and furnished to allow cycles to be taken up into the apartments. The block is considered convenient, safe and accessible in accordance with Cambridge Local Plan 2018 policy 57: design of new buildings.
- 8.28 The S shaped plan form of Blocks B to E result in all dwellings enjoying a significant outlook between primary facing windows. The plan also means the majority of units are dual aspect with a corner position, which enhances amenity. The plan results in the creation of dual fronted private courtyards to both Turing Way and the green corridor. There will be a visual connection to the green corridor from the public street along Turing Way, with each north facing court having a screened entrance portico, a reference to screened courts of the Colleges in the City. This provides a secure entrance to blocks B to E and access to ground level cycle parking options. Overall this layout is considered well resolved.
- 8.29 Mail access is provided in the communal foyer where the letter boxes are located. This ensures that letter boxes are conveniently located and accessible from the street, in accordance with Cambridge Local Plan 2018 policy 57, part g.

Height, Scale and Massing

- 8.30 The development will create a robust southern edge to Eddington. Whilst the Design Code indicates 'three storeys generally' for this part of the site, with the exception of the southern elevation of Block A, the development stands at four levels of accommodation. Notwithstanding, the design approach is considered an appropriate response to its context. This is because the development is not a continuous frontage. There are significant 14m gaps between the buildings resulting from the asymmetric building design which break up the building frontage from oblique angles across the site. The rounded corner edges of each block also softens their appearance.
- 8.31 The graphical analysis in support of the application demonstrates that the proposed building heights will not result in harm to the setting of Eddington or the nearest residential properties at Lansdowne Road. An additional photomontage has been produced from the corner of the ridge and furrow

field which in the view of officers demonstrates the development will not be unduly imposing and is contextually appropriate.

- 8.32 The submitted verified photomontages also demonstrate that the proposal does not compete with the important southerly corner element of Lot 1, nor does it challenge the established heights and perceived density of the local centre in views further afar. The visual impact has been tested from an oblique angle from the west where the future allotments will be sited. This photomontage shows that the L and S-shape forms create appreciable gaps between the buildings, which successfully break down the massing of the proposal.
- 8.33 Importantly, the development does not exceed the maximum AOD heights for the plot, which informed the Landscape and Visual Impact Assessment as part of the outline planning permission. Therefore the proposed building heights are considered acceptable.
- 8.34 The Design Code encourages variation in the roofline for Lot S3. The development incorporates a sloping profile to the roof line of each block which gives the southern elevation in particular a distinctive, varied form, which will be apparent when viewed from Eddington Avenue and further south. This demonstrates the development positively responds to the Design Code block type 9 criteria. This is a welcome contrast to the flat roofs within phase 1 of Eddington.

#### Materials

- 8.35 Robustness and permanence to reflect the Life Cycle Loft Apartment, are the guiding concepts for the external materials of the buildings. The predominant material is glazed brickwork which will have a subtle variation in different light, with pastel green and turquoise tones. Officers consider this treatment is a positive response to the development edge which will integrate with the green corridor and existing architecture in Lots 1 and 3 to the north. The development demonstrates a positive response to its surroundings in accordance with Cambridge Local Plan policy 57.
- 8.36 The development also demonstrates positive inspiration from the character of Cambridge through its detailing. The design and access statement identifies Cambridge City centre is a place where the corners of buildings have particular importance, through chamfers, scallops and other ornamentation across historic buildings. This proposal draws on that characteristic through rounded corners to the blocks which softens their appearance providing a distinctive new architecture to Eddington.
- 8.37 To the north Turing Way elevation, the regularity of the brick piers and the small partition of the windows resemble the look of a warehouse. Above 850mm (fall protection) all windows are openable. The projecting balconies with crossed metal rods will add visual interest to the street and articulation to the facade in long view. Deep window reveals and internal balconies give a

balance of solid to void across the elevation. This means there will be shadow and articulation along the Turing Way street scene.

- 8.38 To the south green corridor elevation, floor to ceiling glazing and narrow brick piers to the top floor creates a lighter character to the frontage. Balconies are within the floorplan of the building to provide shade, with the same crossed metal rod balustrade. The proposed materials and graphical testing through photomontages suggest a high quality external appearance, in accordance with NWCAAP policy NW2 and Cambridge Local Plan 2018 policy 57 part a.
- 8.39 Officers consider that the overall palette will sit well with the adjacent development, in particular the Lot 1 buildings situated on the opposite side of Eddington Avenue. **Condition 1: materials** is recommended, including the requirement for sample panels of all external materials to be provided, prior to development commencing. Use of the glazed brickwork is considered essential to the success of the scheme and will be secured through discharge of the planning condition.

#### Drainage and Landscape

- 8.40 The proposed approach to landscape and drainage is comprehensive. A high quality public realm will be provided through a variety of hard and soft landscape treatments, which reflect the hierarchy and character of new streets. The three mews streets are block paved shared surfaces with a drainage rill and a small area for threshold planting to define the front of the mews properties. A high quality street scene will be created.
- 8.41 The development proposes a pathway along the eastern side of Block A to increase permeability of the development from Turing Way to the Green corridor. The amended plans now remove the steps to include a ramped access from the green corridor which is more inclusive. Final details of the landscape specification and implementation scheme will be agreed through **conditions 3, 4, 5 and 6: landscape**.

#### Cambridgeshire Quality Panel

8.42 The Cambridgeshire Quality Panel reviewed the emerging proposal on 2 May 2017 (At pre application stage). The Panel were very supportive of the proposals and were impressed by the integration of landscape and sense of place. A number of specific recommendations were made to further enhance the scheme which are set out in table 2 below. The full minutes are attached as Appendix 1.

Issues and recommendations of Quality Panel	Officer response
The Panel felt that the scheme	In response, the application submission
has great character and liked the	extended the balcony beneath all of the

Table 2:	Quality Panel Issues and officer responses
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proposed lifestyle it was setting for bike conscious people. Generally they supported the cycle led strategy, but highlighted the need to explore a smarter car-parking strategy.	proposed blocks to increase capacity. This means the development provides a 1:1 ratio or car parking per dwelling which is considered appropriate in this location. The enlarged basement from the pre application proposal also allows space for one additional visitor car parking space in the basement.
Panel were concerned that the internal corridors appeared too narrow for bikes, especially at corners. Though should be given to the practicalities for bringing wet bikes into the communal spaces.	The corners of the corridors were chamfered in the final application submission to increase convenience when taking cycles into the apartments.
The basement plan geometry necessitates two aisles so is inefficient.	The basement was enlarged and reconfigured for the application submission.
Some of the balconies appeared too narrow to be useful. Distances between balconies and living room/bedroom windows was quite tight, particular between blocks A and B.	The majority of balconies are generous in size and are practical and usable for future residents. Whilst it is recognised that some of the south facing balconies are relatively shallow at 1m, they are generous in width (4m) spanning the living room. As such they will be desirable, usable spaces. There was further refinement of windows design and location for the application submission, to reduce interlooking.
The simple approach to landscape design with more formal spaces close to the lobbies and less formal spaces on the south side of the blocks was appreciated.	Noted.
Further thought about future climate and ventilation, particularly on the north western façade.	The application was accompanied by shadow studies.
The Panel hoped that further layout studies could achieve more cross ventilation and that sunlight studies were needed on north west facing units.	

The Panel welcomed and appreciated the applicant's ambition to achieve Code Level 5.	Noted.
The Panel were supportive of the concrete roof with a high thermal mass and the use of photovoltaics on the roof. Furthermore, they commented that the exposed concrete complements the warehouse design.	
Consider alternative/additional social space, such as on the roof. The Panel encourage excellent Wi Fi and coffee to create culture.	The use of the rooftop would not be practicable because of amenity considerations. The rooftop also accommodates photovoltaic panels.
Consider how to maximise the use of car parking spaces. There is a danger some people who own parking bays will not have cars, so consider a permit arrangement instead.	A management plan condition is recommended for the car park.
Consider alternative ground level bike store close to the lift and lobby.	The enlarged basement car park has allowed for more integrated cycle storage. The development provides comprehensive cycle storage options.

Quality Panel Conclusion

8.43 Quality Panel was supportive of the scheme. Their outstanding queries have been satisfactorily addressed through the application submission.

#### Fire Strategy

8.44 The application Design and Access Statement included a fire strategy setting out how the development addresses means of escape; compartmentation and fire spread; smoke control; fire suppression; fire spread control; detection and alarm fire fighting access and emergency facilities. The apartments are covered by sprinklers throughout and an automatic fire detection and alarm system will be provided. All residences are separated from the communal foyers by a ventilated lobby to prevent smoke penetration. Firefighting vehicular access is within 18m of the dry riser. In the view of officers the proposal adequately demonstrates consideration of the fire strategy for the purposes of the planning application and is compliant with Cambridge Local Plan 2018 policy 57.

#### Impact on heritage assets

- 8.45 The development is situated over 500m from the Travelers Rest geological site SSSI. There will be no adverse impacts. The strategy for managing the SSSI was considered at outline application stage. The development does not give rise to impacts which were not considered in the outline Environmental Statement.
- 8.46 The development will be visible from some locations within the Conduit Head Road Conservation Area. Officers do not consider there to be any significant harm to its setting. (Please see scale and massing above).

#### Designing out crime

8.47 The building has a secured boundary with electronic key fob access into the buildings and courtyards. Access to the communal foyers is allowed for all residents. Access to residential corridors is reserved for residents of the individual block only. The approach taken is fully supported by the Designing Out Crime Officer and as such is the development is complaint with Cambridge Local Plan 2018 policy 57.

#### Transport

#### Transport Impact

- 8.48 The impact of the wider development was assessed at the outline stage, and considered acceptable subject to a number of conditions and mitigation measures secured through that consent. This application falls wholly under the outline consent within the development limits.
- 8.49 This notwithstanding, a transport statement has been provided with the application confirming the proposed trip rates. The County Council transport team has confirmed that the detail accords with the outline approval and rates applied to the uses, along with the impact both internal and external to the site. The occupation of this development along with other applications within Phase 1 will contribute towards occupations that will trigger mitigation measures within the S106 agreement.

#### Car parking

8.50 The scheme provides a total of 187 car parking spaces, including ten disabled bays. 20 spaces are equipped for E-charging (Eight disabled bays are equipped for E-charging). The maximum number of car parking spaces which would be permitted by the NWCAAP policy NW19: Parking Standards would be no more than 192 residential car parking spaces, with 46 spaces for visitors. The quantum of car parking is grounded in evidence taken from on car ownership patterns for Castle Ward applied to the proposed development.

This suggests demand for 142 car parking spaces. Whilst the proposed 1:1 ratio (187 car parking spaces) is slightly above the estimated demand and mindful that Quality Panel considered demand for car ownership to be relatively low, the amount proposed overall is considered acceptable in this context.

- 8.51 It is considered that parking outside of the wider site in surrounding residential streets is unlikely to occur given the walking distances involved; however the Section 106 Agreement for the outline permission factors in monies for monitoring of these streets. If on street parking increases then funds are available from the applicant to consult residents upon and provide for (if recommended following consultation) controlled parking zones (CPZ) in the affected streets.
- 8.52 The provision of car parking for Lot S3 is summarised in table 4 below:

Location	Car Parking
West of Block A (above ground)	
Visitor	6
Disabled	3
Car Club	3
Basement	
Basement standard	156
E-charging	20
Disabled	10 (included 8 E-charging)
Guest	1
Total	187

 Table 3: Proposed car parking spaces

Visitor Car Parking

8.53 The development provides seven visitor car parking spaces which is below the maximum of 46 spaces suggested within the NWCAAP. This is considered acceptable because of the robust site wide visitor car parking strategy, with pay and display spaces available within the local centre and the relatively close proximity of Madingley Road Park and Ride, albeit that the Park and Ride is for a different purpose. The additional pressure on the Park and Ride Site is considered negligible. 8.54 Eddington is subject to parking controls whereby there are no opportunities for fly parking within the development. The amount of visitor car parking proposed is therefore considered acceptable. It would be undesirable in landscape terms to install further visitor car parking along Turing Way. Initial monitoring suggests spare capacity across the key worker underground car parks constructed at Eddington, which could be used to provide more site wide visitor car parking in future. Further monitoring of car parking occupancy rates is required by condition under the Lot 5 and Lot 8 consents.

#### Travel plan approach

- 8.55 The applicant will provide a detailed residential travel plan required by the S106. Part of this travel plan will include incentives to encourage trips by sustainable modes for all those living on the site. This will set out access to the car club in phase 1 (and the wider site in later phases).
- 8.56 Welcome packs will be provided to all new residents ensuring they have all up to date bus timetable information, taxi numbers, along with walking and cycling routes. This includes promotional material for a site-wide website and car-share database. These travel plan incentives are designed to encourage the choice of sustainable modes of travel from the outset reducing the need to own a car.
- 8.57 Condition 40 of the outline permission requires car parking provision does not exceed 4000 across NWCD overall. Lot S3 provides approximately 9% of this maximum provision which is proportionate.

#### Car club spaces

8.58 Three car club spaces are provided in close proximity to Lot S3, approved as part of the Lot 4 permission. This is one of a total of 12 spaces provided across Eddington. This provision supports the overall strategy for sustainable transport at Eddington in accordance with NWCAAP policy NW11.

#### Cycle Parking Provision

- 8.59 Cycling is central to the concept of the development and prioritised in the scheme. This is because of the enhanced cycle parking provision at ground level and within the basement; delivery of ancillary cycle washing facilities and the design of the buildings to facilitate cycles being brought into individual units. It is important to note that the internal apartment storage of cycles is in addition to the full provision of cycle parking at ground level and in the basement. The development does not rely on the internal apartment storage to provide the amount of cycle parking required by the adopted standards. It is an additional amenity and part of the overall design concept of the development.
- 8.60 Cycle parking for the residential properties is provided at one space per bedroom as per the NWCAAP standards. Most of these spaces are located in

a number of locations secure within the ground floor footprint of the dwellings. In the view of officers cycle parking is secure, convenient and adequate in size to meet the needs of future occupiers. The provision of cycle parking is summarised in table 5 below:

Location	Number of spaces
Cycle spaces above ground	
Residents parking	48
Off gauge	6
Visitor parking	50
Cycle parking in apartments	195
Cycle parking in the basement	
Residents parking	230
Off gauge	14
Visitors	20
Cycle wash station	1
Disabled scooter parking and charging	4
Total	543

Table 4: Lot S3 Cycle Parking Provision

- 8.61 Camcycle made comments on the application as submitted and set out five objections and several proposed alterations. The objections have all been positively responded to by the developer team and in the view of officers address the issues raised.
- 8.62 There has been a minor reconfiguration of cycle parking spaces within the basement to be more compatible with vehicle tracking. All cycle parking spaces within the basement are now easily accessible.
- 8.63 Camcycle raised concerns regarding the gradient of the basement ramp which at 7% was considered too steep. Whilst only a small part of the ramp
exceeded 7%, the revised plans lengthen the ramp and reduce the gradient. The segregated cycle lane kerb detail will also be reduced to 25mm to reduce the risk of cyclists losing balance if they overrun. The scheme, combined with these amendments demonstrates cycling is priorised throughout the development and is in accordance with NWCAAP policy NW2.

#### Highway Safety

8.64 Vehicle swept path analysis has been undertaken for the proposed basement which demonstrates its design is suitable for manoeuvring of vehicles. The County Highways Authority does not raise any concerns with the design of the vehicle access.

#### Renewable energy and sustainability

- 8.65 The vision shared by both the applicant and the local authorities is for Eddington to be an exemplar of sustainable living. The sustainability strategy is formulated around 13 sustainability principles established at outline planning stage. The Council's Sustainable Design and Construction Officer fully supports the way in which these principles have informed the application proposal.
- 8.66 The proposal includes a number of innovative and exemplar approaches, all of which are fully supported. These include connection of the residential units to the site wide district heating scheme and extensive use of photovoltaic panels; connection of the residential units to the site-wide non-potable water network; design of units to benefit from cross ventilation; proposals to maximise daylighting and integration of sustainable drainage systems into the overall landscaping. Provision is also made for porous paving, swales, rills, alongside some underground storage crates.
- 8.67 Policy NW24 of the North West Cambridge AAP and the outline condition 25 requires the achievement of Level 5 of the Code for Sustainable Homes for the majority of new homes on site. To demonstrate how these requirements will be met, Code for Sustainable Homes pre-assessments have been included. The overall approach to achieving Code Level 5 is supported.
- 8.68 All residential units are proposed to be naturally ventilated with acoustic louvered panels, consisting of a perforated metal cover, an acoustic louvre system and an internal ventilation opening on facades where noise levels are projected to be above acceptable limits. There will be the additional provision of some mechanical ventilation to a limited number of residential units. This is to ensure that acceptable internal noise levels can be achieved both with windows open and closed both for background and thermal comfort ventilation requirements (rapid).
- 8.69 In conclusion, the detailed and comprehensive level of information that has been submitted is fully supported. The sustainability proposals integrated within this scheme meet the requirements of the outline consent, and the NWCAAP.

8.70 In my opinion the applicants have suitably addressed the issue of sustainability and renewable energy and the proposal is in accordance with Cambridge Local Plan 2018 policy 28 and the Sustainable Design and Construction SPD 2007.

#### **Residential Amenity**

#### Impact on amenity of neighbouring occupiers

#### Lansdowne Road

- 8.71 The proposed development is closest to the residential properties along Lansdowne Road to the east. They are detached two storey dwellings situated a significant distance (100m) from the application site. Officers recognise that the development of Lot S3 will be visible from the first floor bedroom windows of properties in Lansdowne Road, but there will be no direct impact of overshadowing or a harmful sense of enclosure. Officers do not consider the visual impact of the proposed buildings to be significantly harmful because of the distances involved and the screening provided by the substantial planting on the west side of the ridge and furrow field.
- 8.72 The amended information provides further graphical testing of the development from the corner of the ridge and furrow field and from the southern end of Eddington Avenue. This demonstrates that the proposed buildings of Lot S3 respect the hierarchy of development to the north. In the view of officers, the broken frontage to the southern elevation by reason of the 14m courtyards between buildings significantly relieves the length of the elevation when viewed from oblique angles.
- 8.73 Officers recognise the fenestration of the new buildings may create some temporary reflection of the sun, but this would be no worse than the current buildings on the site. It is only likely to occur very infrequently and would not result in significant nuisance or harm to the residents of Lansdowne Road.

#### Lots 3 and 7

8.74 The development of Lot S3 was always intended as part of phase 1 of the masterplan for Eddington. In that context, Lot S3 will complete the frontage to Turing Way, providing enclosure to both sides of the street. There will be no adverse harm by reason of overshadowing from the height of the proposed buildings to the neighbouring lots to the north. Turing Way is relatively wide, so the outlook of the existing apartments to north will not experience a harmful sense of enclosure.

#### Amenity for future occupiers of the site

Living conditions and external amenity space

- 8.75 Policy 50 of the Cambridge Local Plan (2018) sets out internal residential space standards. All units either comply or exceed the standards, in many cases providing substantially more floor area than the minimum. In this regard, the units would provide a high quality internal living environment for the future occupants.
- 8.76 The amended plans ensure that the studio apartments in block E all provide at least 37 sq m in floor area and have a private balcony. Additional balconies have also been added to the west facing one bedroom apartments in blocks B to E and to the north west studios. The development is therefore in accordance with the requirements of Cambridge Local Plan 2018 policy 50: residential space standards.
- 8.77 The gross internal floor space measurements for units in this application are shown in the table 2 below:

Unit	Number of bedrooms	Number of bed spaces	Number of storeys	Policy Size requirement (m <sup>2</sup> )	Proposed size of	Difference in size
		(persons)	Storeys	()	ant	
Block A						
Ground floor						
0	2	4	1	70	81	+11
1	2	4	1	70	76	+6
2	2	4	1	70	87	+17
3	1	1	1	39(37)*	46	+9
4	Co working unit					
5	3	5	1	86	101	+15
6	2	4	1	70	77	+7
7	2	4	1	70	81	+11
8	2	4	1	70	81	+11
9	2	4	1	70	75	+5
First floor						
01-00	3	5	1	86	94	+8
01-01	1	2	1	50	61	+11
01-02	2	4	1	70	76	+6
01-03	1	2	1	50	53	+3
01-04	1	1	1	39(37)*	37	0
01-05	2	4	1	70	80	+10
01-06	2	4	1	70	75	+5
01-07	1	1	1	39(37)*	37	0
01-08	1	2	1	50	53	+3
01-09	2	4	1	70	77	+7

Table 5: Internal space of apartments

01-10	2	4	1	70	74	+4
01-11	2	4	1	70	78	+8
01-12	2	4	1	70	75	+5
Second						
Floor						
02-00	3	5	2	93	123	+30
02-01	2	4	1	70	78	+8
02-02	2	4	1	70	75	+5
02-03	1	2	1	50	54	+4
02-04	1	1	1	39(37)*	37	0
02-05	2	4	1	70	75	+5
02-06	2	4	1	70	75	+5
02-07	1	1	1	39(37)*	37	0
02-08	1	2	1	50	54	+4
02-09	2	4	1	70	76	+6
02-10	2	4	1	70	76	+6
02-11	2	4	1	70	78	+8
02-12	2	4	1	70	75	+5
Third						
Floor						
03-00	2	4	1	70	73	+3
03-01	2	4	1	70	76	+6
03-02	1	2	1	50	53	+3
03-03	1	1	1	39(37)*	37	0
03-04	2	4	1	70	75	+5
03-05	2	4	1	70	80	+10
03-06	1	1	1	39(37)*	37	0
03-07	1	2	1	50	53	+3
03-08	2	4	1	70	77	+7
Block						
В						
Ground						
Floor						
0	Co working					
	space					
1	1	2	1	50	50	0
2	1	2	1	50	53	+3
3	2	4	1	70	78	+8
4	1	1	1	39(37)*	39	+2
5	2	4	1	70	75	+5
6	1	1	1	39(37)*	39	+2
7	1	1	1	39(37)*	39	+2
8	2	4	1	70	72	+2
9	1	2	1	50	51	+1
First						
Floor						
01-00	1	1	1	39(37)*	51	+12
01-01	1	2	1	50	53	+3

01-02	1	2	1	50	50	0
01-03	2	4	1	70	73	+3
01-04	1	1	1	39(37)*	39	+2
01-05	2	4	1	70	74	+4
01-06	1	1	1	39(37)*	39	+2
01-07	1	1	1	39(37)*	39	+2
01-08	2	4	1	70	72	+2
01-09	1	2	1	50	52	+2
Second						
floor						
02-00	2	4	1	70	72	+2
02-01	1	2	1	50	50	0
02-02	1	2	1	50	53	+3
02-03	2	4	1	70	73	+3
02-04	1	1	1	39(37)*	39	+2
02-05	3	5	2	93	133	+40
02-06	1	1	1	39(37)*	39	+2
02-07	1	1	1	39(37)*	39	+2
02-08	2	4	1	70	72	+2
02-09	1	2	1	50	52	+2
Third						
Floor						
03-00	2	4	1	70	72	+2
03-01	1	2	1	50	53	+3
03-02	1	2	1	50	50	0
03-03	2	4	1	70	73	+3
03-04	1	1	1	39	39	0
03-05	Unit number		_			
	not used -					
	Duplex					
	Below					
03-06	1	1	1	39(37)*	44	+7
03-07	1	1	1	39(37)*	39	+2
03-08	2	4	1	70	72	+2
03-09	1	2	1	50	52	+2
Block						
С						
Ground						
Floor						
0	Co working					
	unit					
1	1	2	1	50	50	0
2	1	2	1	50	53	+3
3	2	4	1	70	78	+8
4	1	1	1	39	39(37)*	+2
5	2	4	1	70	74	+4
6	1	1	1	39	39(37)*	+2
7	1	1	1	39	39(37)*	+2
8	2	4	1	70	72	+2

9	1	2	1	50	51	+1
First						
Floor						
01-00	1	1	1	39	51	+12
01-01	1	2	1	50	53	+3
01-02	1	2	1	50	50	0
01-03	2	4	1	70	73	+3
01-04	1	1	1	39(37)*	39	+2
01-05	2	4	1	70	74	+4
01-06	1	1	1	39(37)*	39	+2
01-07	1	1	1	39(37)*	39	+2
01-08	2	4	1	70	72	+2
01-09	1	2	1	50	52	+2
Second						
Floor						
02-00	2	4	1	70	72	+2
02-01	1	2	1	50	50	0
02-02	1	2	1	50	53	+3
02-03	2	4	1	70	73	+3
02-04	1	1	1	39	39(37)*	+2
02-05	3	4	1	70	74	+4
02-00	1	1	1	39	39(37)*	+2
02-07	1	1	1	39	39(37)*	+2
02-08	2	5	2	<u>03</u>	124	+31
02.00	1	2	1	50	52	+2
Third	1	<b>L</b>	I		52	12
Floor						
03-00	2	Δ	1	70	72	+2
03-01	1	2	1	50	50	0
03-02	1	2	1	50	50	0
03-03	2	<u> </u>	1	70	73	+3
03-04	1	1	1	39	39(37)*	+2
03-05	2	<u> </u>	2	70	74	+4
03-06	1	1	1	30	30(37)*	±2
03-07	1	1	1	30	39(37)*	+2
03-08	Linner floor	I	1		00(07)	12
00 00	of flat below					
03-09	1	2	1	50	52	2
Block	•	<b>Z</b>	1		02	<u> </u>
DIOOK						
Ground						
Floor						
0	Co working					
	space					
1	1	2	1	50	50	0
2	1	2	1	50	53	+3
3	2	4	1	70	78	+8
4	1	1	1	39(37)*	39	+2
5	2	4	1	70	74	+4

6	1	1	1	39(37)*	39	+2
7	1	1	1	39(37)*	39	+2
8	2	4	1	70	72	+2
9	1	2	1	50	51	+1
First						
Floor						
01-00	1	1	1	39	51	+12
01-01	1	2	1	50	53	+3
01-02	1	2	1	50	50	0
01-03	2	4	1	70	73	+3
01-04	1	1	1	39(37)*	39	+2
01-05	2	4	1	70	74	+4
01-06	1	1	1	39(37)*	39	+2
01-07	1	1	1	39(37)*	39	+2
01-08	2	4	1	70	72	+2
01-09	1	2	1	50	52	+2
Second						
Floor						
02-00	2	4	1	70	72	+2
02-01	1	2	1	50	50	0
02-02	1	2	1	50	53	+3
02-03	2	4	1	70	73	+3
02-04	1	1	1	39(37)*	39	+2
02-05	2	4	1	70	73	+3
02-06	3	5	2	93	142	+49
02-07	Unit number					
	not used –					
	Neignbouring					
02.00	Duplex	Δ	4	70	70	
02-08	<u> </u>	4	1	70	7Z 50	+2
02-09 Third	I	Ζ	I	50	52	+2
Floor						
	2	Λ	1	70	70	1.2
03-00	<u> </u>	4	1	70	72	+2
03-01	1	2	1	50	50	0
03-02	2		1	70	73	0
03-03	<u> </u>	4	1	70	73	+3
03-04	1	1	1	39(37)	- 39 - 72	+2
03-05	l Init numbor	4	I	70	13	+3
03-00	not used -					
	Below					
03-07	Unit number					
00 01	not used -					
	Duplex					
	Below					
03-08	2	4	1	70	72	+2
03-09	1	2	1	50	52	+2

Block						
E						
Ground						
Floor						
0	Co Working					
	space					
1	1	2	1	50	50	0
2	1	2	1	50	53	+3
3	2	4	1	70	74	+4
4	1	1	1	39(37)*	37	0
5	2	4	1	70	77	+7
6	1	1	1	39(37)*	40	+3
7	1	2	1	50	50	0
First						
Floor						
01-00	1	1	1	39(37)*	52	+13
01-01	1	2	1	50	50	0
01-02	1	2	1	50	53	+3
01-03	2	4	1	70	72	+2
01-04	1	1	1	39(37)*	37	0
01-05	2	4	1	70	75	+5
01-06	1	1	1	39(37)*	40	+3
01-07	1	2	1	50	50	0
Second						
Floor						
02-00	2	4	1	70	75	+5
02-01	1	2	1	50	53	+3
02-02	1	2	1	50	50	0
02-03	2	4	1	70	74	+4
02-04	1	1	1	39(37)*	37	0
02-05	3	5	2	93	139	+46
02-06	1	1	1	39(37)*	40	+3
02-07	1	2	1	50	50	0
Third						
Floor						
03-00	2	4	1	70	72	+2
03-01	1	2	1	50	50	0
03-02	1	2	1	50	50	0
03-03	2	4	1	70	72	+2
03-04	1	1	1	39(37)*	37	0
03-05	Unit number					
	not used -					
	Duplex					
	Below					
03-06	1	1	1	39(37)*	40	+3
03-07	1	2	1	50	50	0

\*Where a one bedroom person flat has a shower room rather than a bathroom, the floor area may be reduced from 39 sq m to 37 sq m.

#### Interlooking

8.78 There is 8.7m separating the eastern flank elevation of block A and the western most elevation of block B. Given the design of the fenestration with recessed brickwork, potential interlooking impacts have in the view of officers been adequately mitigated. The design of the fenestration also gives balance and proportion to the overall elevation. Furthermore, new tree planting within the internal courtyard will provide some screening between windows.

#### Co working spaces

- 8.79 The co working foyer is scaled to accommodate a huge number of different uses co-working space/lounge, games room, party room, meeting room or large scale dining room that can be booked by residents, particularly those living in the smaller apartments. Acoustically the working foyer is separated by a lobby that also acts as fire lobby with acoustic walls to the adjacent apartments. In summer and warmer weather it can be extended to an external communal terrace by opening the wide windows.
- 8.80 The threshold to the ground floor apartment (block B) is in relatively close proximity to the co working space which has some potential for disturbance. This relationship is however considered acceptable because of the dual aspect design of the apartment and the specification of the door.
- 8.81 It is considered that for the majority of the time the levels of activity noise associated with the internal and external communal areas would not be expected to be significantly higher than those within residential dwellings. Therefore an enhanced level of sound insulation above that which will be provided between dwellings and as detailed would not be necessary.
- 8.82 However, there may be occasions when large gatherings and certain events will have the potential to give rise to noise disturbance to neighbouring residential units. Not every resident in all the blocks may wish to attend gatherings in the co working spaces. They are likely to have a legal right to complain if they are disturbed by noise and this may be difficult to resolve as a statutory noise nuisance.
- 8.83 Noise and disturbance from the co working spaces could potentially spill out into the garden areas which is potentially problematic. This could be a problem in summer evenings whereby noise will travel up the internal elevations of the building. Further consideration or the overall management of these communal amenity areas can be ensured through the imposition of planning **condition 9: management plan**. This will demonstrate how the management arrangements will address potential amenity implications arising from conflicting residential use and behaviour.

#### External Noise

- 8.84 The submission details how the proposed development Lot S3 residential habitable rooms within blocks A to E will be insulated against external traffic / transport noise. It demonstrates how the noise insulation scheme planning condition 50 and informative requirements are to be achieved.
- 8.85 There are a small number of areas which marginally exceed recommended noise criteria. In these areas practical noise mitigation measures are to be included within the design to reduce the noise levels on the balconies. This is subject to the provision and approval of final balcony noise mitigation details and performance specifications. (Condition 4: Noise insulation).

#### Basement car park operational noise

8.86 Vehicles using the car park ramp are not predicted to significantly increase ambient noise levels above those that would already be apparent due to the M11 and the Primary Street.

#### Contamination

8.87 Contamination issues were addressed at the outline stage through planning condition. Intrusive investigations have been undertaken across the Phase I Development and recorded the absence of significant contamination. The proposal therefore does not have any issues arising from contamination.

#### Artificial Lighting

8.88 All external lighting will be designed to ensure light spillage is minimised so that there is little impact to residential amenity, wildlife and the landscape, whilst still providing a safe and secure environment. Final details will be considered through the discharge of **condition 12, Artificial Lighting.** 

#### Construction Management

- 8.89 Construction related activities can be adequately controlled and mitigated through the discharge of planning conditions attached to the outline planning permission.
- 8.90 As a reserved matters application pursuant to the outline consent the construction of this proposal will have to follow the procedures within the Construction Environmental Management Plan (CEMP), approved by this committee. In addition to this, condition 53 of the outline consent requires a site specific Construction Method Statement to be submitted prior to commencement of development. This will help control the construction process in terms of local impacts and residential amenity.
- 8.91 Through the submitted documentation, and the procedures already secured at the outline stage, it is considered that the application complies with Policy NW28: Construction Process, of the NWCAAP.

Air Quality

- 8.92 The submitted Energy Statement confirms that all dwellings will be linked to the existing district heating scheme (incorporating low NOx boilers and combined heat and power) thus no new combustion emissions to air will be introduced as part of the development.
- 8.93 Electric vehicle charge points will be installed in 29 car parking spaces. These will be secured by **condition 10: Electric Vehicle charge points**.

#### **Disabled access**

- 8.94 All apartments within the development are designed to Lifetime Homes standards. This means that the disabled car parking spaces have a more generous width of 3.3m and are located to each core with the basement; the approach to all entrances will be level or gently sloping; all entrances will be illuminated; level access over the threshold and have adequate weather protection; there is turning space for a wheelchair in dining areas and living rooms and the structure above the main bedroom and bathroom ceilings is capable for supporting ceiling hoists. As such the development is compliant with Cambridge Local Plan 2018 policy 51.
- 8.95 The Disability Panel expressed some reservations at pre application stage that although the scheme was presented as having 'accessible routes throughout' a series of steps where the north to south footpath links Turing Way to the green corridor. The amended plans now incorporate a ramp to the green corridor which is inclusive for wheelchair users. This issue has now been satisfactorily addressed.
- 8.96 Disability Panel commented that the overall provision of disabled parking was limited. The application submission, which includes an enlarged basement achieves 5% disabled car parking spaces of the overall provision.
- 8.97 The Panel expressed some concern that these corridors could potentially become cluttered with bikes. The management company for the blocks would regulate this matter in the interests of access and fire safety.
- 8.98 The Disability Panel recommendations on the internal fixtures and fittings of the development have been passed onto the developer team and will be incorporated into the detailed design stage.

#### **Refuse Arrangements**

8.99 The Council's Commercial Waste manager is broadly content with the waste strategy. The development site will have access to the site wide underground waste strategy collection system, the three collection points of which fall outside of the application site. The detailed design of the underground bins has already been agreed through the primary street infrastructure application.

8.100 Provision should be made for green waste for this part of the Eddington development and can be secured through the imposition of condition 11: green waste. In my opinion the proposal is compliant with Cambridge Local Plan 2018 policy 57.

#### Public Art

8.101 Lots S3 does not contain any of the outcomes of the Eddington site wide Public Art Delivery Plan.

#### Third Party Representations

8.102 Four third party representations have been received. The following matters are raised:

#### Table 6: Representations

Issue	Officer response/report section
Camcycle	
Concerns with layout and ramp.	All satisfactorily addressed, see paragraph 8.61 – 8.63.
of car parking for what is intended to be a site focusing on sustainable transport.	See paragraph 8.48.
Transport Assessment paragraphs 3.14 and 4.25 support our belief. In particular, the estimates based on Castle Ward car ownership show demand for only 142 car spaces out of the 187 in the design.	Officers consider the 1:1 ratio of car parking to units appropriate in this context.
Third Party representations	
The density is too high and not suitable for the edge of a village.	See paragraph 8.30.
Tall structures should be kept to the centre.	In the view of officers the unconventional footprint and spaces between buildings significantly reduces the visual impact of the development from longer views.
The small windows give the impression of high density flats or office blocks, which is not in keeping with the edge of an urban area.	The roofline has variation across the length of the development.
Larger windows with fewer mullions would improve its appearance.	The development will not result in material harm to the amenities of Lansdowne Road properties to the east of the development.
The building is too high and uniform.	The proposed glazed brickwork is

Using different materials would help to break up the lattice effect. Possibly with use of cedar wood cladding.	considered a very high quality external material, the use of which will be secured through <b>condition 2: materials.</b>
This plot is too dense and high and will affect the quality of life for Lansdowne Road residents and property prices.	
The flat line of the proposed block will further emphasise the very unattractive roofline currently presented from all angles of the new development.	
The blocks should have a more varied roofline.	
This is an opportunity to improve the cheap unattractive appearance of the entire University development.	

#### Planning Obligation Strategy

8.103 The reserved matters applications fall under the agreed Section 106 agreement at the outline stage. The proposed development does not give rise to any new issues that need to be secured by legal agreement.

#### 9.0 CONCLUSION

9.1 The proposed development provides a range of market dwellings, in a layout of distinctive design which will make a positive contribution to Eddington. The height scale and mass of the proposed buildings are considered contextually appropriate with the existing design and layout. Car and cycle parking is successfully integrated into the overall design and layout. APPROVAL is recommended.

#### 10.0 RECOMMENDATION

**APPROVE** subject to completion of the s106 Agreement and the following conditions:

#### Approved Drawings

1. The development hereby permitted shall be carried out in accordance with the approved plans as listed on this decision notice.

Reason: In the interests of good planning, for the avoidance of doubt and to facilitate any future application to the Local Planning Authority under Section 73 of the Town and Country Planning Act 1990.

#### Materials samples

2. Prior to the commencement of the development hereby approved, with the exception of below ground works, full details including samples of the materials to be used in the construction of the external surfaces of buildings, which includes the glazed brickwork, external features such as entrance doors, windows, stone surrounds, rounded corner details, external metal work, balconies, balustrades, rain water goods, coping, bike and bin stores, shall be submitted to and approved in writing by the local planning authority.

A sample panel of the facing materials to be used shall be erected on site and shall be at least 1.5m x 1.5m to establish the detailing of bonding, coursing, glazed colour treatment and type of jointing and any special brick patterning/articulation detailing shall be agreed in writing with the local planning authority. Development shall be carried out in accordance with the approved details.

Reason: To ensure that the appearance of the external surfaces is appropriate (Cambridge Local Plan 2018 policies 55 and 57).

#### Public Realm Materials

3. Prior to the commencement of the hard landscaped external spaces (internal courtyards) samples of the materials to be used in the construction of the external landscape surfaces which includes footways, paving and details of the landscaped courtyards, shall be submitted to and approved in writing by the local planning authority. Development shall be carried out in accordance with the approved details.

Reason: To ensure that the appearance of the external surfaces is appropriate (Cambridge Local Plan 2018 policies 55 and 57).

#### Hard and soft landscaping implementation

4. All hard and soft landscape works shall be carried out in accordance with the approved details, and to a reasonable standard in accordance with the relevant recommendation of the appropriate British Standard or other recognised code of good practice. The works shall be carried out prior to the occupation of any part of the development or in accordance with the programme agreed by the local planning authority in writing. Any trees or plants that, within a period of five years after planting, are removed, die or become in the opinion of the local planning authority, seriously damaged or defective, shall be replaced as soon as is reasonably practicable with others of species, size and number as originally approved, unless the local planning authority gives its written consent to any variation.

Reason: To ensure provision, establishment and maintenance of a reasonable standard of landscaping in accordance with the approved design. (Cambridge Local Plan 2018; Policies 55, 57 and 59).

#### Podium planting beds

5. No development above ground level, other than demolition, shall commence until there has been submitted to and approved in writing by the local planning authority details of planting beds on all podium areas. Soils must be deep enough to support the planting being proposed, predominantly level in profile (except where internal ponding/swale areas are proposed). Slopes which allow the migration of soils and mulch onto surrounding hard surfaces must be avoided. The development shall be carried out in accordance with the approved details.

Reason: In the interests of visual amenity, maintenance and to ensure that suitable hard and soft landscape is provided as part of the development. (Cambridge Local Plan 2018; Policies 55, 57 and 59).

#### Landscape management plan

6. A landscape management plan, including long term design objectives, management responsibilities and maintenance schedules for all landscape areas shall be submitted to and approved by the local planning authority in writing prior to occupation of the development. The information shall include details of the irrigation system for the podium landscape including the water delivery system to planting beds, water source, automatic control system, times and amounts of water to planting beds and system maintenance details. The landscape management plan shall be carried out as approved.

Reason: In the interests of visual amenity and to ensure that suitable hard and soft landscape is provided as part of the development. (Cambridge Local Plan 2018; Policies 55, 57 and 59).

### Noise Insulation Scheme Commissioning / Verification Completion Report

7. The development hereby approved shall be constructed fully in accordance with the approved plans and noise insulation / attenuation scheme recommendations and principles as detailed in the submitted and approved 'North West Cambridge, Lot S3 - Reserved Matters Application Noise Insulation Scheme, June 2018 (Prepared by AECOM for Hill Residential / NWC-AECOM-S3-LTW-XX-RPT-AC-0001/ Rev02 dated 22<sup>nd</sup> June 2018)' pursuant to condition 50 of variation consent 13/1402/S73.

Prior to first occupation of the residential units an 'AECOM Noise Insulation Scheme, June 2018 (as detailed in i above) post construction / installation commissioning and performance testing verification completion report' shall be submitted to and approved in writing by the Local Planning Authority (LPA). The commissioning / verification report shall demonstrate full compliance with the AECOM Noise Insulation Scheme, June 2018 and shall include the following:

- a) confirmation that all the rooms constructed have had the noise insulation scheme measures installed fully in accordance with the approved noise insulation scheme report (Ref: NWC-AECOM-S3-LTW-XX-RPT-AC-0001/ Rev02 dated 22<sup>nd</sup> June 2018) and that internal noise level criteria have been achieved
- b) details of the airborne sound attenuation specification / performance standards of the external building facade elements e.g. acoustically attenuated ventilation louvres, glazing & window systems etc.- sound reduction indices / acoustic performance test certificates (undertaken in accordance with standard test conditions)
- c) whole house ventilation system / mechanical ventilation with heat recovery (MVHR) operational noise calculations and post installation commissioning noise testing in typical room / unit types to ensure that the building services noise limits as recommended have been achieved (day and night-time with MVHR providing whole house ventilation and operating at a duty for thermal comfort control (boost function);
- d) schematic diagram or detailed mechanical and electric building service drawings of ventilation system layout in typical units, operator control details (manual or automatic) and performance calculations to demonstrate that the MVHR boost function or acoustically attenuated ventilation louvres can achieve at least 2 air changes per hour for each habitable room
- e) balconies noise mitigation details including acoustically absorptive soffit finish coverage and performance- sound absorption coefficient certification
- f) confirmation of overall satisfactory workmanship and installation

The noise insulation / attenuation scheme and commissioning / verification report as approved shall thereafter be maintained in strict accordance with the approved details in perpetuity and shall not be altered.

Reason: To protect / safeguard the health and quality of life (amenity) of residential premises in accordance with paragraphs 127(f), 170(e) and 180 of the National Planning Policy Framework (NPPF), July 2018, Policy 35: Protection of human health from noise and vibration of the Cambridge Local Plan, 2018 and North West Cambridge Area Action Plan Policy NW2.

#### Plant & Equipment Noise Insulation Scheme – Operational

8. Before any mechanical plant and equipment is installed, an operational noise assessment and noise / sound insulation scheme for any plant and equipment including any associated with substations, lifts, ventilation of the basement car park and operation of the basement car park ramp / entrance gate, in order to minimise the level of noise emanating from the said plant and equipment shall be submitted to and approved in writing by the local planning authority. The noise insulation scheme as approved shall be fully implemented before the use hereby permitted is commenced and retained thereafter.

Reason: To protect / safeguard the health and quality of life (amenity) of residential premises in accordance with paragraphs 127(f), 170(e) and 180 of the National Planning Policy Framework (NPPF), July 2018, Policy 35:

Protection of human health from noise and vibration of the Cambridge Local Plan, 2018.

#### Co working space management plan

9. Prior to the first occupation or use of the approved development, an Occupier Communal / Co Working Space Management Plan / Strategy (OCCSMP) for use of the co-working foyers / rooms and associated external shared communal terraces of each block A to E, shall be submitted to and approved in writing by the local planning authority. The use hereby approved shall only be carried out in accordance with the approved OCCSMP.

For the avoidance of doubt, the OCCSMP shall include the following:

- i) Details of on-site persons, including a dedicated manager during normal office hours who will reside at the premises and will deal with any emergencies or incidents outside office hours including night time supervision;
- ii) Details of how the manager will liaise with local residents and how residents can make contact in the event of any disturbance, emergencies or any other management issues;
- iii) Details of the type of activities that are likely to be held and 'Code of Conduct'.
- iv) A detail of noise management including measures to ensure that noise disturbance and any other potential anti-social behaviour to neighbouring residential properties is minimised. The details shall include a complaints and investigation procedure and information as to how third parties can access that procedure;
- v) Details of the ongoing management regime to ensure that all of the elements included in the OCCSMP will be enforced by the applicant whilst the development is occupied and to set out the process by which sanctions will be applied in the event of non-adherence;
- vi) Anti-social behaviour and disciplinary procedures.

The development shall be occupied in accordance with the agreed management plan, Cambridge Local Plan 2018 policies 55 and 35.

#### Electric Vehicle (EV) charging points

10. Prior to commencement of use / occupation of the development hereby permitted the Electric Vehicle (EV) charging points to basement car parking spaces, as detailed / shown on the submitted 'Alison Brooks Architects Ltd-Drawing number: 2412\_\_X\_00\_100/REV.1 - Title: Basement & Ground Floor Site Plan, Date: 30/04/18' shall be installed and shall remain fully operational and retained / maintained thereafter.

Reason: In the interests of encouraging more sustainable forms of travel/transport and to reduce the impact of development on local air quality, in accordance with paragraphs 103 and 181 of the National Planning Policy Framework (NPPF), Policies 36: Air quality, odour and dust & 82 of the Cambridge Local Plan, 2018 and Cambridge City Councils adopted Air Quality Action Plan (2018).

#### Green waste

11. Prior to occupation of the development details of provision for green waste shall be submitted to and approved in writing by the Local Planning Authority. The development shall be carried out in accordance with the approved details.

Reason: So that adequate refuse provision is made for future occupiers of the development, (Cambridge Local Plan 2018 policy 57).

#### Artificial Lighting

12.Prior to the installation of any artificial lighting details of the height, type, position and angle of glare of any final site lighting / floodlights including vertical and horizontal isolux contours on and off site shall be submitted to and approved in writing by the Local Planning Authority. The details and measures so approved shall be installed / carried out and maintained in accordance with the approved lighting scheme/plan.

Reason: To protect the amenity of nearby properties. Paragraph 180 (c) of the National Planning Policy Framework, July 2018, Policy 34: Light pollution control – of the Cambridge Local Plan, 2018 and North West Cambridge Area Action Plan Policy NW2.

#### Informative

All the proposed access points off Turning Way should be constructed so that their falls and levels are such that there is a positive gradient, of not less than 1:40 away from the back edge of the footway along Turning Way into the proposed development to prevent private water from the site draining across or onto the proposed adopted public highway.

#### Informative

To satisfy the plant sound insulation condition, the rating level (in accordance with BS4142:2014) from all plant, equipment and vents etc (collectively) associated with this application should be less than or equal to the existing background level (L90) at the boundary of the premises subject to this application and having regard to noise sensitive premises.

Tonal/impulsive sound frequencies should be eliminated or at least considered in any assessment and should carry an additional correction in accordance with BS4142:2014. This is to prevent unreasonable disturbance to other premises. This requirement applies both during the day (0700 to 2300 hrs over any one hour period) and night time (2300 to 0700 hrs over any one 15 minute period).

It is recommended that the agent/applicant submits an acoustic prediction survey/report in accordance with the principles of BS4142:2014 "Methods for

rating and assessing industrial and commercial sound" or similar, concerning the effects on amenity rather than likelihood for complaints. Noise levels shall be predicted at the boundary having regard to neighbouring premises.

It is important to note that a full BS4142:2014 assessment is not required, only certain aspects to be incorporated into an acoustic assessment as described within this informative.

Such a survey / report should include: a large scale plan of the site in relation to neighbouring premises; sound sources and measurement / prediction points marked on plan; a list of sound sources; details of proposed sound sources / type of plant such as: number, location, sound power levels, sound frequency spectrums, sound directionality of plant, sound levels from duct intake or discharge points; details of sound mitigation measures (attenuation details of any intended enclosures, silencers or barriers); description of full sound calculation procedures; sound levels at a representative sample of noise sensitive locations and hours of operation.

Any report shall include raw measurement data so that conclusions may be thoroughly evaluated and calculations checked.

#### Contact details

To inspect City Council application or if you have a query on the report please contact:

John Evans | Principal Planner

t: 01223 457289 | e: john.evans@cambridge.gov.uk

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#### CAMBRIDGESHIRE QUALITY PANEL

REPORT OF PANEL MEETING

Scheme: Market Lot S3, North-west Cambridge Development

**Date:** Tuesday 2<sup>nd</sup> May, 2017 **Venue:** Hatton Park Primary School, Northstowe **Time:** 13:15 – 16:15

#### **Quality Panel Members**

David Prichard – Chair David Birkbeck Simon Carne David Taylor Lynne Sullivan Nick James

#### Panel secretariat and support

Alokiir Ajang – Cambridgeshire County Council Colum Fitzsimons – Cambridgeshire County Council

#### **Local Authority Attendees**

John Evans - Principal Planner (New Neighbourhoods) - Cambridge City Council

#### **Applicant and Representatives**

Jamie Wilding – Hill Residential Harry Treanor – Hill Residential Jonathan Hill – AECOM (Planning Agent) Michael Mueller – ABA (Architects) Garry Alden – Townshend Landscape Architects Ryan Coghlan - Townshend Landscape Architects

#### 1. Scheme description and presentation

Architect/DesignerABA (Architects)/ Townshend Landscape ArchitectsApplicantHill ResidentialPlanning statusReserved Matters Application



#### 2. Overview

Market Lot, S3 is part of Phase 1 of the North West Cambridge Development (NWCD). The site is located on the Southern perimeter of North West Cambridge and is near the Park and Ride to the south and Turing Way. The development falls within the Local Centre Character Area in the North West Cambridge Design Code and comprises the following:

- 179 market units
- 153 car parking spaces

The proposed development is situated within a rectangular block and formed of five residential blocks which have four levels of accommodation. A range of unit sizes will be provided from studio apartments to three bedroom units. A total of 153 car parking spaces will be provided within a basement, accessed via a ramp from the south western corner of block A. Each block, excluding block E to the east, would have direct lift and stairwell access to the basement.

Lot S3 has been the subject of two pre-application meetings with Local Authority officers. This is the first time the scheme has been presented to the Quality Panel.

#### 3. Cambridgeshire Quality Panel views

#### Introduction

The Panel's advice reflects the issues associated with each of the four 'C's' in the Cambridgeshire Quality Charter. The comments below include both those raised in the open session of the meeting and those from the closed session discussions.

#### <u>Community</u>

The applicant explained that they intend to focus on community living in the blocks and that they propose internal (and external) co-working spaces to encourage chance encounters. The co-working spaces could be rented out for meetings or used for homeworking as a sociable alternative to working inside the home.

The Panel felt that the co-working spaces appeared as over-sized entrance foyers. They wondered whether the absence of management services and facilities such as WCs, concierge and catering would make them an attractive and viable offering. They liked the external spaces with a large refectory table but wondered whether this had been overprovided and might pose an acoustic management issue.

They understood the ethos of the co-working spaces with temporary social interactions but questioned whether this area could be more intensively used, perhaps with additional cycle storage (see comments below). There was also concern that unregulated use of



communal space could lead to potential for nuisance or anti-social behaviour. Furthermore, might there be an opportunity to create a social space on the roof?

The Panel recommended researching alternative methods of allocation of communal carparking spaces and local campus experience of take up. The capital and running costs of services will be an important factor given the extensive lobbies, basement/storage spaces, roof mounted photovoltaics, circulation spaces and general facilities that need maintaining. It was noted that 100% of the homes were for market sale.

#### <u>Connectivity</u>

Cycling is the integral design inspiration for the scheme so the intention is to make it as cycle friendly as possible. The site is located 20 minutes away from the river and slightly further away to the city centre with both highly accessible by bike. The Panel was pleased to see an interesting scheme with cycling at its core. They suggested that the applicant will have to research and use parking studies to demonstrate that the level of parking is justified, since the proposed provision falls below the current standards for the overall development. The potential for car-pooling should be considered, given the life style of the targeted demographic for the development.

The Panel noted the large lifts for bikes but was concerned that the internal corridors appeared too narrow for bikes especially at corners. The Panel felt that the designs should provide a more generous circulation and corridor space. Thought must be given to the practicalities of bringing wet bikes into the communal spaces and generally how the visitor and bike arrival and storage sequence is designed. There is also a need to carefully consider disabled access.

The Panel supported the approach that the scheme is offering a lifestyle based product and suggested looking at a more inventive transport plan, such as providing folded bikes and setting up a car club across the three sites under the applicant's control. The basement plan geometry necessitates two aisles so is inefficient. The omission of a basement under Block E was justified on grounds of reduced dig and construction time to enable early marketing. Whilst the argument for a reduced parking provision might be made, other options for example double stacking designs might be worth investigation.

#### Character

The applicant described how they have adopted the floor areas and ceiling heights in the London Housing Design Guide (LHDG). They said they have included a set-back south-facing façade to provide for a balcony area with simple balustrades and explained that the majority of the flats will be studio and 1 bed flats. The Panel commented that some balconies appeared too narrow to be useful and that the LHDG gives recommendations.

It was also noted that distances between balconies and living area/bedroom windows was quite tight, particularly between Blocks A and B.



Materials were discussed and the applicant explained how they envisage the scheme to have a fashionable warehouse character which is durable and flexible. The materials are predominantly a glazed "brick" system as the architects want it to use the robust nature of the material to achieve the warehouse aesthetic. It is intended to incorporate curved corner details as part of this reference. The Panel queried whether the brick-tile system would be robust enough on the south side plinth.

The simple approach to landscape design with more formal spaces close to the lobbies and less formal spaces on the south side of the blocks was appreciated.

The Panel supported the industrial character of the architecture and liked the way the material connected the internal and external spaces. Some members were concerned that the south-west facing façade might appear rather stark with a plinth hiding the below ground parking. The Panel also thought that more consideration must be given to the positioning of the studio flats, to avoid quite a high proportion of single aspect units. The desire to achieve a varied and interesting roof profile was supported, and the exposed soffits would further enhance the intended aesthetic.

#### <u>Climate</u>

The Panel welcomed and appreciated the applicant's ambition to achieve Code Level 5.

The Panel considered overheating to be a risk and encouraged the applicant to think about the worst case scenario and take experience from other sites. The applicant responded that they have tested pilot homes in Trumpington Meadows.

The Panel hoped that further layout studies could achieve more cross ventilation and that sunlight studies were needed on the NW facing units.

The Panel were supportive of the concrete roof with a high thermal mass and the use of photovoltaics on the roof. Furthermore, they commented that the exposed concrete complements the warehouse design.

#### 4. Conclusion

The Panel felt that the scheme has a great character and liked the proposed lifestyle it was setting for bike conscious people. Generally they supported the cycle-led strategy but highlighted the need to explore a smarter car-parking strategy.

The Panel made the following recommendations, further details can be found above:

- Think about the future climate and ventilation, particularly on the north-western façade.
- Consider alternative/ additional area for social space, such as on the roof. The Panel encourage excellent Wi-Fi and coffee to create a culture or "buzz".



- Think about how to maximise the use of car-parking spaces, there is a danger that some people who will own parking bays will not have cars, so consider a permit arrangement instead.
- Consider alternative ground level bike stores close to the lift and lobby.



#### **APPENDIX 1 - Drawings**



Lot S3, Eddington 18/1195/REM

**Application drawings** 

JDCC 20 March 2019





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### Site sections







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# Amended access ramp to north/south footway



### Block B, ground floor



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## **Communal foyers**





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### Cycle Pavilion design


# Verified View from the west



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# Agenda Item 5

REPORT TO:	Joint Development Control Committee - Cambridge Fringes Planning Committee (Cambridge City) Planning Committee (South Cambridgeshire DC)	20 March 2019 3 April 2019 10 April 2019
	Joint Director of Planning and Economic I	Development

**LEAD** Joint Director of Planning and Economic Development **OFFICER:** 

## Information for Planning Committee: New Odour Assessment of Cambridge Water Recycling Centre

# Purpose

- 1. Cambridge City Council and South Cambridgeshire District Council commissioned consultants Odournet to undertake an odour impact assessment, in order to assess the level and risk of odour impact posed by Cambridge Water Recycling Centre (CWRC) to both inform the North East Cambridge Area Action Plan and aid consideration of development proposals. That assessment has been completed.
- 2. To accompany the study, a technical note has been prepared jointly with Environmental Health to set out how officers intend to interpret the results of the Odournet Assessment.
- 3. Members of the three committees are asked to note both reports.

# Recommendations

4. It is recommended that Committee note the findings of the 'Odour Impact Assessment for Cambridge Water Recycling Centre (2018) (appendix A), and the Technical Note on interpretation of 'Odour Impact Assessment for Cambridge Water Recycling Centre' (October 2018) (Appendix B), for the purposes of considering planning applications in the vicinity.

# Background

5. Planning policy in the National Planning Policy Framework (NPPF) (2019) and the Cambridge and South Cambridgeshire Local Plans are clear that new development should only be permitted where there will not be any significant adverse effects from existing poor air quality, including odour, in order to protect the health and amenity of future occupiers.

# Considerations

- 6. In order to assess the level and risk of odour impact posed by CWRC, the Councils commissioned consultants Odournet to undertake an odour impact assessment (see Appendix A for the final report entitled 'Odour Impact Assessment for Cambridge Water Recycling Centre' (October 2018)). The assessment involved an on-site odour measurement survey and atmospheric odour dispersion modelling to produce predicted odour exposure contours, setting out levels of odour experienced in the area around the CWRC.
- 7. Environmental health officers at the Councils have advised that are fully supportive of the approach taken in the Odournet report, which in their view was conducted in accordance with all relevant published UK technical guidance issued by the Institute of Air Quality Management (IAQM), the Environment Agency and DEFRA. It is considered to be a reasonable representation of likely odour emissions from the CWRC site and provides robust predicted odour exposure levels in the area.
- 8. The Odournet study discusses at length the various odour criteria used in the UK which identify when an odour annoyance is likely to occur. The risk of annoyance is highly dependent upon how sensitive the use is. Residential is considered as a high sensitivity receptor, compared to non-residential such as office or commercial development which are medium sensitivity. The report states that there is no definitive precedent as to which odour exposure level criterion is acceptable and suitable for either residential or non-residential premises, although the majority of the guidance and legal/planning cases relating to odour, focus on the risk of impact at residential premises. The report goes on to say that 'ultimately the decision on which odour criteria to apply is for the Council based on their risk appetite'.

# **Technical Note**

9. The technical note (Appendix B) sets out how officers intend to

interpret the results of the Odour Assessment, when considering planning applications for development in the vicinity of CWRC and more specifically which are located within the Odour Exposure Contours in Figure 1.

- 10. The key parts of the note are Figure 1 and Table 1. Figure 1 shows the odour exposure contours around CWRC (this is the worst case modelled year, as advised in the Odournet Study). The higher the contour value, the higher the level of odour exposure. Figure 1 also shows the Waste Water Treatment Works (WWTW) Safeguarding Area (how the Water Recycling Centre was previously named) from the Cambridgeshire and Peterborough Minerals and Waste Plan (2012), which is discussed further below.
- 11. Table 1 sets out the likely acceptability of different types of development within the different odour exposure contours. The note applies to planning applications for all development (including change of use) which will be regularly occupied or used, but does not apply to householder applications. For each of the odour exposure contours (3 to <5, 5 to <10, and 10 & above) Table 1 sets out:
  - types of developments that are unlikely to be suitable even with mitigation;
  - types of development that may be suitable and provides examples of suitable mitigation measures;
  - types of uses that are likely to be suitable.
- 12. Having regard to policies in the Local Plans, if a planning application falls within the odour exposure contours in Figure 1 of this technical note it is recommended that it is accompanied with a statement setting out how the application has regard to this note and the following:
  - the Councils' Odournet Report 'Odour Impact Assessment for Cambridge Water Recycling Centre' (October 2018);
  - relevant Government, national and industry standards, codes of practice and best practice technical guidance; and
  - The Institute of Air Quality Management (IAQM) 'Guidance on the assessment of odour for planning' (Version 1.1 July 2018).
- 13. The note also highlights that if an application falls within the WWTW Safeguarding Area (shown on Figure 1), the application should be accompanied by the information required by Policy CS31

of the Minerals and Waste Core Strategy (2011). This requires that all planning applications for proposed new development involving buildings which would normally be occupied must be accompanied by an odour assessment report. The Waste Planning Authority (Cambridgeshire County Council) must be consulted on any planning proposal within a Safeguarding Area, except householder applications or advertisements.

- 14. The note highlights that applicants are encouraged to enter into pre-application discussions with the Local Planning Authority, to determine the individual submission requirements of planning applications which fall within the areas identified in Figure 1.
- 15. The note also refers to permitted development issues at paragraph 1.7 of the Technical Appendix. The Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) allows certain changes of use to high sensitive end uses (such as residential or educational uses) without requiring planning permission. This would be of concern if permission was granted for an office development, which could then change to residential without the need for planning permission. The Local Planning Authority can remove permitted development rights by means of a condition on a planning permission. The restrictions imposed will vary on a case by case basis.

# Options

16. Members are being asked to note the Odournet Assessment and Technical Note only, as material considerations in decision making. It will be for planning committee to make a decision on a case by case basis on individual planning applications weighing up all material planning considerations at the time of the decision.

# Implications

- 17. In the writing of this report, taking into account financial, legal, staffing, risk management, equality and diversity, climate change, community safety and any other key issues, the following implications have been considered: -
- 18. There are no significant implications.

# **Consultation responses**

19. There has been no formal consultation involved in the preparation of this report.

# Background Papers

The following background papers were used in the preparation of this report:

Cambridge Local Plan 2018 https://www.cambridge.gov.uk/local-plan-2018

South Cambridgeshire Local Plan 2018 https://www.scambs.gov.uk/planning/local-plan-and-neighbourhoodplanning/the-adopted-development-plan/south-cambridgeshire-localplan-2018/

National Planning Policy Framework (2018) <u>https://www.gov.uk/government/publications/national-planning-policy-framework--2</u>

**Report Author:** Nancy Kimberley – Senior Planning Policy Officer Shared Planning Service Telephone: 01223 457233 <u>nancy.kimberley@cambridge.gov.uk</u>

### Appendices:

Appendix A – Odour Impact Assessment for Cambridge Water Recycling Centre' (October 2018). Appendix B – Technical note on interpretation of 'Odour Impact

Assessment for Cambridge Water Recycling Centre' (October 2018)

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# Report

Odour impact assessment for Cambridge Water Recycling Centre

Client: Cambridge City Council Mandela House Cambridge

Report number: CACC17A\_08\_final Project code: CACC17A

Date: 23 October 2018 (October 2018)





Spain Odournet SL • United Kingdom Odournet UK Ltd • France Odournet France Brazil Odournet Brasil Ltda. • India Odournet Holding India Pvt Ltd

title:	Odour impact assessment for Cambridge Water Recycling Centre
report number:	CACC17A_08_final
project code:	CACC17A
key words:	
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approved:	on behalf of Odournet UK Ltd by

#### Mr. Nick Jones, director

- date: 23 October 2018
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# **Executive Summary**

Cambridge City Council (CCC) commissioned Odournet UK Ltd to undertake an odour impact assessment for Anglian Water's Water Recycling Centre (WRC) in Cambridge. The overall objective of the study was to assess the level of odour impact risk posed by the WRC in the surrounding area to inform the Council's ongoing and future planning decisions and policy.

The scope of the study was as follows:

- 1. To clarify the current WRC configuration and operations.
- 2. To undertake an odour survey and define odour emission estimates for each of the key elements of the treatment process at the WRC.
- 3. To undertake odour dispersion modelling of the WRC under the current operational conditions and assess the extent of potential odour impact risk in the surrounding area.

The study was conducted in accordance with the relevant aspects of published UK guidance issued by the Institute of Air Quality Management (IAQM) the Environment Agency and DEFRA. The study involved an odour measurement survey which was conducted at the WRC in summer 2017 with the cooperation of Anglian Water. The results of the survey were used alongside operational information for the WRC and odour measurement data collected at other UK sewage treatment works to define odour emission estimates for each aspect of the works operations. Odour dispersion modelling was then undertaken in order to assess the long-term odour exposure levels which are likely to occur around the site under the current operational conditions.

The key findings of the study are summarised as follows:

- The odour survey identified a range of odour sources at the WRC under the current operational conditions. These sources include the raw sewage reception and screenings/grit removal plant, the stormwater storage tanks, the primary settlement tanks, the anoxic and aerobic secondary treatment plant, and the sludge handling and storage operations.
- 2. The estimated time weighted summer odour emissions from the WRC are approximately 73,000  $ou_E/s$ . Of these emissions approximately 20% are generated by the preliminary treatment stage, 1% from storm water handling, 15% by the primary treatment stage, 22% by the secondary treatment stage and 42% from the sludge handling and treatment operations.
- 3. The largest individual contributors to the total site emissions are the emissions from the raw sludge belt thickening plant, the secondary sludge digestion tanks, the D stream anoxic plant and the primary settlement tanks.
- 4. The results of dispersion modelling which was undertaken to assess the level of odour impact risk under the foreseeable long term operational conditions at the works (current operations plus both secondary digestion tanks assumed to be in use and gas collection issues addressed) indicate that odour exposure levels in the area immediately surrounding the works exceed the  $C_{98, 1-hour} = 3, 5$  and  $6 \text{ ou}_E/\text{m}^3$  odour impact criteria discussed in section 2.3 of this report. On this basis any residential developments in these areas are likely to be at risk of odour impact. For any commercial or industrial developments in these areas, the degree to which odour impact is likely to occur is less clear for the reasons discussed within this report.
- 5. The likely increase in exposure to odours that would be experienced periodically in the vicinity of the storm overflow lagoon should be considered if the suitability of this land for development is to be reviewed.





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### 1 Introduction and scope

#### 1.1 Introduction

Cambridge City Council (CCC) commissioned Odournet UK Ltd to undertake an odour impact assessment for Anglian Water's Water Recycling Centre (WRC) in Cambridge. The overall objective of the study was to assess the level of odour impact risk posed by the WRC in the surrounding area to inform the Council's ongoing and future planning decisions and policy.

The scope of the study was as follows:

- 1. To clarify the current WRC configuration and operations.
- 2. To undertake an odour survey and define odour emission estimates for each of the key elements of the treatment process at the WRC.
- 3. To undertake odour dispersion modelling of the WRC under the current operational conditions and assess the extent of potential odour impact risk in the surrounding area.

The study was conducted in accordance with the relevant aspects of published UK guidance issued by the Institute of Air Quality Management (IAQM) the Environment Agency and DEFRA. The study was conducted by specialist consultants drawn from Odournet's UK consultancy team who have extensive experience assessing the odour impact of sewage treatment operations.

#### **1.2** Structure of report

The report is structured as follows:

- 1. Section 2 describes the methodology undertaken to conduct the assessment.
- 2. Section 3 provides an overview of the current site operations.
- 3. Section 4 identifies the odour sources associated with the operation of the WRC.
- 4. Section 5 presents the results of the odour survey conducted at the works.
- 5. Section 6 presents an estimation of odour emissions from the WRC.
- 6. Section 7 assesses the predicted odour exposure levels in the area surrounding the WRC under the current operational conditions.
- 7. Section 8 summarises the findings of the study.

Supporting information is provided in the Annex.

#### 1.3 Quality Control and Assurance

Odournet's odour measurement, assessment and consultancy services are conducted to the highest possible quality criteria by highly trained and experienced specialist staff. All activities are conducted in accordance with quality management procedures that are certified to ISO9001 (Certificate No. A13725).

All sensory odour analysis and odour sampling services are undertaken using UKAS accredited procedures (UKAS Testing Laboratory No. 2430) which comply fully with the requirements of the international quality standard ISO 17025: 2005 and the European standard for olfactometry EN13725: 2003. Where required, Odournet are accredited to conduct odour sampling from stacks and ducts in accordance to ISO 17025: 2005 and EN13725: 2003 under the MCERTS scheme. Odournet is the only company in the UK to have secured UKAS accreditation for all elements of the odour measurement and analysis procedure.







The Odournet laboratory is recognised as one of the foremost laboratories in Europe, consistently out performing the requirements of the British Standard for Olfactometry in terms of accuracy and repeatability of analysis results.





# 2 Description of approach

#### 2.1 Identification of odour sources and estimation of odour emissions

The odour sources associated with the WRC operations under the current conditions were defined on the basis of a review of the site operations (site audit) which was undertaken on 18<sup>th</sup> January 2017 by Mr Paul Ottley (senior consultant at Odournet) in the company of an experienced Anglian Water Treatment Manager (Mr Ceri Williams) and Senior Growth Planning Engineer (Mr Richard Lyon).

Emission estimates (expressed in terms of European odour units) for each source were defined primarily on the basis of data collected at the works during an odour survey which was conducted by Odournet in August 2017. The odour survey was undertaken in summer conditions after a period of dry weather. In defining appropriate emission rates library data collected by Odournet from other operational sewage treatment facilities in the UK and contained in Odournet's odour emission database were reviewed where necessary.

All of the Odournet measurement data utilised was collected using sampling and analysis techniques compliant with the British Standard for Olfactometry BS EN 13725: 2003<sup>1</sup>. Further details regarding the sampling and analysis techniques applied during the studies are presented in Annex A.

Consideration was given to the influence of the following factors to derive representative and comparable emission values:

- Turbulence of aspects of the process handling odorous liquid and solid material.
- The effect of seasonal changes in the influent quality and rate of biological generation of odours within the process.
- The frequency and duration of release of intermittent activities.

#### 2.2 Odour dispersion modelling

On the basis that odour annoyance or 'nuisance' is a symptom that develops through intermittent exposure to odours over extended time periods (see Section 2.3 below), the study focused on assessing the long-term odour exposure levels which may occur around the site under the current operational conditions<sup>2</sup>.

The assessment was performed using mathematical atmospheric dispersion modelling techniques which provided statistical analyses of the odour exposure levels that are likely to occur in the area around the site for each individual meteorological year of a 5 No. year dataset.

Data describing the topography of the local area was obtained from Ordnance Survey. The locations of the odour sources at the facility were defined using detailed aerial imagery of the site along with observations made during the site audit.

The dispersion modelling was conducted using the US EPA AERMOD dispersion model (version 7.12.1). The model was run in accordance with guidance issued by the US EPA and guidance relevant to odour assessment published by the Environment Agency. Details of the assumptions applied within the model are presented within the main body of this report.



<sup>&</sup>lt;sup>1</sup>BS EN 13725:2003, Air quality - Determination of odour concentration by dynamic olfactometry

<sup>&</sup>lt;sup>2</sup> For the current operations model it was assumed that the recent issue of odorous biogas leakage has been resolved (Anglian Water have indicated that the flare stack is now fully operational, and that by the end of October 2017 a replacement gasholder bag will be operational).



#### 2.3 Criteria for assessment of impact risk

In general terms, odour annoyance is recognised as a symptom that develops as a result of intermittent but regular exposure to odours that are recognisable and have an offensive character. The key factors that contribute to the development of odour annoyance can be usefully summarised by the acronym FIDOL:

- Frequency of exposure.
- Intensity or strength of exposure.
- Duration of exposure.
- Offensiveness.
- Location sensitivity.

In acknowledgement of these factors, a number of odour impact criteria have been developed that enable the odour impact risk of facilities to be predicted using dispersion modelling techniques. These criteria are generally defined in terms of a minimum concentration of odour (reflecting the intensity/strength element of FIDOL) that occurs for a defined minimum period of time (reflecting duration and frequency element of FIDOL) over a typical meteorological year. The concentration element of these criteria can be increased or lowered to reflect variations in the offensiveness of the odours released from a specific type of facility, and the sensitivity of nearby sensitive locations.

There are currently a range of odour criteria applied in the UK to attempt to gain an insight into the probability of odour annoyance developing at a given location. However, there is no firm consensus on which odour impact criteria should be applied for sewage treatment works and the issue is currently a matter of debate.

In the UK, odour impact criteria are generally expressed in terms of a European odour unit concentration that occurs for more than 2% of the hours of a typical meteorological year, and have been designed for application to permanent residential properties which are considered to be the most sensitive from an impact risk perspective.

The most commonly applied criterion from this perspective is the 'Newbiggin criterion'. This criterion was originally introduced into a public inquiry for a new sewage works at Newbiggin-by-the-sea in 1993, and equates to an odour exposure level of 5 European odour units per cubic meter ( $C_{98, 1-hour} > 5 \text{ ou}_E/m^3$ ). This 5 European odour units criterion has been successfully applied during numerous planning and odour nuisance assessment studies since 1993 for sewage, waste, food and a range of other industrial and agricultural activities.

Since 2002, a range of indicative odour annoyance criteria have also been applied to assess odour impact risk from residential properties, which have supplemented the use of the Newbiggin criterion. These criteria were introduced in the Horizontal Guidance Note for Odour Management H4 issued by the Environment Agency<sup>3</sup> and define three different levels of exposure at which odour impact or annoyance could potentially be expected to occur, for odours with high, moderate and low offensiveness. The indicative criteria are presented in the table below:

<sup>&</sup>lt;sup>3</sup> IPPC H4 Technical Guidance Note "H4 Odour Management", published by the Environment Agency, March 2011.





#### Table 1: Odour impact criteria

Relative offensiveness	Indicative criterion	Typical processes
Most offensive	1.5 $ou_E/m^3 98^{th}$ percentile (hourly average)	Processes involving decaying animals or fish remains; septic effluent or sludge; biological landfill odours
Moderately offensive	3 $ou_E/m^3$ 98 <sup>th</sup> percentile (hourly average)	Intensive livestock rearing; sugar beet processing; fat frying (food processing); well aerated green waste composting
Less offensive	$6 \ ou_{E}/m^{3} \ 98^{th}$ percentile (hourly average)	Brewery; coffee roasting; confectionary; bakery

Odour guidance published by DEFRA in March 2010<sup>4</sup> also refers to these criteria but in less specific terms. The guidance does not state which criterion should be applied for assessing impact but does suggest that typical criteria fall within the range of  $C_{98, 1-hour} = 1.5 \text{ ou}_E/\text{m}^3$  to  $C_{98, 1-hour} = 5 \text{ ou}_E/\text{m}^3$ .

Similarly, guidance published by the Institute of Air Quality Management  $(IAQM)^5$  in May 2014 also refers to these criteria. This guidance does however state that odour impact may occur between  $C_{98, 1-hour} = 1$   $ou_E/m^3$  and  $C_{98, 1-hour} = 10$   $ou_E/m^3$  and that professional judgement should be applied to determine criteria on a case by case basis by considering the underlying science, sensitivity of local receptors and developing case law.

There is currently some debate as to which odour criteria currently are the most appropriate for assessing the risk of impact of odorous industries such as sewage treatment, and to what extent the criteria are able to predict occurrence of odour annoyance for different odour types. Whilst there appears to be a substantial body of evidence to support the Newbiggin-by-the-Sea impact criterion for assessing the development of odour annoyance from the sewage treatment sector, the availability of such evidence for the EA criteria is currently somewhat lacking. There is therefore a developing view within the UK odour community that the most stringent EA criteria (i.e.  $C_{98, 1-hour} = 1.5 \text{ ou}_E/\text{m}^3$ ) may represent an overly precautionary standard in many cases even for highly offensive odours.

Odournet's general experience based on assessment of odours which could generally be classified as moderate to highly offensive (e.g. odours from waste water and sludge handling operations) generally supports this view, and indicates that for high sensitivity receptors such as residential premises odour annoyance is a symptom that is most likely<sup>6</sup> to develop at exposure levels between  $C_{98, 1-hour} = 3 \text{ ou}_E/m^3$  and  $C_{98, 1-hour} = 5 \text{ ou}_E/m^3$ . However the occurrence of adverse impact and complaints from areas of predicted odour exposure levels below  $C_{98, 1-hour} = 3 \text{ ou}_E/m^3$  cannot be completely ruled out.

This observation is supported to some extent by the findings of recent legal cases relating to odours from sewage treatment works (and a policy statement issued by the Chartered Institute of Water and Environmental Management) as indicated below.

• Appeal by Sherborne School, CRUK, CLIC Sargent, Mencap and British Heart Foundation against North Dorset District Council (January 2016). The District Council originally refused outline planning permission for the erection of homes on land in proximity to Gillingham sewage treatment works on the basis that the proposed development would have an adverse impact on the general amenity of the future occupants due to odours from the sewage treatment works.

<sup>&</sup>lt;sup>6</sup> On the basis of odour exposure levels predicted by the AERMOD dispersion model using emission rates defined on the basis of site specific measurement data and taking into account local factors that will influence emissions (such as sewage turbulence in open channels/tanks, seasonal variation in emissions etc).





<sup>&</sup>lt;sup>4</sup> Odour Guidance for Local Authorities, published by DEFRA, March 2010.

<sup>&</sup>lt;sup>5</sup> Guidance on the assessment of odour for planning, published by IAQM: April 2014.



Odour dispersion modelling was undertaken on behalf of the appellant, and the inspector concluded that "the appropriate parameter to apply in this case is the 3  $ou_E/m^3$  contour line".

- Appeal by Abbey Homes against St Edmundsbury Borough Council (March 2012). The Borough Council originally refused planning permission for the erection of 101 dwellings on land between Upthorne Road and Hepworth Road, Stanton, Suffolk, for reasons including the proximity of the site to an existing small rural sewage treatment works and the potential effects on the living conditions of future residents of the dwellings. On the basis of odour dispersion modelling submitted by experts acting for both parties, the inspector considered an appropriate threshold to be more than C<sub>98, 1-hour</sub> = 1.5 ou<sub>E</sub>/m<sup>3</sup>, and that C<sub>98, 1-hour</sub> = 3 5 ou<sub>E</sub>/m<sup>3</sup> was a more appropriate threshold (the inspector could see no reason to expect a significant loss of amenity to the occupiers of the proposed dwellings where Anglian Water's modelling predicted exposure levels below C<sub>98, 1-hour</sub> = 3 ou<sub>E</sub>/m<sup>3</sup>).
- Appeal against Corby Borough Council (2012). This appeal concerned land at Ashley Road, Middleton, Leicestershire. The inspector concluded in this case "I believe that it is reasonable to take account of the 1.5 ou<sub>E</sub>/m<sup>3</sup> contour map in determining odour impact. In my view areas subject to such concentrations are unlikely to provide a reasonable permanent living environment."
- Appeal by Lakeland Leisure Ltd. against Allerdale Borough Council, 2012. This appeal concerned the development of dwellings in Cockermouth, Cumbria in the vicinity of a sewage treatment works. The inspector concluded that development within the area predicted to experience odour exposure levels of C<sub>98, 1-hour</sub> = 3 ou<sub>E</sub>/m<sup>3</sup> or less would be appropriate due to the anticipated medium offensive nature of the odours from the sewage works.
- Thames Water vrs Dobson 2011. This nuisance action was brought against Thames Water Mogden Sewage Treatment Works by a group of residents claiming odour nuisance caused by this large municipal sewage works in London. The inspector concluded that he would be reluctant to find nuisance if the modelled odour concentration was only  $C_{98, 1-hour} > 1.5$  ou<sub>E</sub>/m<sup>3</sup> but as the odour concentration rises to  $C_{98, 1-hour} = 5$  ou<sub>E</sub>/m<sup>3</sup> he considered that this was the area where nuisance from the works would start and that by the time that  $C_{98, 1-hour} > 5$  ou<sub>E</sub>/m<sup>3</sup> or above is reached nuisance would certainly be established.
- Appeal by JS Bloor (Northampton) Ltd 2010. This appeal concerned a proposed residential development on land near an existing sewage treatment works in Leighton Linslade. The inspector noted that the water company used a standard of C<sub>98, 1-hour</sub> > 5 ou<sub>E</sub>/m<sup>3</sup> which they indicated would be a "concentration level above which odour might be a potential nuisance", and stated that the approach seemed reasonable and had been accepted at a previous appeal.
- Extract from CIWEM policy statement. CIWEM issued a position statement on odour in 2012 stating that the following framework is the most reliable that can be defined on the basis of the limited research undertaken in the UK at the time of writing:
  - $C_{98, 1-hour} > 10 \text{ ou}_E/m^3$  complaints are highly likely and odour exposure at these levels represents an actionable nuisance;
  - C<sub>98, 1-hour</sub> >5 ou<sub>E</sub>/m<sup>3</sup>, complaints may occur and depending on the sensitivity of the locality and nature of the odour this level may constitute a nuisance;
  - C<sub>98, 1-hour</sub> <3 ou<sub>E</sub>/m<sup>3</sup>, complaints are unlikely to occur and exposure below this level is unlikely to constitute significant pollution or significant detriment to amenity unless the locality is highly sensitive or the odour highly unpleasant in nature.





It should be noted that the majority of the guidance and legal/planning cases relating to odour focus on the risk of impact at <u>residential</u> premises which are considered as high sensitivity receptors. There is much less available data regarding odour impact at potentially less sensitive non-residential receptors, and there is no clear precedent for what constitutes a suitable criterion.

As a general concept, the application of less stringent odour impact criterion may be suitable for users of less sensitive receptors (such as commercial or industrial premises). However complaints of odour are often documented from non-residential premises such as places of work so the issue is far from clear.

As there is no definitive precedent as to which criterion is suitable for either residential or nonresidential premises, the criteria selected for planning purposes is open to challenge. Ultimately the decision on which criteria to apply is for the Council based on their risk appetite.

For this study, the assessment of risk of impact associated with the operations conducted at the WRC has been conducted by consideration of the  $C_{98, 1-hour} = 3 \text{ ou}_E/m^3$  and  $5 \text{ ou}_E/m^3$  criteria. The  $C_{98, 1-hour} = 6$  and  $10 \text{ ou}_E/m^3$  isopleths are also presented for reference.





# 3 Overview of sewage treatment operations

#### 3.1 Location of works

The Water Recycling Centre is a medium to large sized sewage treatment works located on the north eastern edge of the city of Cambridge. The works serves a population equivalent of approximately 165,000, with an influent dry weather flow of 650 l/s.

In close proximity to the northern, south eastern and western boundaries of the WRC are located commercial premises. To the east and north east is located undeveloped land (agricultural land and Milton Country Park). Residential areas are located further afield to the north and south west.

The location of the site is indicated in Figure 1 below.





In broad terms, the works has been operating in its current configuration since 2015. In 2015 Anglian Water completed a £20 million upgrade of the WRC to meet the Greater Cambridgeshire growth needs up to 2031. The key elements of the upgrade focussed on the secondary treatment operations, and involved decommissioning two percolating filter beds (known as Stream A and Stream B filters) and associated





humus tanks. To replace these plant new biological treatment plant with a smaller footprint (Stream D activated sludge plant) and final settlement tanks were commissioned.

#### 3.2 Overview of sewage treatment operations

The sewage received at the WRC is made up of primarily domestic influent (there are no notably odorous trade discharges). The majority of the influent received at the works is delivered via gravity sewer, although a small proportion of the influent is delivered via pumped rising mains. Septicity dosing is undertaken at the pumping stations of the rising mains to reduce the risk of the development of septic conditions within the sewage.

Sewage arrives at the WRC into a large open below ground chamber from where it is pumped to the head of a raised inlet works. Tankered cess and other liquid wastes delivered to the works by road are also discharged into the below ground chamber.

At the head of the raised inlet works a number of bellmouths discharge the influent into a turbulent chamber prior to it flowing through open channels to 3 No. enclosed fine screens (operated in duty-assist-standby configuration). The screens remove rag from the influent which is then washed and compacted prior to deposit in 2 No. open skips which are replaced approximately once per week.

Following screening the flows pass through an open channel into an open circular detritor where grit is removed prior to being washed and deposited into an open skip which is replaced approximately once per week.

The screened and degritted flows are then conveyed along an open channel and turbulent mixing section. Works returns primarily consisting of liquors from the sludge treatment centre (liquors from the raw sludge gravity belt thickeners and centrate from the digested sludge centrifuges) and any road drainage are returned into an open chamber downstream of the detritor prior to combining with the influent in the open channel. Ferric sulphate is dosed into this channel.

Storm flows received at the works (those above 3x dry weather flow) are removed via storm weirs located downstream of the screens and diverted into 2 No. open circular storm tanks via enclosed pipework. Once the incoming flow rate into the works subsides the storm water within the tanks is returned to the works for treatment. The storm tanks are fitted with scrapers which are designed to prevent the accumulation of potentially odorous sediment on the base of the tanks after emptying. In extreme rainfall events the storm tanks fill and overspill (via enclosed pipework) into a large (approximately 100m x 140m) storm lagoon which is designed to store storm effluent which then soaks into the ground. Once the effluent has soaked away a residual sediment layer is left on the base of the lagoon which (according to site operators) typically results in a notable odour in the immediate area for between 10 and 14 days. Site operators believe that the lagoon is typically filled once per year on average.

Flows from the inlet works are conveyed via 2 No. open turbulent distribution chambers into 5 No. circular primary settlement tanks (PSTs) for solids settlement and removal. Each tank is fitted with automatic sludge scrapers and scum removal plant. Site operators state that between four and five of the tanks are routinely in use, dependent on the magnitude of flows received at the works.

Following primary treatment, the settled sewage is conveyed via an open distribution chamber into one of 2 No. secondary treatment streams. Stream D is an activated sludge process which includes a highly turbulent distribution/mixing chamber at the head of the works where settled sewage and return activated sludge (RAS) are mixed. The mixed liquors are conveyed to one of 4 No. lanes each comprising an anoxic and an aerobic section. A turbulent outlet channel collects the treated sewage from all 4 No. lanes and conveys it to 4 No. circular final treatment tanks (FSTs) for final clarification.





Stream C receives settled sewage from the PSTs which is mixed with RAS in a turbulent open chamber and then diverted into 4 No. lanes, each comprising anoxic and aerobic stages. Final clarification is provided by 3 No. open circular final settlement tanks.

Final tertiary treatment of all flows is provided by sand filters.

#### 3.3 Overview of sludge treatment operations

Indigenous raw sludge from the primary settlement tanks is pumped via enclosed pipework into a circular covered sludge buffer tank, the air from which is extracted for treatment in an odour control unit.

Imported raw sludge is delivered to the site by road tanker and passed through a strainpress (to remove rag and other materials which are deposited into an open skip) into an enclosed imported sludge holding tank. This tank is served by an odour control unit. Imported sludge from this tank is conveyed into the sludge buffer tank where it is mixed with the indigenous raw sludge.

Mixed raw sludge from the sludge buffer tank is thickened in 2 No. gravity belt thickeners located on the ground floor of a sludge thickening building. The belts are locally enclosed and the captured odours are vented to atmosphere via 2 No. dispersion stacks. The liquors from the belts are discharged into an open sump prior to return the head of the works as described above.

Surplus activated sludge (SAS) from the Stream D activated sludge plant is stored in an open above ground SAS holding tank prior to thickening within 1 of 2 No. aquabelts (only one belt can run at any time and each is locally enclosed and vented to atmosphere via short dispersion stack) located in a SAS thickening building. Liquors from the belts are diverted into the distribution chamber at the head of the D stream secondary treatment plant.

Imported SAS and indigenous SAS from the Stream C secondary treatment plant is stored in a circular covered SAS buffer tank which is served by an odour control unit. The SAS is thickened in a SAS drum thickener prior to delivery into a circular covered above ground sludge blend tank where it is mixed with the thickened SAS from the D stream secondary treatment plant and the thickened raw sludge. The air from the sludge blend tank is extracted for treatment in the same odour control unit as the SAS buffer tank.

Mixed thickened sludge from the sludge blend tank is processed in the enclosed Monsal plant and then digested in enclosed primary anaerobic digesters with associated gas capture and combustion plant. At the time of the site audit there were a number of operational issues with the normal gas collection system and gas flare and some degree of gas leakage was occurring from the primary digester Whessoe valves. Anglian Water have indicated that these issues are being resolved and the routine release of unburnt biogas will not be anticipated from the site over the long term. Following digestion the sludge is transferred to one of 2 No. open secondary digestion tanks, sections of which are aerated in specific locations to avoid the accumulation of grit and silt, resulting in turbulence in these areas. The second tank is not in use, but contains a quantity of digested sludge. Anglian Water have indicated that the second tank will be cleaned in September 2017 and brought back into operation at some future stage.

Sludge from the secondary digestion tank is transferred via enclosed pipework to a number of centrifuges located in the upper level of the sludge thickening building. Centrate is discharged into the same sump as the GBT liquors. The trailers are typically removed after several days of storage, and in summer four or five trailers are typically stored onsite, and in winter this can increase up to nine. In addition, an emergency bund typically contains a quantity of cake that hasn't been deposited in a trailer.

The layout of the treatment assets at the WRC is shown in Figure 2.





Figure 2: Layout of treatment assets at the WRC



#### 3.4 Overview of complaints

Complaints data provided by Cambridge City Council indicates that between 2005 and 2014 18 No. complaints of odour relating the WRC were received by the Council, from both residential and commercial premises. From completion of the upgrade in 2015 to the present (September 2017), 5 No. complaints of odour have been received. Detailed information regarding the nature of each complaint is not available. For three of the complaints the postcode is provided and these appear to have been received from residential locations. These locations have been plotted on the map below.





Figure 3: Location of odour complaints (2015-present)







## 4 Identification of odour sources

# 4.1 Overview of the mechanisms for odour generation from sewage treatment operations.

The generation of odour from the processing of sewage is primarily associated with the release of odorous Volatile Organic Compounds (VOCs) that are generated as a result of the anaerobic breakdown of organic matter by micro-organisms. Anaerobic breakdown starts within the human bowel and may continue within the sewerage network and treatment works if conditions (i.e. a lack of oxygen) allow.

The key objectives of the sewage treatment process are to remove solid organic matter which is responsible for the generation of the majority of sewage odours and to provide treatment to remove any residual contaminants from the wastewater so that it can be returned back into the environment.

Since the main source of odour and VOCs is the solid organic matter, the most intense and offensive odours tend to be generated from the operations involving the handling of sludge i.e. the processes applied to dewater and store raw sludge. These processes are generally considered to present the greatest risk of odour impact offsite, unless adequate controls are put in place. Depending upon the quality of the sewage presented to the works, the aspects of the treatment process involved in the handling of raw sewage (e.g. preliminary and primary treatment stages) may also generate substantial levels of offensive odours.

Odours generated from the sewage treatment processes downstream of the primary sludge removal stage (e.g. the activated sludge processes and final settlement) present a significantly reduced risk of odour impact. This is due to the fact that the majority of odorous biogenic material has been removed from the flow at this point, and the treatment processes applied to remove any remaining contaminants in the sewage are aerobic which inhibits the formation of the majority of the reduced sulphur compounds which are responsible for offensive sewage odours.

The rate of odour release from sewage and sludge sources is influenced by the temperature of the material and the surface area exposed to the atmosphere. As a result, odorous emissions from sewage treatment operations tend to be highest during the summer months. Furthermore, activities that lead to increase in the surface area of odorous material exposed to the atmosphere (e.g. due to turbulence generated by sewage handling processes and agitation of sludge) will inevitably lead to an increase in the magnitude of odour released.

#### 4.2 Identification of sources of odour emission

A range of odour sources were identified at the WRC. These sources are summarised below.

Stage of treatment	Source	Nature of odorous material/level of enclosure	Frequency and duration of release
Preliminary Treatment	Inlet works chambers, detritor and channels	Raw sewage / open	Continuous
	Screenings plant and skips	Screenings / enclosed and open	Continuous
	Grit skips and dewatering plant	Grit storage / open	Continuous
	Works return channel	Works returns (dewatering liquors, site drainage)	Continuous
Storm water	Storm weirs and tanks	Raw sewage (storm water) / open	Intermittent (1 day per month in summer, 2 days per month winter)

Table 2: Identification of odour sources for the WRC







	Storm lagoon	Raw sewage (storm water) and sediment / open	Intermittent (very infrequent, typically 1 to 2 weeks per year)
Primary	Distribution chambers	Raw sewage / open	Continuous
Treatment	Primary settlement tanks	Raw sewage / open	Continuous
	Settled sewage distribution chambers	Raw sewage / open	Continuous
Secondary Treatment	Distribution/mixing chambers	Settled sewage and return activated sludge / open	Continuous
	Activated sludge plant - anoxic and aerobic sections	Mixed liquors / open	Continuous
Sludge	Sludge buffer tank OCU	Treated odours - stack emissions	Continuous
treatment and handling	Imported sludge strain press skip	Sludge screenings / open skip	Continuous
	Imported sludge tank OCU	Treated odours - stack emissions	Continuous
	Raw sludge gravity belt thickeners	Enclosed thickeners with vented emissions	Continuous
	Raw sludge thickening building	Fugitive emissions from building	Continuous
	Sludge liquors sump	Raw & digested sludge liquors / open chamber	Continuous
	SAS thickening building	Enclosed belts with vented emissions	Intermittent (10 hours per day)
	SAS holding tank	SAS / open tank	Continuous
	SAS buffer & sludge blend tank OCU	Treated odours - stack emissions	Continuous
	Secondary digestion tanks	Digested sludge / open tanks	Continuous
	Sludge cake	Digested sludge cake / open bay and trailers	Continuous





# 5 Odour survey results

#### 5.1 Olfactometry and hydrogen sulphide measurement results

The results of Odournet's 2017 odour survey are summarised in the tables below and presented in full in Annex B, along with a record of the operational conditions at the works at the time of sampling.

Source	Date of Sampling	Geomean emission rate $[ou_E/m^2/s]$	H <sub>2</sub> S emission rate [ug/m <sup>2</sup> /s]
Detritor (morning)	22.08.2017	22.2	5.664
Detritor (afternoon)	24.08.2017	23.4	1.680
Works return chamber	22.08.2017	26.8	1.338
PST #1	22.08.2017	3.9	0.654
PST #5	23.08.2017	1.1	0.134
Settled sewage chamber	23.08.2017	8.0	0.539
Stream D Anoxic zone	23.08.2017	22.4	0.414
Stream D Aerobic zone	23.08.2017	0.2*	<llod< td=""></llod<>
Stream C Anoxic zone	23.08.2017	0.5	<llod< td=""></llod<>
Stream C Aerobic zone	23.08.2017	0.2*	<llod< td=""></llod<>
Secondary digestion tank (in use)	24.08.2017	5.7	3.342
Secondary digester (disused)	24.08.2017	0.6	5.739
Fresh sludge cake	24.08.2017	5.7	4.475
Digested sludge centrate sump	24.08.2017	2.4	0.677

Table 3: Olfactometry and H<sub>2</sub>S measurements from open sources

\*Estimated result as some sample results fell below the lower limit of detection of the analysis technique

Table 4: Olfactometry and H<sub>2</sub>S measurements from volume sources

Source	Date of sampling	Geomean odour concentration [ouɛ/m³]	H₂S conc. [ppm]	Flow rate (m²/s)	Odour emission rate (ou <sub>E</sub> /s)
SAS buffer & sludge blend tank OCU	22.08.2017	31	<llod< td=""><td>0.03</td><td>1</td></llod<>	0.03	1
Raw sludge thickening building	22.08.2017	231	<llod< td=""><td>n/a</td><td>n/a</td></llod<>	n/a	n/a
Imported raw sludge holding tank OCU outlet	24.08.2017	2831	<llod< td=""><td>0.02</td><td>50</td></llod<>	0.02	50
Raw sludge gravity belt outlet stack	22.08.2017	47557	10.7	0.36	19023

The raw sludge buffer tank OCU was not operating at the time of the 2017 odour survey. Anglian Water have indicated that the performance of this unit is likely to be broadly comparable to the performance of the OCU which serves the sludge blend and SAS buffer tanks.

#### 5.2 Hedonic tone analysis results

Table 5: Hedonic tone analysis results

Source	Date of sampling	Concentration at which odours were perceived as 'mildly offensive' [ouɛ/m₃]
Detritor	22.08.2017	2.1
Stream D anoxic zone*	23.08.2017	1.8





Imported raw sludge holding tank OCU outlet	24.08.2017	2.0	
Secondary digestion tank	24.08.2017	2.1	

\*due to the low concentration of the sample collected from the stream D aerobic zone, hedonic tone analysis could not be undertaken.

#### 5.3 Discussion

Review of the odour measurement results presented above prompts the following observations:

- The odour emission rates measured from the influent in the detritor at the WRC are indicative of a moderately odorous influent. The comparability of the measured emission rates from the morning of the first day of sampling and the afternoon of the third day indicate a relatively consistent influent emission rate. The hydrogen sulphide emission rates do not indicate a substantial problem of septicity within the sewage received at the works at the time of sampling.
- The measurements of the odour emission rate from the works return chamber confirm that the material which is returned to the works for treatment is also moderately odorous.
- In comparison the emission rates of odour and hydrogen sulphide from the primary settlement tanks (PSTs) are low and are indicative of well operated tanks. The maintenance of the sludge blankets in the tanks at minimal levels is likely to result in the minimisation of odour generation within the tanks.
- The odour emission rates measured from the secondary treatment plant (filter beds, humus tanks and activated sludge plant) were all low and indicative of a well treated sewage, with the exception of the D stream anoxic zone. The measured emission rate at this location is higher than would typically be expected, and the reason for this is unknown.
- Review of the emission rates from the secondary digestion tanks indicates that the retained digested sludge within the disused tank is not a particularly odorous material. The sludge within the tank that is in use is more odorous, and measurements of the ammonia concentration of the collected samples indicates that this is likely to be a key component of the odours released. The same is the case for the sludge cake.
- At the time of sampling the sludge liquors sump was unlikely to have contained liquors due to the temporary suspension of the use of the thickening plant. On this basis the emission rate measured from this location is unlikely to be representative of the long term emissions.
- The odour concentration of the treated air from the SAS buffer & sludge blend tank OCU is very low, and indicates that the unit is likely to be providing a high level of treatment.
- The odour concentration of the treated air from the imported raw sludge holding tank OCU is substantially higher and indicates that the unit is unlikely to be performing as well. However due to the low flow rate of air through this OCU the resulting odour emission is small. The untreated air extracted from the raw sludge gravity belt thickeners is extremely odorous.
- Review of the results of the hedonic tone analysis indicates that the odour panel found the offensiveness of the odours from the various areas of the works to be broadly comparable.





# 6 Estimation of odour emissions

#### 6.1 Assumptions applied to estimate odour emissions

The assumptions applied to estimate odour emissions from the works for the current operational conditions are presented below. This reflects the current operational conditions at the works, but assuming that the biogas leakage has been resolved and both of the secondary sludge digestion tanks are brought into use (indicated by Anglian Water to be the long term plan).

• The odour emission rates for open odour sources for summer conditions were calculated by multiplying the plan area of the treatment process by the area odour emission rates defined in the table below.

Stage of treatment	Source	Estimated odour emission rate (ou <sub>E</sub> /m <sup>2</sup> /s)	Turbulence factor	Note
Preliminary Treatment	Inlet works chamber, screens detritor and channels	23	1 - 6	Measured
	Screenings skips	35	1	Estimated (reference data)
	Grit skips and dewatering plant	25	1	Estimated (reference data)
	Works return channel	27	1	Measured
Storm water	Storm weirs and tanks	8	1-6	Measured influent emission rate divided by 3 (3xDWF)
Primary	Distribution chambers	23	1-3	Measured (influent)
Treatment	Primary settlement tanks	2.1	1-3 (weirs)	Measured
	Settled sewage distribution chamber	8	1-6	Measured
Secondary Treatment	Distribution/mixing chambers	5	1-20	Estimated based on SS distribution measurement and estimate of RAS
	Stream D anoxic zone	22	1	Measured
	Stream D aerobic zone	0.2	1	Measured
	Stream C anoxic zone	0.5	1	Measured
	Stream C aerobic zone	0.2	1	Measured
	Outlet channels	0.2	1-20	Estimated based on aerobic zone measurements
Sludge	Imported sludge strain press skip	50	1	Estimated (reference data)
treatment and handling	Sludge liquors sump	350	3	Estimated (reference data)
	SAS holding tank	4	1	Estimated (reference data)
	Secondary digestion tank	6	1-6	Measured
	Sludge cake	6	1	Measured

Table 6: Estimated summer odour emission rates applied for current operational conditions

The emission rate of odour from all aspects of the works involved in handling raw liquid sewage (e.g. the preliminary and primary treatment) were reduced by a factor of 5 during autumn/winter to reflect the reduction in emissions due to lower sewage/ambient temperature and dilution effects of rainwater. Emissions from aspects of the operations including the secondary treatment stage, sludge handling, screenings handling and storage were assumed to remain relatively constant during summer and winter conditions.







 For turbulent sources, a multiplier was applied to the emission rate to reflect the elevation in emissions that occurs due to the increase in surface area exposed to the atmosphere. The following turbulence factors were used which are based on Odournet's broader experience in the wastewater sector and the findings of research:

Table 7: Turbulence factors

Level of turbulence	Turbulence multiplier
Low	3
Medium	6
High	12
Extreme	20

The emission rates applied for volume and point sources were also based on the results of Odournet's 2017 measurement survey, and where relevant, reference data obtained by Odournet from comparable sources at UK sewage treatment works using accredited odour sampling and analysis techniques. For the raw sludge buffer tank OCU, the flow rates and odour emission rate were estimated based on the results of the testing of the SAS buffer and sludge blend tank OCU.

Stage of treatment	Source	Estimated flow rate (m <sup>3</sup> /s)	Estimated odour emission rate (ou <sub>E</sub> /s)	Note
Sludge treatment and handling	Raw sludge buffer tank OCU	0.03	1	Assumed to be the same as SAS buffer & sludge blend tank OCU
	Imported sludge OCU	0.02	50	Measured
	SAS buffer & sludge blend tank OCU	0.03	1	Measured
	SAS thickening belt vent	0.4	250	Estimated (reference data)
	Raw sludge thickening building	0.625	144	Estimate based on measured odour concentration and estimated 3 building air changes per hour
	Raw sludge gravity belt thickener vents	0.4	19023	Measured

Table 8: Estimated emission rates for point and volume sources

- It is assumed that at any given time three of the bellmouths at the head of the elevated inlet works are discharging.
- It is assumed that 2 No. screenings skips, 1 No. grit skip and 1 No. sludge strainpress skip are in use.
- It is assumed that the 2 No. circular storm tanks are in use for 2 No. days per month in winter and 1 No. day per month in summer. The emission rate from the storm water has been estimated as a third of the influent emission rate, to account for the fact the storm flows are directed to the tanks at 3x dry weather flow. It is assumed that the cleaning systems within the tanks are effective and that no odorous sediment is retained in the tanks after emptying.
- It is assumed that 4 No. PSTs are in use during summer, and 5 No. PSTs are in use in winter.
- It is assumed that one of the raw sludge gravity belt thickeners is in operation 24 hours per day.
- It is assumed that one of the SAS belts is in operation for 10 No. hours per day.





- It is assumed that both of the secondary digestion tanks are in use, and that each is fitted with an aeration system which constantly aerates approximately 10% of the surface.
- It is assumed that 5 No. sludge cake trailers were in place in summer, and 9 No. trailers were
  present in winter.
- Emissions from the filling of the storm lagoon (which typically only happens once per year) were
  not included in the model.

#### 6.2 Breakdown of estimated emissions

A breakdown of the summer odour emissions generated from each aspect of the sewage treatment process is presented in Table 9 below. The emission rates presented in the table have been adjusted to reflect the frequency of occurrence of each odour source and are 'time-weighted'.

Stage of treatment	Source	Odour emission rate $[ou_E/s]$	% of total emissions
Preliminary treatment	Inlet works screens, detritor & channels		18.2%
	Screenings skips	315	0.4%
	Grit skips and dewatering plant	190	0.3%
	Works return channel	398	0.5%
Storm water	Storm weirs and tanks	557	0.8%
Primary treatment	Distribution chambers	2235	3.1%
	Primary settlement tanks	7271	10.0%
	Settled sewage	1744	2.4%
Secondary treatment	Distribution/mixing chambers	1435	2.0%
	Activated sludge plant - anoxic zones	13705	18.8%
	Activated sludge plant - aerobic zones	1264	1.7%
Sludge treatment and	Sludge buffer tank OCU	1	0.0%
handling	Imported sludge strain press skip	225	0.3%
	Imported sludge tank OCU	50	0.1%
	Raw sludge gravity belt thickener vent	19023	26.1%
	Raw sludge thickening building	144	0.2%
	Sludge liquors sump	350	0.5%
	SAS thickening vent	104	0.1%
	SAS holding tank	278	0.4%
	SAS buffer & sludge blend tank OCU	1	0.0%
	Secondary digestion tanks	9855	13.5%
	Sludge cake	416	0.6%
TOTAL		72843	100

Table 9: Summer time weighted emissions from each aspect of the treatment process

Based on a review of the above table, the total time weighted summer odour emission from the works is approximately 73,000  $ou_E/s$ . Of these emissions approximately 20% are generated by the preliminary treatment stage, 1% from storm water handling, 15% by the primary treatment stage, 22% by the secondary treatment stage and 42% from the sludge handling and treatment operations.

Within the preliminary treatment area, the handling and treatment of odorous raw sewage results in this area contributing approximately one fifth of the total emissions from the WRC.



Storm water handling emissions account for a very small percentage of site emissions due to fact that the storm tanks are used relatively infrequently, and also due to the cleaning systems which prevent the retention of sediment in the base of the tanks after emptying.

For the primary treatment stage, the majority of emissions (10%) are released from the surface of the primary settlement tanks which have a relatively large surface area.

For the secondary treatment stage, the elevated odour emission rate measured from the anoxic zones of the D stream activated sludge plant means that they account for almost 19% of the total emissions from the WRC as a whole. Despite the large surface area of the aerobic stages of the secondary treatment plant, the low odour emission rate from the partially treated sewage means that emissions from this area only account for approximately 1% of overall emissions.

The high contribution of the sludge treatment and handling operations is due primarily to two key odour sources; the vent which emits odours from the raw sludge gravity belt thickener and the open secondary digestion tanks. The large contribution of the raw sludge belt thickener (26% of total emissions) is due to the very high odour concentration of the air extracted and vented to atmosphere untreated. For the secondary digestion tanks the 14% contribution to total emissions results primarily from the large surface area of the tanks and the areas of turbulence caused by the aeration mixing.





# 7 Odour impact assessment

#### 7.1 Dispersion modelling assumptions

The assumptions applied for the dispersion model were as follows:

- The meteorological data used by the model to simulate the dispersion and dilution effects generated by the atmosphere has been selected with reference to the AERMOD Implementation Guide<sup>7</sup>, which advises that the most representative meteorological dataset should be utilised (this will be influenced by both proximity to the study site and the representativeness of the surface characteristics of the meteorological station in comparison to the study site).
- Sequential hourly average meteorological data was obtained from the recording station located at Cambridge Airport for the years 2012 to 2016, with missing data imported from RAF Mildenhall. Cambridge Airport is located approximately 3km to the south of the WRC and is located in an area of broadly comparable landuse (semi rural/urban area located on the eastern edge of the city of Cambridge). The meteorological data was adjusted to reflect the surface characteristics of the study site in accordance with the guidelines in the AERMOD Implementation Guide. The windrose for the meteorological data utilised in the study is presented below.



Figure 4: Windrose for Cambridge Airport (with missing data imported from RAF Mildenhall) for 2012 to 2016

- Data describing the topography of the area surrounding the works was obtained from Ordnance Survey in Landform Panorama<sup>™</sup> format.
- The model was run assuming rural dispersion characteristics, as defined in the AERMOD implementation guide
- Buildings and structures in the vicinity of the odour control units were included in the model.
- A 2.7km by 3.2 km uniform Cartesian receptor grid was defined for the study area. The model was run using a receptor point spacing of 100 m for all years. The model for the 'worst case'

<sup>&</sup>lt;sup>7</sup> AERMOD Implementation Guide, Published by the US EPA, Revised August 2015



year was also rerun using a spacing of 40 m, and this is presented in Annex C. Receptor heights of 1.5m were assumed.

- The model only considers normal operational occurrences. Short term events such as plant breakdown, maintenance and repair could potentially impact considerably on the odorous emissions from time to time. Such short term variations have not been considered within the model.
- The model reflects the current operational conditions, with the exception that the both secondary digestion tanks are assumed to be in use and the issues with gas collection are assumed to have been addressed. From discussions with Anglian Water it is understood that there are currently no other planned changes to the works operations that are likely to substantially change odour emissions and that this reflects the likely foreseeable long term operation of the WRC.

#### 7.2 Dispersion modelling results

Current practice for odour assessment for planning is for the model to be run using five individual meteorological years, and for the assessment conclusions to be based on the results of the worst case year. In this case the worst case year is likely to be 2013, although this is dependent on which specific offsite location is being assessed. The model output for 2013 (100 m receptor grid spacing) is presented in Figure 5 below. The model outputs for all years modelled (including the 2013 model output with a 40 m receptor grid spacing) are presented in Annex C so that the variation in predicted odour exposure levels can be understood. The figures present isopleths defining the area where predicted odour exposure levels will exceed  $C_{98, 1-hour} = 3, 5, 6$  and 10  $ou_E/m^3$ .



Figure 5: Current operational conditions model output - 2013 (100m receptor grid spacing)



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#### 7.3 Discussion of model output:

Review of the model output presented above indicates that under the likely foreseeable long term operations at the WRC, predicted odour exposure levels in the area immediately surrounding the works exceed the  $C_{98, 1-hour} = 3$ , 5 and 6  $ou_E/m^3$  criteria discussed in section 2.3. On this basis any residential developments in these areas are likely to be at risk of odour impact. For any commercial or industrial developments in these areas, the degree to which odour impact is likely to occur is less clear for the reasons discussed in section 2.3.

Clearly if the operations at the works vary substantially going forwards in comparison to those assumed for the model then the risk of odour impact will vary.

Review of the model output indicates that the predicted exposure levels at the 3 No. residential locations from which odour complaints were received range fall below the  $C_{98, 1-hour} = 3 \text{ ou}_E/\text{m}^3$  exposure level. However the absence of detailed complaint information means that it is unclear whether these complaints resulted from 'normal' odour emissions from the works or abnormal emissions, such as those associated with the gas collection system problems. Overall the value of the complaint data in assessing the forseeable level of odour impact risk is limited.

It should be noted when reviewing the model output that the odour emissions associated with the use of the storm overflow lagoon are not included within the model. As described in section 3.2 the lagoon is typically only used approximately once per year with the resulting sediment causing a notable odour in the immediate area for between 10 and 14 days. On this basis it is considered likely that any receptors located in close proximity to the lagoon would experience elevated odours and increased risk of annoyance during these times. This could be confirmed by undertaking sniff testing in the area at a time when the lagoon contains odorous material.




### 8 Summary of findings

The key findings of the study are summarised as follows:

- 1. The odour survey identified a range of odour sources at the WRC under the current operational conditions. These sources include the raw sewage reception and screenings/grit removal plant, the stormwater storage tanks, the primary settlement tanks, the anoxic and aerobic secondary treatment plant, and the sludge handling and storage operations.
- 2. The estimated time weighted summer odour emissions from the WRC are approximately 73,000  $ou_E/s$ . Of these emissions approximately 20% are generated by the preliminary treatment stage, 1% from storm water handling, 15% by the primary treatment stage, 22% by the secondary treatment stage and 42% from the sludge handling and treatment operations.
- 3. The largest individual contributors to the total site emissions are the emissions from the raw sludge belt thickening plant, the secondary sludge digestion tanks, the D stream anoxic plant and the primary settlement tanks.
- 4. The results of dispersion modelling which was undertaken to assess the level of odour impact risk under the foreseeable long term operational conditions at the works (current operations plus both secondary digestion tanks assumed to be in use and gas collection issues addressed) indicate that odour exposure levels in the area immediately surrounding the works exceed the  $C_{98, 1-hour} = 3, 5$  and 6  $ou_E/m^3$  odour impact criteria discussed in section 2.3 of this report. On this basis any residential developments in these areas are likely to be at risk of odour impact. For any commercial or industrial developments in these areas, the degree to which odour impact is likely to occur is less clear for the reasons discussed within this report.
- 5. The likely increase in exposure to odours that would be experienced periodically in the vicinity of the storm overflow lagoon should be considered if the suitability of this land for development is to be reviewed.





### Annex A Odour sampling and analysis techniques

### A.1 Collection of odour samples from sources with no measurable flow

Collection of samples from area sources where there is no measurable flow such as open liquid tanks or channels and piles of sludge cake was conducted using a ventilated canopy known as a 'Lindvall hood'. The canopy was placed on the odorous material and ventilated at a known rate with clean odourless air. A sample of odour was collected from the outlet port of the hood using the 'Lung' principle as described above.

The rate of air blown into the hood was monitored for each sample and used to calculate a specific odour emission rate per unit area per second ( $E_{sp}$ ) as follows:

 $E_{sp} (ou_E/m^2/s) = C_{hood} \times L \times V$ 

Where:

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 $C_{\text{hood}}$  is the concentration result from the laboratory analysis.

V is the flow presented to the hood.

L is the flow path cross section of the hood (m<sup>2</sup>)

Covered area (m<sup>2</sup>)

### A.2 Collection of odour samples from odour control plant and buildings

Collection of samples from vents and odour control plant stacks vents were conducted using the 'Lung' principle. A 60 l Nalophan sample bag was placed in a rigid container and connected to the sample location using a PTFE sample line. Air was withdrawn from this container using a pump which caused a sample of the odorous air to be drawn through the line into the bag.

If necessary, samples were pre-diluted with nitrogen at the point of collection to prevent condensation from forming in the sampling lines and odour bag, which may influence the odour concentration prior to analysis.

For samples undertaken from vents or odour control plant stacks, the temperature and velocity of the airflow at each point was also determined using suitable monitoring techniques.

The emission rate of odour was then calculated by multiplying the measured odour concentration by the volume flow rate  $(m^3/s)$  as measured in the duct.

For samples collected from within buildings, the lung principle was applied to collect the sample, and the volume escape rate of building air estimated to enable an estimation of the emission rate of odour from the building to be made.

### A.3 Measurement of odour concentration using olfactometry

Odour measurement is aimed at characterising environmental odours, relevant to human beings. As no methods exist at present that simulates and predict the responses of our sense of smell satisfactorily, the human nose is the most suitable 'sensor'. Objective methods have been developed to establish odour concentration, using human assessors. A British standard applies to odour concentration measurement:

BSEN 13725:2003, Air quality - Determination of odour concentration by dynamic olfactometry.

The odour concentration of a gaseous sample of odorants is determined by presenting a panel of selected and screened human subjects with that sample, in varying dilutions with neutral gas, in order to determine the dilution factor at the 50% detection threshold ( $D_{50}$ ). The odour concentration of the





examined sample is then expressed as multiples of one European Odour Unit per cubic meter  $[ou_{\rm E}/m^3]$  at standard conditions.





## Annex B Odour and H<sub>2</sub>S measurement results

### B.1 Odour and H<sub>2</sub>S measurement results from 2017 survey

Table 10 Odour emission measurements for open sources

Source	Date of Sampling	Area odour emission rate [ou <sub>E</sub> /m <sup>2</sup> /s]			
		Geomean	Sample 1	Sample 2	Sample 3
Detritor (morning)	22.08.2017	22.2	36.4	13.4	22.3
Detritor (afternoon)	24.08.2017	23.4	23.2	23.5	23.4
Works return chamber	22.08.2017	26.8	20.0	36.7	26.2
PST #1	22.08.2017	3.9	3.3	4.0	4.6
PST #5	23.08.2017	1.1	1.2	1.2	0.9
Stream D Anoxic zone	23.08.2017	22.4	22.2	20.4	24.9
Stream D Aerobic zone	23.08.2017	0.2*	0.2*	0.2*	0.2*
Stream C Anoxic zone	23.08.2017	0.5	0.5	0.6	0.4
Stream C Aerobic zone	23.08.2017	0.2*	0.3	0.2*	0.2*
Settled sewage chamber	23.08.2017	8.0	6.6	6.5	11.8
Secondary digestion tank (in use)	24.08.2017	5.7	12.1	4.9	3.1
Secondary digester (disused)	24.08.2017	0.6	0.9	0.6	0.4
Fresh sludge cake	24.08.2017	5.7	5.1	5.9	6.0
Digested sludge centrate sump	24.08.2017	2.4	1.6	3.6	2.2

\*Result is estimated as actual result fell below the Lower limit of detection of the analysis technique

Table 11 Odour concentration measurements for volume sources

Source	Date of	Odour concentration [ou <sub>E</sub> /m <sup>3</sup> ]			
Sa	sampling	Geomean	Sample 1	Sample 2	Sample 3
SAS buffer & sludge blend tank OCU	22.08.2017	31	32	30	32
Raw sludge thickening building	22.08.2017	231	277	216	206
Imported raw sludge holding tank OCU outlet	24.08.2017	2831	4012	2779	2036
Gravity belts outlet stack	22.08.2017	47557	48699	45353	48699

### B.2 Operational conditions at the time of the odour survey

15					
Date	Incoming flow rate to works (m³/day)	PST dip levels	GBTs in operation1	Centrifuges in operation	Rainfall in 3 days prior to survey (mm)
22.08.2017	53049	#1: 3.0m water (<1m sludge)	1 of 2	1	0
23.08.2017	51016	#5: 3.2m water (<0.8m sludge)	1 of 2	1	0
24.08.2017	49943	NA	0 of 2	1	0





# Annex C Dispersion model outputs

Figure 6: Current operational conditions model output - 2012 Met data (100m receptor grid spacing)









Figure 7: Current operational conditions model output - 2013 Met data (40m receptor grid spacing)







Figure 8: Current operational conditions model output - 2014 Met data (100m receptor grid spacing)







Figure 9: Current operational conditions model output - 2015 Met data (100m receptor grid spacing)







Figure 10: Current operational conditions model output - 2016 Met data (100m receptor grid spacing)



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Technical note on interpretation of 'Odour Impact Assessment for Cambridge Water Recycling Centre' (October 2018) as a material consideration in determining Planning Applications in the vicinity of Cambridge Water Recycling Centre

### Purpose of this technical note

- 1 This technical note sets out how officers intend to interpret the results of the 'Odour Impact Assessment for Cambridge Water Recycling Centre' (October 2018), undertaken for the Councils by Odournet, in consideration of planning applications for development in the vicinity of Cambridge Water Recycling Centre (CWRC). Figure 1 shows the area which is covered by this note (later sections of this technical note explain how this area has been determined).
- 2 The Odournet study will be a material consideration in determining planning applications, alongside all other material planning considerations, for all development (including change of use) which will be regularly occupied or used, but does not apply to householder applications.

### Background

- 3 At all water recycling centres (WRCs), sewage can give off odour when it is treated, or moved around during the treatment process. Although it is mainly water, sewage contains polluting materials that produce gases with odorous characteristics that can be detected when released into the air.
- 4 The amount of odour from a WRC and its dispersion depends on a range of factors including what is in the sewage, how long it takes to arrive at the sewage works, how it is treated during various stages, local topography, the direction and strength of the wind and how warm the weather is (sewage can smell more on hot days). Although the CWRC endeavors to use best practical means to minimise odour generation, inherently it is not possible to have absolute control over many of these issues to completely eliminate odours.
- 5 The Councils commissioned consultants Odournet to undertake an odour impact assessment, in order to assess the level and risk of odour impact posed by CWRC in the surrounding area. The results of this assessment will be used as a material consideration by the Councils to help inform future planning decisions in line with the planning policies in the Cambridge Local Plan (2018) and South Cambridgeshire Local Plan (2018).

### **Planning Policy**

6 The National Planning Policy Framework (2019) aims to reduce air pollution and provide healthy and acceptable living conditions. Paragraph 127 which is concerned with achieving well-designed places, states that *'Planning policies and decisions should ensure that developments:... f) create places that are safe, inclusive and accessible and*  which promote health and well-being, with a high standard of amenity for existing and future users'.

- 7 Paragraph 180, states that 'planning policies and decisions should ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment'.
- 8 Paragraph 182 is key and states that 'Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed'.
- 9 The CWRC falls at the boundary of Cambridge City Council and South Cambridgeshire District Council and so policies in both authorities' Local Plans are of relevance.
- 10 Policy 36: Air quality, odour and dust of the Cambridge Local Plan (2018) relates to air pollution from all potential sources, including odour. Part b) of the policy states that where the proposed development is a sensitive end-use it will be permitted where it can be demonstrated that there will not be any significant adverse effects from existing poor air quality, sources of odour or other emissions to air. The policy goes on to state that any such impacts on the proposed use should be appropriately monitored and mitigated by the developer. The supporting text says that applicants shall, where reasonable and proportionate, prepare and submit with their application a relevant assessment, taking into account guidance current at the time of the application.
- 11 Policy SC/14 of the South Cambridgeshire District Local Plan deals with odour and other fugitive emissions to air. However, it mainly relates to new development which may generate malodours or emissions to air. The supporting text to the policy recognises that odour from sewage treatment works is an issue that is addressed by the Cambridgeshire and Peterborough Minerals and Waste LDF. Policy HQ/1: Design Principles, seeks to secure high quality design in all new development. Criterion (n) states that proposals must 'protect the health and amenity of occupiers and surrounding uses from development that is overlooking, overbearing or results in loss of daylight or development which would create unacceptable impacts such as noise, vibration, odour, emissions and dust'.
- 12 Policy 15 of the Cambridge Local Plan and Policy SS/4 of the South Cambridgeshire District Local Plan are identical policies dealing with development in Cambridge Northern Fringe East and Cambridge North railway station. In line with this policy, the Councils are currently preparing a joint Area Action Plan for the site. As part of the development of the AAP, the relocation of CWRC is being considered, however if it is to

remain on the current site the policy states that all proposals should 'demonstrate that environmental and health impacts (including odour) from Cambridge Water Recycling Centre can be acceptably mitigated for occupants'.

13 The Cambridgeshire and Peterborough Minerals and Waste Development Plan Core Strategy (2011) has a policy (CS31) on Waste Water Treatment Works (WWTW) Safeguarding Areas. These Safeguarding Areas assist in safeguarding waste management sites from incompatible development which may prejudice their use, and they extend 400 metres around existing treatment works, with a capacity exceeding 2000 population. This applies to the CWRC (Policy SSP W7I – Cambridge WWTW in the Site Specific Proposals Development Plan Document (2012)) and the Safeguarding Area is defined on the Local Plan Policies Maps for Cambridge and South Cambridgeshire. This Safeguarding Area is also shown in Figure 1 of this technical note. Within the Safeguarding Area Policy CS31 states that there is a presumption against allowing development which would be occupied by people, including new buildings or changes of use of buildings to residential, industrial, commercial, sport and recreation uses. Where new development is proposed within the Safeguarding Areas involving buildings which would normally be occupied, the application must be accompanied by an odour assessment report. The assessment must consider existing odour emissions from the waste water treatment works at different times of the year and in a range of different weather conditions. The policy goes on to say that planning permission will only be granted when it has been demonstrated that the proposed development would not be adversely affected by the continued operation of the existing waste water treatment works. The Waste Planning Authority must be consulted on any planning proposal within a Safeguarding Area, except householder applications or advertisements.

### **Odournet Report**

- 14 The report 'Odour Impact Assessment for Cambridge Water Recycling Centre' (October 2018) was commissioned by Environmental Health Officers at both Councils and produced by Odournet. Environmental Health Officers at the Councils are fully supportive of the approach taken in the Odournet report, which in their view was conducted in accordance with all relevant published UK technical guidance issued by the Institute of Air Quality Management (IAQM), the Environment Agency and DEFRA. It is considered to be a reasonable representation of likely odour emissions from the CWRC site and provides robust predicted odour exposure levels in the area.
- 15 The study involved an odour measurement survey which was conducted at CWRC in summer 2017, targeting each individual odour source. The results of the survey were used alongside operational information for CWRC and odour measurement data collected at other UK sewage treatment works to define site and source specific odour emission estimates for each odour source of the works operations. Atmospheric odour dispersion modelling was then undertaken using the AERMOD computer modelling system in order to assess representative odour exposure levels (impacts) which are likely to occur around the site under the current and likely future long-term operational conditions.

16 The results of the odour assessment study are predicted odour exposure contours (of equal odour concentration units - ouE/m-3) in the vicinity of CWRC for each individual meteorological year of a 5 year dataset (2012 – 2016). The contours are based on the predicted 98th percentile (C98) value of hourly average odour concentration units (as advised in current UK guidance) and measured in European odour units per cubic metre of air (C98, 1-hour concentrations - ouE/m-3). Current practice for odour assessment for planning is to use the worst case year, which was 2013. These odour exposure contours are shown in Figure 5 of the study and repeated in this technical note at Figure 1.

### **Odour Impact and Annoyance**

- 17 Odour annoyance occurs when a person exposed to an odour perceives it as unwanted or objectionable. The perception of the impact of odour and perceived odour annoyance involves not just the strength of the odour but also its Frequency, Intensity, Duration and Offensiveness (the unpleasantness at a particular intensity) and the Location of the receptors (both indoor and outdoor). These attributes are known collectively as the FIDOL factors and are explained further in the Technical Appendix Table 2: Description of the FIDOL factors.
- 18 The risk of annoyance from odour is also highly dependent upon how sensitive the use is. The IAQM Odour Planning Guidance 2018 sets out a table of receptor sensitivity to odours based upon the level of expected amenity and the length of time users would be exposed to odour (see Table 4: Receptor Sensitivity to Odours in the Technical Appendix 1 of this technical note). Uses such as residential, hospitals, schools are classified as high sensitivity because users would expect enjoyment of a high level of amenity and would be present for extended periods of time. Places of work and retail premises are classified as medium sensitivity and industrial and farm use, roads / footpaths are low sensitivity.
- 19 Section 2.3 of the Odournet study discusses at length the various odour criteria used in the UK which identify when an odour annoyance is likely to occur. It refers to the different acceptability criteria used in the UK by industry, regulators, relevant case law, Planning Inspectorate appeal decisions and consultant experience to determine the potential significance of odour effects.
- 20 The report states that there is no definitive precedent as to which criterion is suitable for either residential or non-residential premises. The majority of the guidance and legal/planning cases relating to odour focus on the risk of impact at residential premises which are considered as high sensitivity receptors. The report goes on to say that 'ultimately the decision on which criteria to apply is for the Council based on their risk appetite'.
- 21 Further discussion about the significance of odour impact / effect and annoyance and how this technical note has been developed is set out in Technical Appendix 1.

### **Odour Exposure Level Acceptability Criterion for Planning Applications**

- 22 After careful consideration by Environmental Health and Planning Officers at both Councils, taking into account the Odournet study and relevant guidance and case law reported in the study, the Councils' position is set out below.
- 23 Figure 1 shows the modelled worst case year (2013) from the Odournet Study and the odour exposure contours for 3, 5, 6 and 10 odour units (C98 1-hour ouE/m-3). It also shows the WWTW Safeguarding Area from the Minerals and Waste Site Specific Proposals Development Plan Document (2012).
- 24 If an application falls within any of the odour exposure contours, consideration should be given to Table 1 of this technical note, taking into account which contour the site falls within.
- 25 If an application falls within the WWTW Safeguarding Area, consideration must be given to Policy CS31, of the Cambridgeshire and Peterborough Minerals and Waste Local Plan Core Strategy (2011).
- 26 There will be some circumstances where an application falls in either the odour exposure contours or the WWTW Safeguarding Area, however there will also be cases where an application may fall within both. Later sections of this technical note set out what should be submitted alongside planning applications falling within the different areas and the need for pre-application discussions.





- 28 Table 1 below sets out the types of use which would be suitable in principle in each odour exposure contour. Where the table refers to 'new' uses this includes both new build and change of use.
- 29 Policy 36 of the Cambridge Local Plan states that where there may be significant impacts to proposed development from existing sources of odour, these should be appropriately mitigated. Suitable mitigation would also be required by Policy HQ/1 of the South Cambridgeshire Local Plan to protect the health and amenity of occupiers of new development. Table 1 sets out where mitigation may be possible and the types of mitigation that would be acceptable. However, even with mitigation some development may still be unsuitable, for example if it would result in poor living conditions for occupiers.

# Table 1: Acceptability of development within different odour exposure contours in the vicinity of CWRC

Odour Exposure Contour (C98,ouE/m3)	Types of development that are <u>unlikely</u> to be suitable even with mitigation	Types of development that <u>may</u> be suitable	Types of uses that are <u>likely</u> to be suitable
3 to <5	High Sensitivity Receptors	High Sensitivity Receptors	Medium Sensitivity Receptors
	NEW high sensitivity receptors including residential, hospitals, school/educational uses and tourist/cultural uses (includes all uses in Use Classes C & D apart from outdoor playing/recreation fields).	Extension / expansion of ESTABLISHED EXISTING residential, hospitals, school/educational uses and tourist/cultural uses (C & D planning use classes). This does not cover householder applications. Consideration may need to be given to possible mitigation.	NEW and extension / expansion of ESTABLISHED EXISTING B1 (a) offices and (b) research and development, commercial / retail premises (A classes) and playing / recreation fields Low Sensitivity Receptors NEW and extension / expansion of ESTABLISHED EXISTING Low sensitivity receptors including industrial uses (B1(c), B2), storage and distribution (B8), farms,

Odour Exposure Contour (C98,ouE/m3)	Types of development that are <u>unlikely</u> to be suitable even with mitigation	Types of development that <u>may</u> be suitable	Types of uses that are <u>likely</u> to be suitable
			footpaths and roads
5 to <10	High Sensitivity Receptors	High Sensitivity Receptors	Low Sensitivity Receptors
	<b>NEW</b> high sensitivity receptors including residential, hospitals, school/educational and tourist/cultural (C & D uses).	Extension / expansion of ESTABLISHED EXISTING high sensitivity receptors including residential, hospitals, school/educational and tourist/cultural (C & D uses).	NEW and extension / expansion of <b>ESTABLISHED EXISTING</b> Low sensitivity receptors including industrial uses (B1(c), B2), storage and distribution (B8), farms, footpaths and roads
		Medium Sensitivity Receptors	
		NEW and extension / expansion of ESTABLISHED EXISTING B1 (a) offices and (b) research and development, commercial / retail (A classes) premises and playing / recreation fields with acceptable odour mitigation at receptor e.g. no external seating areas, sealed external facades with building mechanical ventilation with odour abatement technology	
10 and above	High Sensitivity	Medium Sensitivity	-
	Receptors NEW and extension/expansion of ESTABLISHED EXISTING high sensitivity receptors including residential,	Receptors Extension / expansion of ESTABLISHED EXISTING B1(a) offices and (b) research and development,	

Odour Exposure Contour (C98,ouE/m3)	Types of development that are <u>unlikely</u> to be suitable even with mitigation	Types of development that <u>may</u> be suitable	Types of uses that are <u>likely</u> to be suitable
	hospitals, school/educational and tourist/cultural (C & D uses). Medium Sensitivity Receptors NEW medium sensitivity receptors including B1(a) offices and (b) research and development, commercial / retail (A classes) premises and playing / recreation fields.	commercial / retail premises (A classes) with proven and acceptable odour mitigation at receptor e.g. no external seating areas, sealed external facades with building mechanical ventilation with odour abatement technology This could include the replacement of existing buildings with the same use. Low Sensitivity Receptors NEW and extension / expansion of ESTABLISHED EXISTING low sensitivity receptors including industrial uses (B1(c), B2), storage and distribution (B8), farms, footpaths and roads. Consideration may need to be given to possible mitigation.	

### Odour Statement to be included with planning application

- 30 Having regard to policies in the Local Plans, if a planning application falls within the odour exposure contours in Figure 1 of this technical note it is recommended that it is accompanied with a statement setting out how the application has regard to this note and the following:
  - the Councils' Odournet Report 'Odour Impact Assessment for Cambridge Water Recycling Centre' (October 2018);

- relevant Government, national and industry standards, codes of practice and best practice technical guidance; and
- The Institute of Air Quality Management (IAQM) 'Guidance on the assessment of odour for planning' (Version 1.1 July 2018).

### **Minerals and Waste Plan requirements**

31 If an application falls within the WWTW Safeguarding Area (shown on Figure 1), the application should be accompanied by the information required by Policy CS31 of the Minerals and Waste Core Strategy (2011). This requires that all planning applications for proposed new development involving buildings which would normally be occupied, must be accompanied by an odour assessment report. The assessment must consider existing odour emissions from the waste water treatment works at different times of the year and in a range of different weather conditions. The policy goes on to say that planning permission will only be granted when it has been demonstrated that the proposed development would not be adversely affected by the continued operation of the existing waste water treatment works. The Waste Planning Authority must be consulted on any planning proposal within a Safeguarding Area, except householder applications or advertisements.

### **Pre-application Discussions**

32 Applicants are encouraged to enter into pre-application discussions with the Greater Cambridge Shared Planning Service, to determine the individual submission requirements of planning applications which fall within the areas identified in Figure 1.

### **APPENDIX 1 - Odour Annoyance and Impact**

### **Odour Annoyance – A Brief Overview and Definitions**

- 1.1 Exposure to odours that are perceived to be unpleasant can affect well-being at levels of exposure well below those that would lead to physiological or pathological effects, e.g. sleep disorders, headaches, respiratory problems.
- 1.2 Odour annoyance occurs when a person exposed to an odour perceives it as unwanted or objectionable. The perception of the impact of odour involves not just the strength of the odour (magnitude measured as concentration) but also its Frequency, Intensity, Duration and Offensiveness (the unpleasantness at a particular intensity) and the Location of the receptors. These attributes are known collectively as the FIDOL factors and are described in Table 2 below.

#### Table 2: Description of the FIDOL factors

(Institute of Air Quality Management (IAQM) 'Guidance on the assessment of odour for planning' - Version 1.1 - July 2018)

Frequency	How often an individual is exposed to odour				
Intensity	The individual's perception of the strength of the odour				
<b>D</b> uration	The overall duration that individuals are exposed to an odour				
	over time				
<b>O</b> ffensiveness	Odour unpleasantness describes the character of an odour as it				
	relates to the 'hedonic tone' (which may be pleasant, neutral or				
	unpleasant) at a given odour concentration/ intensity. This car				
	be measured in the laboratory as the hedonic tone, and when				
	measured by the standard method and expressed on a standard				
	nine-point scale it is termed the hedonic score.				
Location	The type of land use and nature of human activities in the				
	vicinity of an odour source. Tolerance and expectation of the				
	receptor. The 'Location' factor can be considered to encompass				
	the receptor characteristics, receptor sensitivity, and socio-				
	economic factors.				

- 1.3 The magnitude of the odour effect and annoyance potential experienced is determined by the scale of odour exposure (FIDO) and the sensitivity of the receptor (L, denoting the Location, which is often taken to be a surrogate for the sensitivity and incorporates the social and psychological factors that can be expected for a given community.)
- 1.4 Odour exposure is typically quantified in terms of a frequency of occurrence of hourly average concentrations above a certain limit odour concentration; e.g. European odour units per cubic metre of air (ouE/m-3) as a 98-percentile of hourly averages of odour concentration for a year with average meteorology (C98, ouE/m-3, 1-hour concentrations). Typical benchmark odour concentration exposure criteria C98, ouE/m-3 indicative of the offensiveness / unpleasantness (annoyance /

unpleasantness spectrum) of various odour emission sources are given in Table 3 below.

# Table 3: Benchmark Odour Concentration Exposure Level Criteria – Indicative of Offensiveness

Criterion, C98 ouE/m3	Offensiveness (unpleasantness)	Odour Emission Sources
1.5	Most Offensive	Processes involving decaying animal or fish remains Wastewater treatment works - Processes involving septic effluent or sludge
		Biological landfill odours
		Intensive livestock rearing
3.0	Moderately Offensive	Sewage treatment works plant operating normally i.e. non- septic conditions Fat frying (food processing) Sugar beet processing Well aerated green waste composting
6.0	Less Offensive	Brewery Confectionery Coffee

(Derived from EA technical guidance note H4 Odour Management 2011)

- 1.5 In accordance with the Institute of Air Quality Management (IAQM) 'Guidance on the assessment of odour for planning' (IAQM Odour Planning Guidance, 2018 Version 1.1 July 2018), the Councils agree and have decided that for odours that are less unpleasant, the level of odour exposure required to elicit the same effect may be somewhat higher, requiring professional judgement to be applied. For example, as in this case it has been decided that odours from sewage treatment works plant operating normally, i.e. non-septic conditions, would not be expected to be at the 'most offensive' end of the spectrum (Table 3 above) and can be considered on par with 'moderately offensive' odours such as intensive livestock rearing.
- 1.6 The risk of annoyance from odour is also highly dependent upon how sensitive the use is. The IAQM Odour Planning Guidance 2018 sets out a table of receptor sensitivity to odours, including the types of uses that would fall within each category (high, medium or low) which is recreated as Table 3 below.

### Permitted Development Issues

1.7 The Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) allows certain changes of use to high sensitive end uses (such as residential or educational uses) without requiring planning permission. 1.8 Permitted development rights can be removed by the Local Planning Authority, for example, by means of a condition on a planning permission. The restrictions imposed will vary on a case by case basis.

### Table 4: Receptor Sensitivity to Odours

(Institute of Air Quality Management (IAQM) 'Guidance on the assessment of odour for planning' - Version 1.1 - July 2018)

For the sensitivity of people to odour, the IAQM recommends that the Air Quality Practitioner uses professional judgement to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the following general principles:

High sensitivity	Surrounding land where:
receptor	• users can reasonably expect enjoyment of a high level of amenity; and
	• people would reasonably be expected to be present here continuously, or
	at least regularly for extended periods, as part of the normal pattern of use
	of the land.
	Examples may include residential dwellings, hospitals, schools/education
	and tourist/cultural.
Medium sensitivity	Surrounding land where:
receptor	• users would expect to enjoy a reasonable level of amenity, but wouldn't
	reasonably expect to enjoy the same level of amenity as in their home; or
	• people wouldn't reasonably be expected to be present here continuously
	or regularly for extended periods as part of the normal pattern of use of the
	land.
	Examples may include places of work, commercial/retail premises and
	playing/
Low sensitivity	Surrounding land where:
receptor	<ul> <li>the enjoyment of amenity would not reasonably be expected; or</li> </ul>
	• there is transient exposure, where the people would reasonably be
	expected to be present only for limited periods of time as part of the normal
	pattern of use of the land.
	Examples may include industrial use, farms, footpaths and roads.

### **Significance of Odour Effects**

- 1.9 The significance of an odour effect (risk of annoyance from odour) for planning purposes requires the careful consideration of the nature / level of odour exposure (Table 3 above the impact) and the sensitivity of the proposed end use (Table 4 above).
- 1.10 The overall significance of the adverse odour effect in this guidance note has been determined considering a combination of the Odour Exposure Level (C98, ouE/m3) against Receptor Sensitivity, as shown in Table 5, below, which shows the impact descriptors proposed for a 'moderately offensive' odour.

# Table 5: Proposed Significance of Adverse Odour Effect Descriptors for impacts predictedby modelling 'Moderately Offensive' odours

(recreated from Institute of Air Quality Management (IAQM) 'Guidance on the assessment of odour for planning' - Version 1.1 - July 2018)

	Receptor Sensitivity			
Odour Exposure Level C98, ou <sub>e</sub> /m <sup>-3</sup>	Low	Medium	High	
≥10	Moderate	Substantial	Substantial	
5-<10	Slight	Moderate	Moderate	
3-<5	Negligible	Slight	Moderate	
1.5-<3	Negligible	Negligible	Slight	
0.5-<1.5	Negligible	Negligible	Negligible	
<0.5	Negligible	Negligible	Negligible	

### **Odour Exposure Level Acceptability Criteria for Planning Applications**

- 1.11 The assessment of odour risk and effects from the operations conducted at the CWRC on potential future receptors of varying sensitivity was decided by consideration of the results of the Odournet survey, relevant case law and Inspectors decisions on past planning appeals. This has resulted in the following general odour contour concentration exposure threshold values / acceptability criteria that should be used for consideration of planning applications:
  - $C_{98 \ 1-hour} = 3 \ ou_E/m^{-3}$  (at 3 and above at which high sensitivity development such as residential premises is likely to be deemed unacceptable)
  - $C_{98 \ 1-hour} = 5 \ ou_E/m^{-3}$  (at 5 and above at which moderate / medium sensitivity development such as offices and commercial / retail is likely to be deemed unacceptable)
  - $C_{98 \ 1-hour} = 10 \ ou_E/m^{-3}$  (at 10 and above all development is likely to be deemed unacceptable)
- 1.12 These criteria have been used to develop Table 1 in this technical note.

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## Committee Dates – 2019/20

The proposed dates are:

2019/20	Committee Meeting	Development Forum	Control
June	19 <sup>th</sup>	As required	
July	17 <sup>th</sup>	As required	
August	21 <sup>th</sup>	As required	
September	18 <sup>th</sup>	As required	
October	23 <sup>th</sup>	As required	
November	20 <sup>st</sup>	As required	
December	18 <sup>th</sup>	As required	
January	22 <sup>rd</sup>	As required	
February	19 <sup>th</sup>	As required	
March	18 <sup>th</sup>	As required	
April	15 <sup>th</sup>	As required	

Members are requested to contact the Committee Manager in advance of the meeting if they have any comments regarding the above dates. This page is intentionally left blank