Concerns with the Incinerator at Canford
20/08/2024

Here are my concerns about the proposed incinerator at Canford Manga.
The information about the application has been referenced from;
https://boppa.poole.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=_POOLE_DCAPR_268765
And the environmental permit consultation for the Canford incinerator
https://consult.environment-agency.gov.uk/psc/bh21-3bw-mvv-environment-limited/

My concerns are divided into three areas:

- **Air Quality**
  Risk assesmment cauluations based on UK children have been assumed to be 5 kg heavier than the default value for HHRAP. (Pg18)

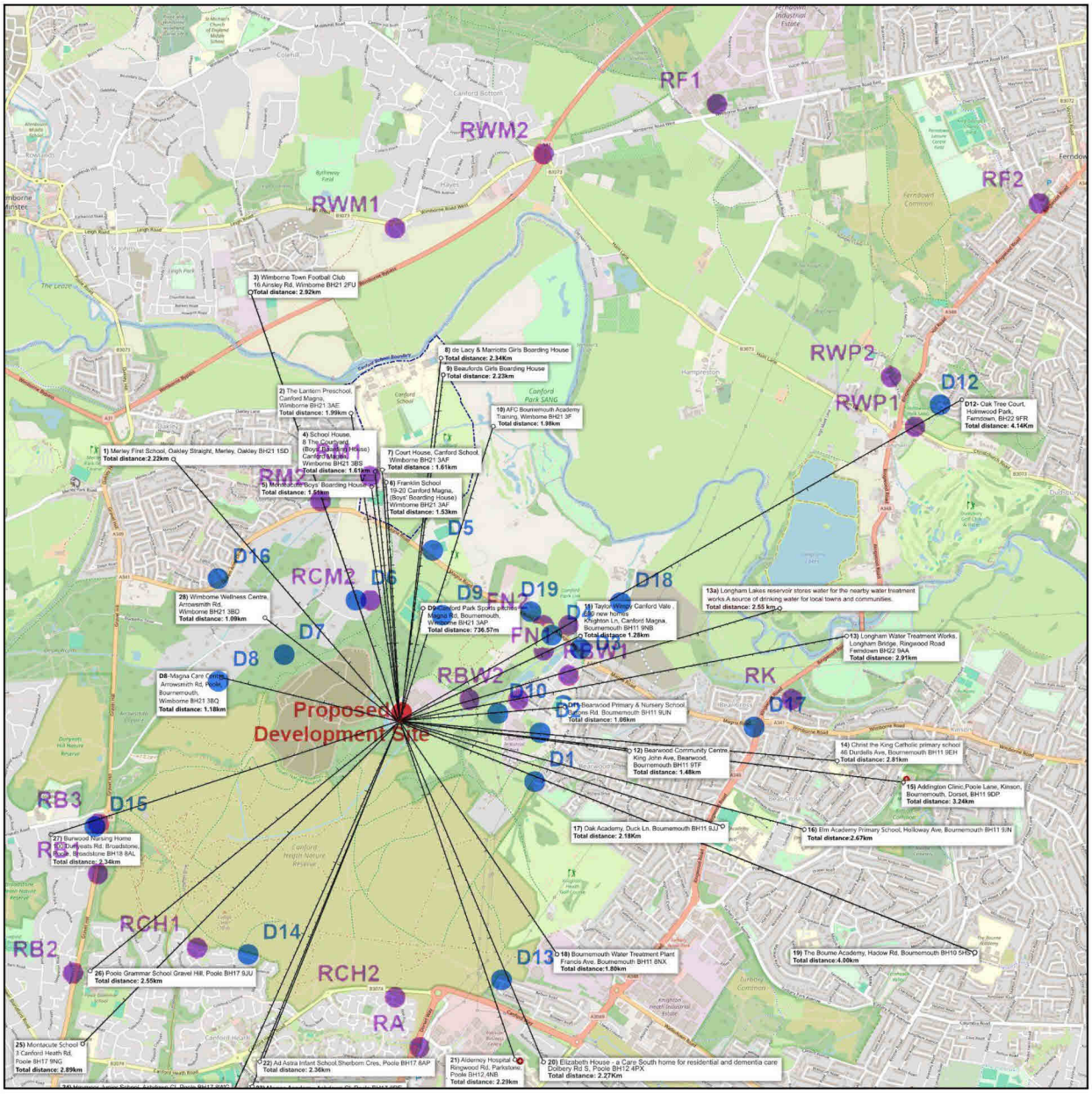
- **Water Treatment**
  Two water treatment plants are within 1.8km and 2.91km of planed incinerator (Pg27)

- **UK Emissions Trading Scheme: Financial Cost to the Council**
  Increased cost of £11.7m-£20 per year (Pg36)

And generally a concern of the critical need for safe disposal of products containing PFASs (forever chemicals)

In the report, Operational Air Quality Assessment and Human Health Risk Assessment on Sensitive Human receptors. Ten locations, listed below are within a 2km radius of the planned incinerator, which may need to be included in the Operational Air Quality Assessment report in the planning application. These include several boarding school residential houses, the site for a housing development for 690 new homes, the AFC Bournemouth Academy Training stadium, and the Bournemouth Water Treatment Plant. The other eighteen locations listed below that are not included are within the range of 4.14km, which is within the range of location **D12** used as examples where members of the public are regularly present in the application. They include several schools, nursing homes, healthcare facilities, and a Hospital. I have also included more details of the locations referred to in the Operational Air Quality Assessment report.

Please find attached a larger copy of the map. The blue dots are from ENVIRONMENTAL_STATEMENT_FIGURE_6.1_-_SENSITIVE_HUMAN_RECEPTORS -2785150.pdf, and purple dots (originally blue) are the locations from the Human Health Risk Assessment -HHRA.pdf fig4.1 from the Enviromental Permit application pg20.



1) Merley First School, Oakley Straight, Merley, Oakley BH21 1SD
Total distance:2.22km
At this address, the annual average of the pollutant PM2.5 is 9.11mcg/m3. The reading for PM10 is 15.85mcg/m3, and the limit is 15mcg/m3.
https://addresspollution.org/results/8e088bd2-edc8-48ab-b96e-8f9925fb8fa5

2) The Lantern Preschool, Canford Magna, Wimborne BH21 3AF
Total distance: 1.99km
At this address, the annual average of the pollutant PM2.5 is 9.34 mcg/m3. The reading for PM10 is 16.12 mcg/m3. The limit is 15 mcg/m3.
https://addresspollution.org/results/d4b0bb87-bd1c-42fe-989f-dd966da3debc

3) Wimborne Town Football Club,16 Ainsley Rd, Wimborne BH21 2FU
Total distance: 2.92km
The address for the house opposite is 14 Ainsley Rd. The annual average of the pollutant PM2.5 is 9.46mcg/m3.The reading for PM10 is 16.16mcg/m3.at this location
https://addresspollution.org/results/db218576-6c67-4817-b6d2-351fafa6595c

4) School House,8 The Courtyard,
(Boys' Boarding House)Canford Magna, Wimborne BH21 3BS
Total distance: 1.61km
At this address, the annual average of the pollutant PM2.5 is 9.19 mcg/m3.The reading for PM10 is 15.96 mcg/m3, and the limit is 15 mcg/m3.
https://addresspollution.org/results/59233b27-4d59-4e0b-bccd-a812fda9ec9c

5) Monteacute Boys' Boarding House
Total distance: 1.51km
At this address, the annual average of the pollutant PM2.5 is 9.43mcg/m3. The reading for PM10 is 16.20mcg/m3. The limit is 15mcg/m3.
https://addresspollution.org/results/d7752773-7f02-467c-9091-a8a0522d8499

6) Franklin School 19-20 Canford Magna (Boys' Boarding House)
Wimborne BH21 3AF
Total distance: 1.53km
At this address, the annual average of the pollutant PM2.5 is 9.11mcg/m3. The reading for PM10 is 15.83mcg/m3, and the limit is 15mcg/m3.
https://addresspollution.org/results/5ae0cfb2-9a3c-472a-a72d-47ede7a39647

D5-The Hamworthy Club, Magna Rd, Canford Magna, Wimborne BH21 3AP
Total distance: 1.12km
At this address, the annual average of the pollutant PM2.5 is 9.00mcg/m3. The reading for PM10 is 15.82mcg/m3, and the limit is 15mcg/m3.
https://addresspollution.org/results/ee1f2792-e234-418e-8606-6f78578cec50

D9-Canford Park Sports pitches, Magna Rd, Bournemouth, Wimborne BH21 3AP
Total distance: 736.57m.
There is no data on air quality from Imperial College at this location.

7) Court House, Canford School, Wimborne BH21 3AF
Total distance: 1.61km
At this address, the annual average of the pollutant PM2.5 is 9.14mcg/m3. The reading for PM10 is 15.88mcg/m3, and the limit is 15mcg/m3.
https://addresspollution.org/results/dcf9df9d-b367-427f-9c13-6e27d6a27ec2

8) de Lacy & Marriotts Girls Boarding House
Total distance: 2.34Km
At this address, the annual average of the pollutant PM2.5 is 9.47 mcg/m3.The reading for PM10 is 16.30 mcg/m3. The limit is 15 mcg/m3.
https://addresspollution.org/results/cc1dd828-35c6-4766-a510-e08a20931b4e

9) Beaufords Girls Boarding House
Total distance: 2.23km
At this address, the annual average of the pollutant PM2.5 is 9.35mcg/m3. The reading for PM10 at this address is 16.07mcg/m3. The limit is 15mcg/m3.
https://addresspollution.org/results/46bdafed-010c-4cb2-908f-a3f527845d40

D19- Canford Magna Garden Centre, 170 Magna Rd, Wimborne BH21 3AP
Total distance: 1.11km
At this address, the annual average of the pollutant PM2.5 is 9.07mcg/m3.The reading for PM10 is 16.13 mcg/m3.The limit is 15mcg/m3.
https://addresspollution.org/results/fc1ee329-f3a4-4bdb-a197-b175f1ac14a7

10) AFC Bournemouth Academy Training, Wimborne BH21 3F
Total distance: 1.98km.
The closest address is 8 The Courtyard, Canford Magna, Wimborne BH21 3BS(530.73 m). At this address, the annual average of the pollutant PM2.5 is 9.19 mcg/m3. The reading for PM10 at this address is 15.96 mcg/m3. The limit is 15mcg/m3.
https://addresspollution.org/results/59233b27-4d59-4e0b-bccd-a812fda9ec9c
D4-143 Waggy Tails Rescue Dorset, Magna Rd, Poole, Wimborne BH21 3AW
Total distance: 1.13km
At this address, the annual average of the pollutant PM2.5 is 8.95 mcg/m3, and the reading for PM10 is 15.82 mcg/m3.
https://addresspollution.org/results/c898bb01-f354-4cd2-b75d-220d8c72e4ea

11) Taylor Wimpy Canford Vale,(**690 new homes**)Knighton Ln, Canford. Magna, Bournemouth BH11 9NB.
Total distance 1.28km.
The closest address is 154 Magna Rd, Bournemouth BH11 9NB. At this address, the annual average of the pollutant PM2.5 is 9.17mcg/m3, and the reading for PM10 is 16.25mcg/m3.
https://addresspollution.org/results/9ad46a06-c122-4d93-99a9-05f5b0a678d8

D18- 45 Knighton Ln, Bournemouth, Wimborne BH21 3AS
Total distance: 1.61km
At this address, the annual average of the pollutant PM2.5 is 8.89 mcg/m3. The reading for PM10 is 15.72 mcg/m3, and the limit is 15 mcg/m3.
https://addresspollution.org/results/b422ed99-9d50-44ab-ba96-b5e62b3c970b

D12-52, Oak Tree Court, Holmwood Park, Ferndown, BH22 9FR
Total distance: 4.14km
At this address, the annual average of the pollutant PM2.5 is 9.55mcg/m3. The World Health Organization limit is 5mcg/m3. The reading for PM10 at this address is 16.49 mcg/m3. The limit is 15mcg/m3. For N02 at this address is 10.87mcg/m3. The limit is 10mcg/m3
https://addresspollution.org/results/5999df02-6299-4bbd-9700-885dcbb4f24b

D3-154 Magna Rd, Bournemouth BH11 9NB
Total distance: 1.26km
At this address, the annual average of the pollutant PM2.5 is 9.17mcg/m3. The reading for PM10 at this address is 16.25 mcg/m3. The limit is 15mcg/m3
https://addresspollution.org/results/9ad46a06-c122-4d93-99a9-05f5b0a678d8

D10- Provence Dr, Poole, Bournemouth BH11 9FE /BH11 9FT
Total distance: 635.90 m
At this address, the annual average of the pollutant PM2.5 is 8.94mcg/m3. The reading for PM10 is 15.72 mcg/m3. The limit is 15mcg/m3.
https://addresspollution.org/results/3d091aec-de91-4534-ab73-dce10441ffaf

D2-Merton Lodge, Wheelers Ln, Bournemouth BH11 9QJ.
Total distance: 907.50 m
At this address, the annual average of the pollutant PM2.5 is 9.07mcg/m3. The reading for PM10 is 15.90mcg/m3, and the limit is 15mcg/m3. For N02 at this address is 10.17mcg/m3. The limit is 10mcg/m3.
https://addresspollution.org/results/d8dabc62-bbde-4ce2-aa11-da0f4f0ab0b5

D1-188 Viscount Walk, Bearwood, Bear Cross, BH11 9TN,
Total distance: 946.94m

D7-Maranello, Arrowsmith Road, Canford Magna, Merley, Bournemouth, Christchurch and Poole, England, BH21 3BG.
Total distance: 845.47 m
The closest address by 157.51m is Le Beau, Arrowsmith Rd, Bournemouth, Wimborne BH21 3BE. At this address, the annual average of the pollutant PM2.5 is 8.87mcg/m3. The reading for PM10 is 15.60mcg/m3, and the limit is 15mcg/m3.for N02 at this address is 10.21mcg/m3. The limit is 10mcg/m3.
https://addresspollution.org/results/09b35ec9-6e49-48db-bb3a-e560b64f34b7

D6-Flambards, Arrowsmith Road, Canford Magna, Merley, Christchurch and Poole, England, BH21 3BG
Total distance: 827.00 m
The closest reading address is their neighbour, 97.55 m away at High Trees, Arrowsmith Road. At this address, the annual average of the pollutant PM2.5 is 8.72 mcg/m3. The reading for PM10 at this address is 15.38 mcg/m3. The limit is 15 mcg/m3.
https://addresspollution.org/results/518605ab-eb2f-4aff-91be-eeaab489b88c

D11-Bearwood Primary & Nursery School, Barons Rd, Bournemouth BH11 9UN
Total distance: 1.06km
At this address, the annual average of the pollutant PM2.5 is 9.01 mcg/m3. The reading for PM10 at this address is 15.82 mcg/m3. The limit is 15mcg/m3
https://addresspollution.org/results/fa0d719d-60be-4a70-b104-2b0078c0e544

D-17 Magna Road, Bear Cross, Christchurch and Poole, England, BH11 9LX
Total distance:2.27 km
The address at this location is 1100 Ringwood Rd, Bournemouth BH11 9LF . At this address, the annual average of the pollutant PM2.5 is 9.98mcg/m3. The World Health Organization limit is 5mcg/m3. The reading for PM10 at this address is 17.59 mcg/m3. The limit is 15mcg/m3. For N02 at this address is 20.05mcg/m3. The limit is 10mcg/m3.
https://addresspollution.org/results/531e0ec1-7d37-45f1-98f8-84672caa1a0f

12) Bearwood Community Centre, King John Ave., Bearwood, Bournemouth BH11 9TF
Total distance: 1.48km
At this address, the annual average of the pollutant PM2.5 is 9.22mcg/m3. The reading for PM10 at this address is 16.12mcg/m3. The limit is 15mcg/m3.
https://addresspollution.org/results/5e442856-cf0f-4be5-a44e-439f8a58876c

13) Longham Water Treatment Works, Longham Bridge, Ringwood Road,Ferndown BH22 9AA.
At this address, the annual average of the pollutant PM2.5 is 9.89mcg/m3.For PM10 at this address is 17.64mcg/m3. The limit is 15mcg/m3.The reading for N02 at this address is **18.82mcg/m3**.The limit is 10mcg/m3.
Total distance: 2.91km
https://addresspollution.org/results/c2920720-204a-4943-a894-519c54ebb87d

13a) Longham Lakes reservoir stores water for the nearby water treatment works. It's also a source of drinking water for local towns and communities.
Total distance: 2.55 km

14) Christ the King Catholic Primary School,46 Durdells Ave, Bournemouth BH11 9EH
Total distance: 2.81km
At this address, the annual average of the pollutant PM2.5 is 9.49mcg/m3. The reading for PM10 is 16.40 mcg/m3. The limit is 15mcg/m3.
https://addresspollution.org/results/fd76dc64-ee2d-4fb0-b3ba-83245cce848b

15) Addington Clinic, Poole Lane, Kinson, Bournemouth, Dorset, BH11 9DP
Total distance: 3.24km
At this address, the annual average of the pollutant PM2.5 is 9.54 mcg/m3. The reading for PM10 is 16.44 mcg/m3. The limit is 15 mcg/m3.
https://addresspollution.org/results/d3476e7a-71c4-440b-a83d-d56ab11160b4

16) Elm Academy Primary School, Holloway Ave, Bournemouth BH11 9JN
Total distance:2.67km
At this address, the annual average of the pollutant PM2.5 is 9.58 mcg/m3. The reading for PM10 is 16.47 mcg/m3. The limit is 15 mcg/m3.
https://addresspollution.org/results/88ded0f7-bb8f-403f-aa5b-4e78da4a2231

17) Oak Academy, Duck Ln, Bournemouth BH11 9JJ
Total distance: 2.18Km
At this address, the annual average of the pollutant PM2.5 is 9.54 mcg/m3. The reading for PM10 is 16.43 mcg/m3. The limit is 15 mcg/m3.
https://addresspollution.org/results/8dcf85f0-bb67-4089-bd20-2f3354a6fc92

18) Bournemouth Water Treatment Plant, Francis Ave, Bournemouth BH11 8NX
Autumn Rd &, Francis Ave, Bournemouth BH11 8NX
Total distance:1.80km
At this address, the annual average of the pollutant PM2.5 is 9.43mcg/m3.
(address opposite). The reading for PM10 at this address is 16.34 mcg/m3. The limit is 15mcg/m3.
https://addresspollution.org/results/c2fb8c76-5121-4ea4-82c5-9cd2be0da6ab

19) The Bourne Academy, Hadow Rd, Bournemouth BH10 5HS
Total distance:4.00km
At this address, the annual average of the pollutant PM2.5 is 9.73mcg/m3
https://addresspollution.org/results/59e6771a-8eb6-4c03-a8c6-e533ae4f4f66

D13-124 Belben Road, Alderney, Christchurch and Poole, England, BH12 4PS.
Total distance: 1.77 km
The house opposite 67 Farewell Road BH12 4PN has an annual average of the pollutant PM2.5 of 9.47 mcg/m3. For PM10 at this address, it is 16.47 mcg/m3. The limit is 15 mcg/m3.
https://addresspollution.org/results/6a24cd8c-1d4f-48e1-837f-e5a9ba919ef8

20) Elizabeth House - a Care South home for residential and dementia care
Dolbery Rd S, Poole BH12 4PXAt this address, the annual average of the pollutant PM2.5 is 9.55mcg/m3
Total distance: 2.27Km
At this address, the annual average of the pollutant PM2.5 is 9.55mcg/m3
https://addresspollution.org/results/c5cedf00-d074-4c58-a807-e7ddd94072fe

21) Alderney Hospital, Ringwood Rd, Parkstone, Poole BH12 4NB
Total distance: 2.29km
At this address, the annual average of the pollutant PM2.5 is 9.54mcg/m3. For PM10 at this address is 16.55mcg/m3. The limit is 15mcg/m3. The reading for N02 at this address is 11.70 mcg/m3. The limit is 10mcg/m3.
https://addresspollution.org/results/8430c269-46b6-4e28-8294-3cd773db4bb4

22) Ad Astra Infant School, Sherborn Cres, Poole BH17 8AP
Total distance: 2.36km
At this address, the annual average of the pollutant PM2.5 is 9.35mcg/m3. The World Health Organization limit is 5mcg/m3. The reading for PM10 at this address is 16.29 mcg/m3.
https://addresspollution.org/results/caba0662-323b-419b-aefd-268427b65f13

23) Magna Academy, Ashdown Cl, Poole BH17 8RE
Total distance:2.54km
At this address, the annual average of the pollutant PM2.5 is 9.33mcg/m3
.https://addresspollution.org/results/0f59f651-68c0-4917-a1e5-2e6925b8bb46

24) Haymoor Junior School, Ashdown Cl, Poole BH17 8WG
Total distance:2.65km
At this address, the annual average of the pollutant PM2.5 is 9.33mcg/m3
https://addresspollution.org/results/4ad2c23e-cf3f-4f77-9773-a1d4a7e030b6

25) Montacute School,3 Canford Heath Rd, Poole BH17 9NG
Total distance:2.89km
At this address, the annual average of the pollutant PM2.5 is 9.29 mcg/m3.
https://addresspollution.org/results/02d610f2-74e8-4f06-bd39-ce754403bea7

D14-78 Pilsdon Drive, Canford Heath, Christchurch and Poole, England, BH17 9HS,
Total distance: 1.76km
At this address, the annual average of the pollutant PM2.5 is 9.18 mcg/m3.The reading for PM10 at this address is 16.10 mcg/m3. The limit is 15mcg/m3
https://addresspollution.org/results/598d1023-1f8b-4aa7-94ee-1b1a8e6e1d2c

26) Poole Grammar School Gravel Hill, Poole BH17 9JU
Total distance: 2.55km
At this address, the annual average of the pollutant PM2.5 is 9.14mcg/m3.
https://addresspollution.org/results/45cd5496-2f77-48eb-b91e-aadf637fea05

27) Burwood Nursing Home,100 Dunyeats Rd, Broadstone,
Poole, Broadstone BH18 8AL
Total distance: 2.34km
At this address, the annual average of the pollutant PM2.5 is 8.79 mcg/m3.
https://addresspollution.org/results/7bef2dca-86d1-4eb3-a6a8-ce3902a9aa71

D15-Gravel Hill, Broadstone, Christchurch and Poole, England, BH18 8LP,
Total distance: 2.05 km
The closest address is 118A Dunyeats Rd, Broadstone, Poole,BH18 8ANBH18 8AN
At this address, the annual average of the pollutant PM2.5 is 8.87mcg/m3.The reading for PM10 at this address is 15.74mcg/m3. The limit is 15mcg/m3.The reading for N02 at this address is 10.60 mcg/m3.

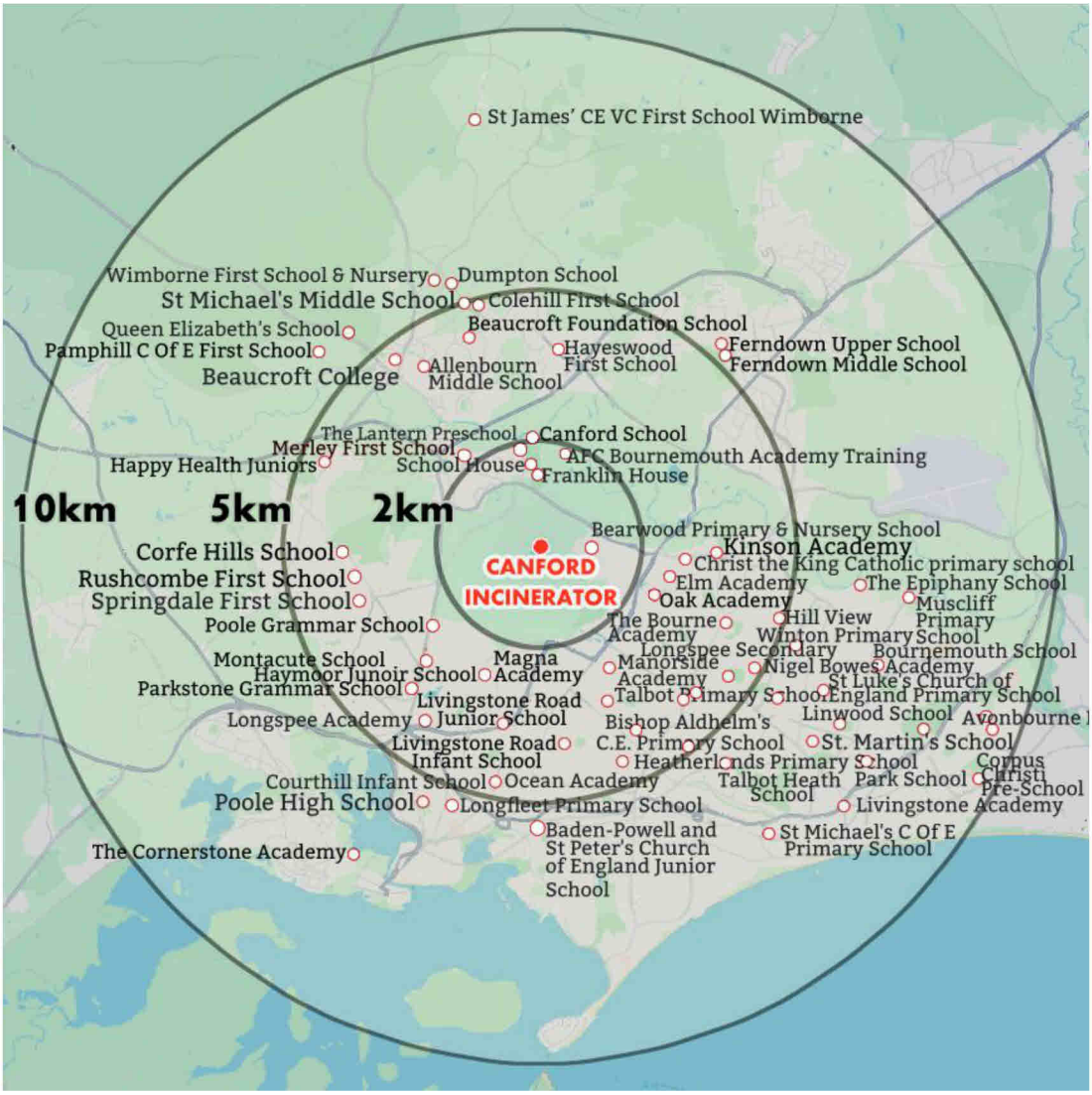
D8-Magna Care Centre, Arrowsmith Rd, Poole, Bournemouth, Wimborne BH21 3BQ
Total distance: 1.18km
At this address, the annual average of the pollutant PM2.5 is 8.64mcg/m3. The reading for PM10 is 15.35mcg/m3, and the limit is 15mcg/m3.
https://addresspollution.org/results/6039fa8a-e666-4b92-9ccd-9259e46257ae

28) Wimborne Wellness Centre, Arrowsmith Rd, Bournemouth, Wimborne BH21 3BD
Total distance: 1.09km
At this address, the annual average of the pollutant PM2.5 is 8.71mcg/m3. The reading for PM10 is 15.42mcg/m3, and the limit is 15mcg/m3.
https://addresspollution.org/results/11ceeb35-829f-4a09-a000-e1da5689ae8c

D16-14, Egdon Drive, Oakley, Merley, Christchurch and Poole, BH21 1TX,
Total distance: 1.46 km
There is no data on air quality from Imperial College at this location.

Air Quality

There are over 30 schools within a 5km radius of the incinerator location.



Incinerators emit large quantities of CO2, roughly one tonne of CO2 for every tonne incinerated. About half of this CO2 derives from fossil sources such as plastic. As a result, incinerators release harmful greenhouse gases into the atmosphere.

The Incineration facility is designed to process 33.2 tonnes of municipal solid waste (MSW) per hour and treat up to 260,000 tonnes of residual waste per annum.

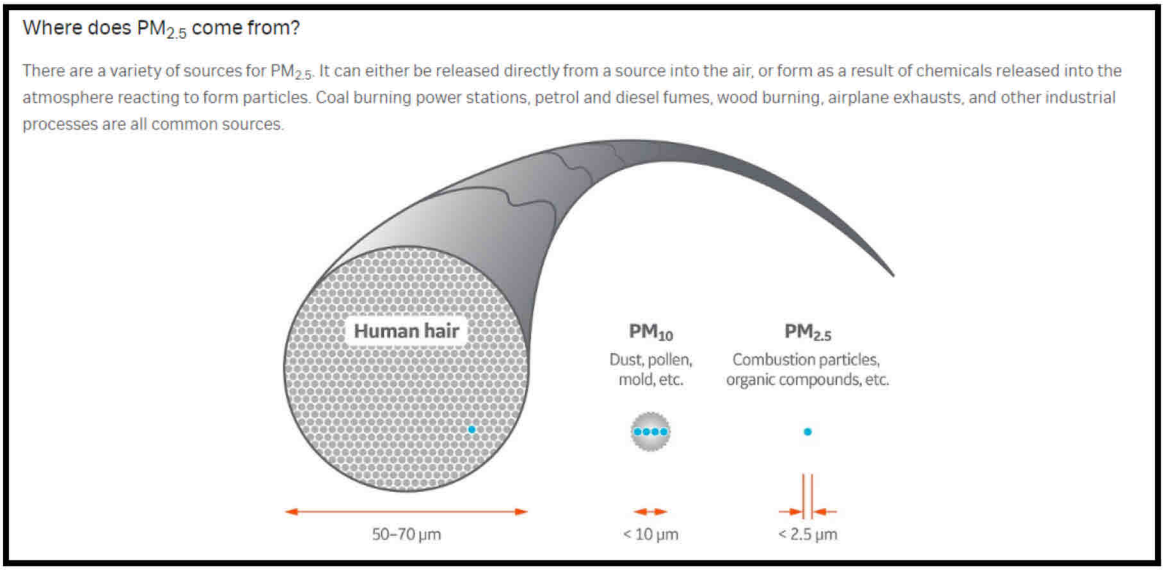
The Air Quality Standards Regulations 2024 require that concentrations of PM in the UK must not exceed:

- An annual average of 40 µg/m3 for PM10;
- An annual average of 20 µg/m3 for PM2.5.
  Particulate matter (PM10/PM2.5) - GOV.UK

According to the World Health Organisation (WHO): "PM [Particulate Matter] is a widespread air pollutant, present wherever people live. The health effects of PM10 and PM2.5 are well documented. There is no evidence of a safe level of exposure or a threshold below which no adverse health effects occur. Since even at relatively low concentrations the burden of air pollution on health is significant, effective air quality management aiming to achieve WHO AQG (World Health Organisation Air Quality Guidelines) levels is necessary to reduce health risks to a minimum". http://www.euro.who.int/en/health-topics/environment-and-health/air-quality/publications/2013/health-effects-of-particulate-matter.-policy-implications-for-countries-in-eastern-europe,-caucasus-and-central-asia-2013

Currently, all locations above exceed the World Health Organization pollutant limit for PM2.5 and PM10. Location D17 is particularly concerning, as it has the highest levels of these pollutants.The World Health Organization (WHO) recommends an annual PM 10 AQG level of 15 µg/m. This air quality data is supplied by Imperial Collage https://addresspollution.org/

PM means Particulate matter. Particulates are classified according to the size of micrometres in diameter (PM10 and PM2.5) The largest PM2.5 particles are about 30-times smaller than a human hair.



Given that the area's air quality already exceeds World Health Organization limits, the new incinerator will add more air pollution to the immediate vicinity and surrounding areas.

“**22**.The available evidence indicates that continuing to reduce PM2.5 concentrations below 10µg/m3 will be beneficial to public health. It will therefore be important to encourage local authorities and other bodies to continue to exert effort to improve air quality, even if the concentration target has been met “.COMEAP advice note - GOV.UK

The air quality at **D-17** is exceptionally poor.The reading for PM10 at this address is 17.59 mcg/m3.PM2.5 is 9.98mcg/m3. For N02, the reading is 20.05 mcg/m3.https://addresspollution.org/results/531e0ec1-7d37-45f1-98f8-84672caa1a0f

The Air Quality Briefing for Directors of Public Health rasies the question “Consider whether UK objectives/WHO air quality guidelines are being exceeded. the WHO guideline is not to exceed annual average concentrations of PM of:
• 10 µg/m 3 of PM 2.5
• 20 µg/m 3 of PM10 .”

And uses this example, “Measurements from the BirminghamTyburn urban background monitoring station give an annual mean value of 16 µg/m3 for PM2.5 and 23 µg/m3 forPM10. These are both above the WHO guidelines, suggesting that reducing these levels to improve local public health should be a high priority.p44

Air quality strategy: framework for local authority delivery - GOV.UK **5.1 PM2.5 target implementation**

Under the Environment Act 2021, the government has set 2 ambitious, legally-binding targets to reduce concentrations of PM2.5:

● an annual mean concentration target for PM2.5 of 10 µg/m3 across England by 2040

●an average population exposure reduction target of 35% in 2040 compared to a 2018 baseline

I note that in the PRE_APP_DOCUMENTS_OF_PREA22_00049-2790101.pdf it says “8.8-Monitoring of fine particles (PM 10) is not carried out by BCP Council…..For the nine grid squares surrounding the EfW CHP Facility Site, the maximum mapped 2021 background concentrations are 12.6 µg/m 3 and 8.6 µg/m3 for PM10 and PM2.5,

respectively. There are well below the air quality objectives of 40 µg/m 3 and 20 µg/m3.8.9."

In reading Local Air Quality Management Technical Guidance (TG22)At the core of LAQM delivery are three pollutant objectives; these are: Nitrogen Dioxide (NO2), Particulate Matter (PM10) and Sulphur Dioxide (SO2)5.So it was a surprise to read "8.8-Monitoring of fine particles (PM 10) is not carried out by BCP Councl"

The locations of the various schools carehomes and hospitals not included should be considered and inform the scoping assessment . As listed in Table 9.2 pg32 https://iema-stage.wearewattle.com/media/s35fughe/iema-eia-guide-to-effective-scoping-of-human-health-nov-2022.pdf

The schools should be a concern for children playing outside. The average resting human breathes approximately 5 to 6 litres of air per minute; however, a typical endurance athlete may breathe around 150 litres a minute, and some world-class athletes (such as those based on campus) may breathe up to 300 litres a minute. It is well-reported in the clinical literature that athletes are far more susceptible to respiratory problems, such as asthma, as a consequence of this increased ventilation.

Children are particularly at risk from air pollution, as their immune systems, lungs and brains are still developing. Air pollution can affect children's physical health. The normal breathing rates for children are:

●Preschooler (3-5 years): 22-34 breaths per minute

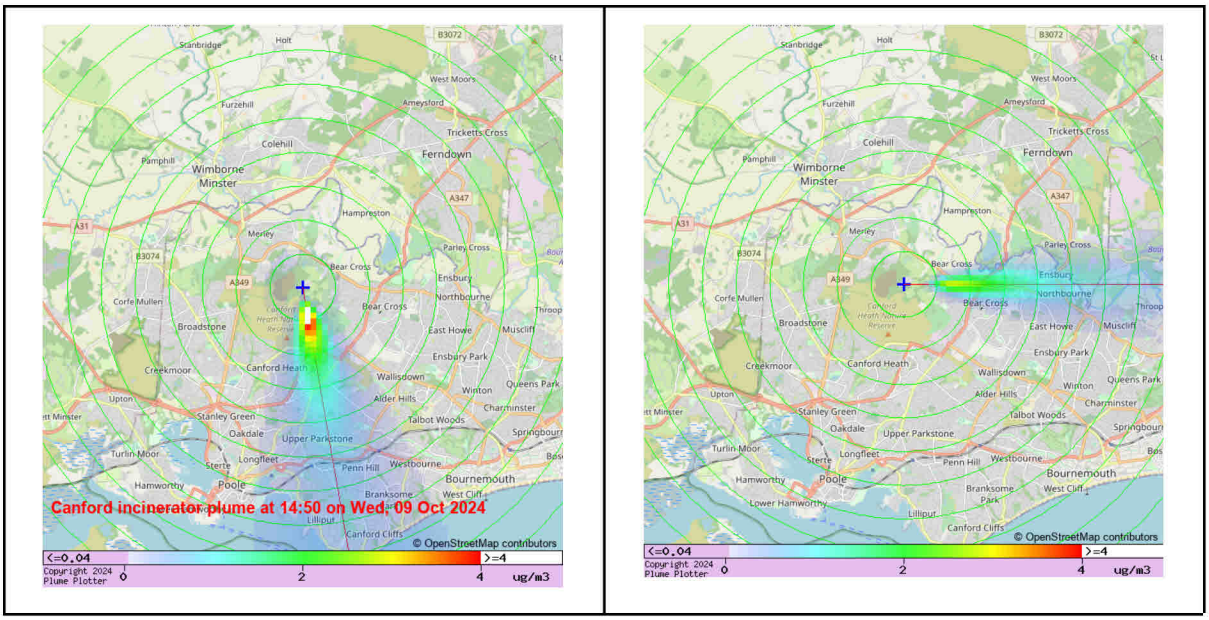
●School-age child (6-12 years): 18-30 breaths per minute

●Adolescent (13-17 years): 12-16 breaths per minute

Appendix 3 Normal Respiratory Rates

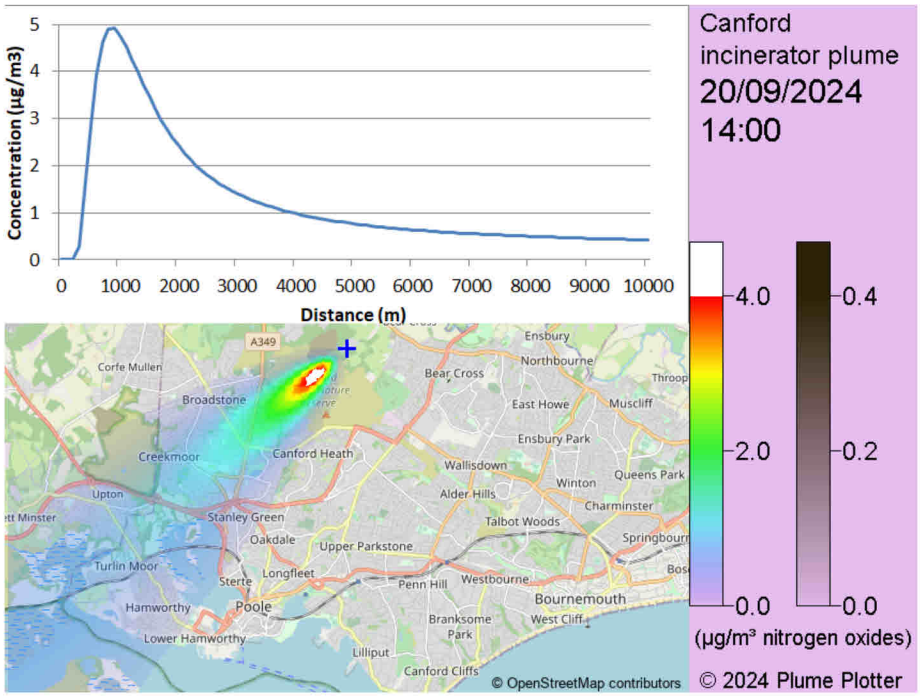
Just as exercise raises your heart rate, it also raises your breathing rate. The direct relationship between exercise and respiratory rate is that you will begin to take in more oxygen — about three to four times as much. Long-term exposure to even low levels of this toxic gas increases mortality rates and contributes to the development of asthma and other respiratory issues.

Below are images from https://plumeplotter.com/canford/ showing what area will be affected by the incinerator's emissions plume depending on the wind direction).

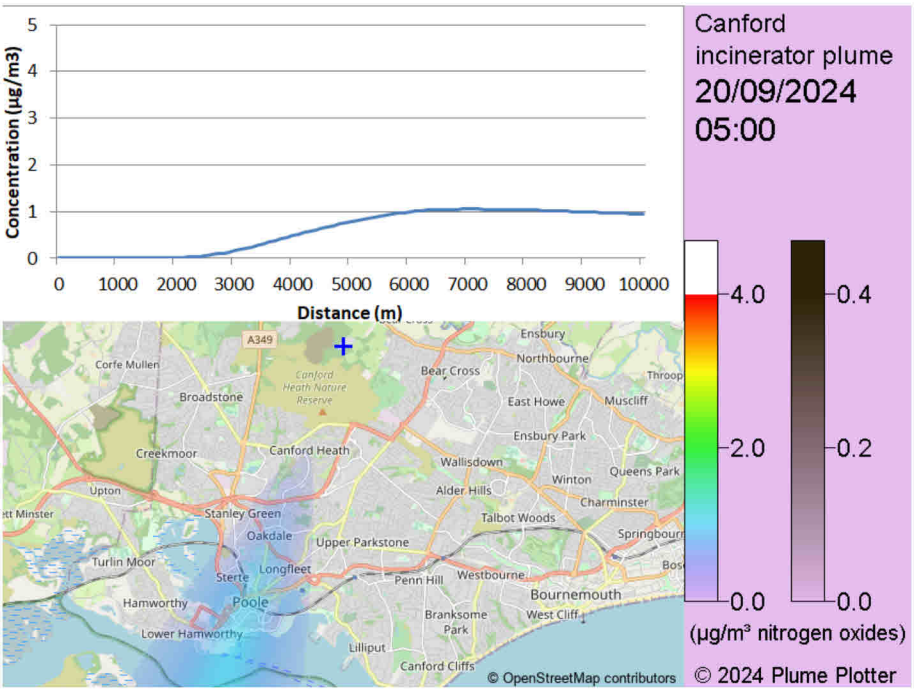


Breakdown of pollutants at the most polluted location (green = background, red = added by plume): The red line shows the wind direction. Green rings show distance (km). The colours show the concentration of oxides of nitrogen at ground level. The maximum is 4 µg/m3, which is the concentration at the location most polluted by the plume. µg/m3 is the concentration of an air pollutant. µg/m3 is the concentration of an air pollutant.

The maximum concentration of pollutants on some occasions are 1.3 km away.



It travels further at night because of stable conditions. When the sun comes out, there is a lot of vertical dispersion. Some of the plume goes down to the ground, and some rises. It also shows that it reached a peak at 11.6 km downwind. The concentration at that point was 0.827. It decreased after that but was still 0.659 at 20 km downwind



Of course, it depends on other things (notably the wind). This was just one day. Other days may be different.

This information is from https://plumeplotter.com/canford/howitworks.php

These show a rise in TOC (total organic carbon), particularly calcium and thallium.

Concentration per m^3	Background (annual mean)	Plume	
Oxides of nitrogen	19.6 µg	4 µg	(20%)
Particulates	18.7 µg	165 ng	(1%)
Sulphur dioxide	6.6 µg	1.01 µg	(15%)
Carbon monoxide	153 µg	1.65 µg	(1%)
Hydrogen flouride	500 ng	33 ng	(7%)
Hydrogen chloride	260 ng	197 ng	(76%)
TOC	180 ng	330 ng	(184%)
Dioxins and furans	3.2 fg	1.33 fg	(42%)
Cadmium and Thallium	110 pg	640 pg	(582%)
Mercury	N/A	640 pg	
Other metals	12.4 ng	10.1 ng	(82%)
PaHs	78 pg	2.99 pg	(4%)
PCBs	27 pg	0.117 fg	(0%)
Ammonia	1.3 µg	165 ng	(13%)

Multiple epidemiological studies have found that thallium has a significant impact on renal function, with this phenomenon observed in elderly, young, or diseased populations. Children and pregnant women are highly sensitive populations. Research

has found that thallium increases the risk of premature birth and impacts child development.https://www.mdpi.com/1422-0067/25/9/4750

Cadmium can travel long distances from the source of emission by atmospheric transfer. It is readily accumulated in many organisms, notably molluscs and crustaceans. Lower concentrations are found in vegetables, cereals and starchy roots. Human exposure occurs mainly from the consumption of contaminated food, active and passive inhalation of tobacco smoke, and inhalation by workers in a range of industries.https://www.who.int/teams/environment-climate-change-and-health/chemical-safety-and-health/health-impacts/chemicals/cadmium

Children get 90% of the Tolerable Daily Intake (TDI) of PCDD/Fs (Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans) from everyday sources.

The EfW (Energy from Waste) facility adds 1.2% of the TDI. The Tolerable Daily Intake for PCDD/Fs (Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans) in children is generally set at 1 to 4 picograms per kilogram of body weight per day (pg/kg bw/day)

The average weight of a child can vary quite a bit depending on age and growth patterns. Here's a rough guide:

- Newborns (0-1 year): Typically between 3-10 kg.
- Toddlers (1-3 years): Generally around 10-14 kg.
- Preschoolers (3-5 years): Usually about 14-18 kg.
- Young Children (5-12 years): Often in the range of 18-40 kg, depending on their growth rate.

(Data Table of Weight-for-age Charts)

In the CANFORD ENERGY FROM WASTE COMBINED HEAT AND POWER FACILITY:HUMAN HEALTH RISK ASSESSMENT pg18. It states

"For the purposes of this assessment the default IRAP/HHRAP parameters have been used mainly to define the characteristics of the receptors. The default input data are presented in Annex B. The only variation to this is the assumed body weight of a child receptor. The IRAP/HHRAP default value is 15 kg whereas in the UK a value of 20 kg is typically used. Therefore, a value of 20 kg has been used."

(This same statement is made in the Human Health Risk Assessment Pg18 for the Calber Valley by Gair Consulting Ltd CVSH Human Health Risk Assessment (February 2022).

And on page25 in the same CANFORD ENERGY FROM WASTE COMBINED HEAT AND POWER FACILITY: :HUMAN HEALTH RISK ASSESSMENT.it states

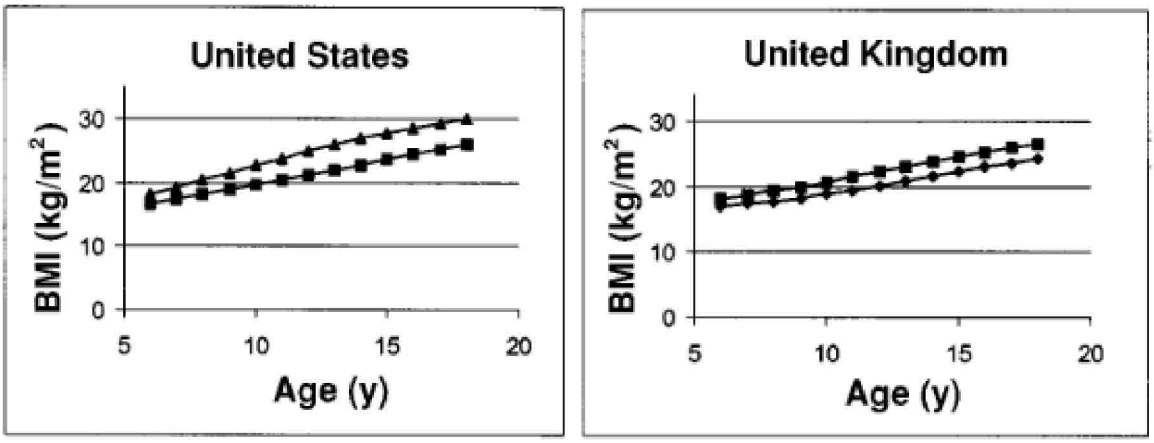
"....Combined with the background exposure for a 20 kg child (1.8 pg TEQ kg-1 d-1) the total intake would be below the TDI (91.2%)....."

HHRAP is the US statistics/standards previously used in UK reports. IRAP is Canadian.

"UK children have been assumed to be 5 kg heavier than the default value for HHRAP. This is based on a 'typical' approach but is not supported by any evidence of typical weights of children or further justification" This is one of the reasons Bureau Veritas, appointed by Calderdale Borough Council, questioned a recent waste incineration plant application. https://www.calderdale.gov.uk/docs/cvsh/CVSH-bv-hhra-review-v1.pdf

U.S. EPA (1990e) defines the body weight of the receptor as either adult weight (70 kilograms) or child weight (1 to 7 years; 17 kilograms) based on data presented in Nelson et al.(1969). However, as in other Agency guidance (U.S. EPA 1991b; 1994r; 1994g), we recommend using a weight of 15 kilograms for the child (exposure duration of 6 years) in the risk assessment.HHRAP Chapter 6: Quantifying Exposure | US EPA ARCHIVE DOCUMENT

In this study, it shows there is a slight difference. ■ data from December 1985; ▲, data from December 1995.



Comparison of weight and height relations in boys from 4 countries - ScienceDirect.

The Committee on Toxicity (COT) TDI for dioxins and dioxin-like PCBs of set what is essentially the RfD at 2 pg I-TEQ kg-BW^{-1} d^{-1}.

The Human Health Risk Assessment for Canford Heath states on pg 24:

"for an adult receptor a MDI of 0.7 pg I-TEQ kg-1 d-1 6 is derived by dividing the Environment Agency MDI by a body weight of 70 kg;"

TDI and MDI do not occur naturally in the environment. TDI is a clear, colourless to pale yellow liquid. MDI is a light yellow crystalline solid. There are several forms of TDI and MDI, which are called isomers.TDI and MDI are used to make many household products. They combine with other chemicals to produce various polyurethanes. Some of the products made with these polyurethanes include foam for furniture cushions and carpet padding and waterproof sealants.(PUBLIC HEALTH STATEMENT - Toxicological Profile for Toluene Diisocyanate and Methylenediphenyl Diisocyanate - NCBI Bookshelf)

This means the dose for a typical adult is – 0.7*70 = 49 pg / day

For a child receptor a MDI of 1.8 pg I-TEQ kg-1 d-1 is derived by dividing the Environment Agency MDI by a bodyweight of 20 kg and applying an adult to child correction factor of 0.74.

This means the dose for a typical 20kg child is – (1.8*20)/0.74 = (48.64) or 49 pg / day

If you look at the same calculation for a 15kg child, the daily exposure goes to 2.42pg units, which is above the recommendation of the Committee on Toxicology.

Weight kg	Limit 2pg	Without incinerator	With incinerator	%
9	2	3.999289	4.045333	1.151316
10	2	3.59936	3.6408	1.151316
11	2	3.272145	3.309818	1.151316
12	2	2.999467	3.034	1.151316
13	2	2.768738	2.800615	1.151316
14	2	2.570971	2.600571	1.151316
15	2	2.399573	2.4272	1.151316
16	2	2.2496	2.2755	1.151316
17	2	2.117271	2.141647	1.151316
18	2	1.999644	2.022667	1.151316
19	2	1.8944	1.916211	1.151316
20	2	1.79968	1.8204	1.151316

In conclusion, is it fair to say that children aged between 0-5 or weighing **15kg - 18kg**, with the facility's additional contribution. The exposure level is not within safe limits.

It would be worth checking how this affects the Bearwood Primary School X (Easting) 404517 / 96776Y (Northing) calculations in the Operational Air Quality Assessment.

Also, this is against the calculations for RBW1 Resident Bearwood 1, X (Easting) 404540 / 96990 Y (Northing) in the Human Health Risk Assessment -HHRA. It is 173m away from the Bearwood Primary & Nursery School. or even the calculations for RBW2 Resident Bearwood 2 (Easting) 404220 / 96830 Y (Northing).

As the applicants use the **20kg** as a guide for their calculations, I have the same question as Peer Review document Calderdale Borough Council about their assumptions.BV INY Proposal Template (calderdale.gov.uk)

(If BCP councillors wish to see the documents you can find them here ; https://new.calderdale.gov.uk/business-services/licences/other/environmental-permits/current-recent-applications/calder-valley-skip-hire)

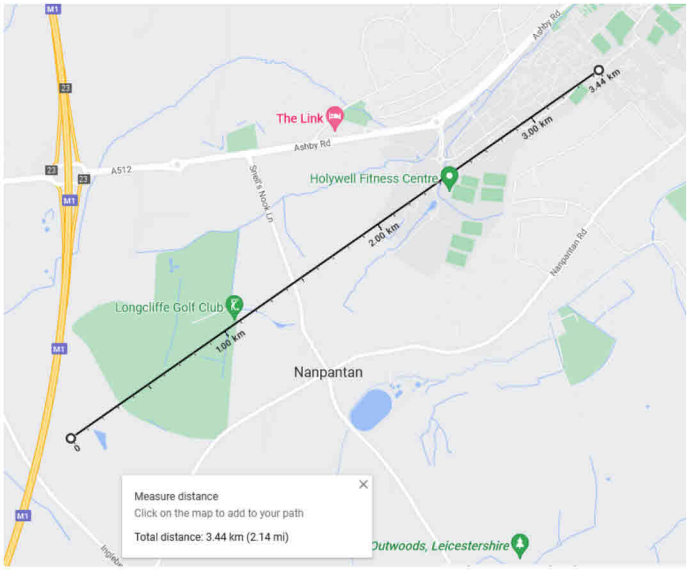
Assuming a higher weight does not represent a worse-case approach given the intake dose is divided by weight, a higher weight would be associated with a greater distribution of a toxic compound, so a lower dose per kg.

It is odd that Gair Consulting Limited chose to use a set of calculations and guidelines (IRAP/HHRAP) for the calculations and then change one key parameter from the Human Health Risk Assessment -HHRA.pdf

Annex B: Exposure Scenario Parameters

Parameter Description	Adult Resident	Child Resident	Adult Farmer	Child Farmer	Adult Fisher	Child Fisher	Units
Averaging time for carcinogens	70	70	70	70	70	70	a
Averaging time for noncarcinogens	30	6	40	6	30	6	a
Consumption rate of BEEF	0.0	0.0	0.00122	0.00075	0.0	0.0	kg kg^{-1} FW d^{-1}
Body weight	70	15	70	15	70	15	kg

At the Newhurst incinerator in Loughborough the air quality is being monitored by Loughborough University.Loughborough University chief operating officer Richard Taylor said: "Loughborough University feels strongly that further research is required into the effects of incinerator emissions before an environmental permit is granted, and the university has made this clear to the Environment Agency."



This is because the Newhurst Energy from Waste facility is 3.44 km away from the Sports grounds. Loughbrough University are offering a PHd in modelling the impact of the proposed Newhurst Incinerater .https://centa.ac.uk/18718-2/

The average exposure to PCDD/Fs in children under 3 years of age is between 0.22 and 0.44 pg TEQWHO05.kg bw−1. d−1.The average exposure to non-dioxin-like PCBs is between 0.87 ng kg bw−1. d−1 for children 1–4 months old and 3.53 ng kg bw−1. d−1 for children 13–36 months old.

Children are exposed to about 2.5 times more PCBs than adults, and breastfed infants are exposed to 50–100 times more. The tolerable weekly intake (TWI) for PCDD/Fs and dl-PCBs is 14 pg TEQ/kg bw per week. The tolerable daily intake (TDI) for total PCBs is 20 ng PCB/kg bw daily.

“The European Commission asked EFSA for a scientific opinion on the risks for animal and human health related to the presence of dioxins (PCDD/Fs) and DL-PCBs in feed and food……..Using toxicokinetic modelling and taking into account the exposure from breastfeeding and a twofold higher intake during childhood, it was estimated that daily exposure in adolescents and adults should be below 0.25 pg TEQ/kg bw/day..”Risk for animal and human health related to the presence of dioxins and dioxin-like PCBs in feed and food | EFSA

PCDD/Fs and DL-PCBs via breastfeeding, the tolerable daily intake (TDI) of 2 pg TEQ/kg bw per day.Individual breast milk consumption and exposure to PCBs and PCDD/Fs in Hungarian infants: a time-course analysis of the first three months of lactation - PubMed

In the applications for the Human Health Risk Assessment -HHRA pg 27 Human Health Risk Assessment, “As a the worst Case Scenario, the average daily dose of PCDD/Fs for infants of farmers in the Farmer East 1 area is 9% of the Tolerable Daily Intake (TDI) set by the Council of the European Union (COT). What does Farmer East 1 refer to?

On page 25 of the /Human Health Risk Assessment -HHRA.pdf…

“**4.3.2 Infant Breast Milk Exposure to Dioxins and Furans**

….. This exposure is measured by the Average Daily Dose (ADD) on the basis of an averaging time of one year. In the US, a threshold value of 50 pg kg-1 d-1 of 2,3,7,8-TCDD TEQ is cited as being potentially harmful. The IRAP model calculates the ADD that would result from an adult receptor breastfeeding an infant. It should be noted that the ADD from breastfeeding calculated by IRAP does not consider dioxin-like PCBs. However, the dioxin-like PCB emission is a small fraction of the total emission, and the inclusion of dioxin-like PCBs would not result in a significant increase in the ADD from breastfeeding.”

The reliance on a US study from June 2002 titled : Infant exposure to dioxin-like compounds in breast milk." It’s completely reasonable to think that there should be more current research available, that addresses this important topic from WHO and EFSA.

The conclusions from this 2002 study were “Levels in breast-fed infants ranged from near10 ppt TEQ lipid to > 50 ppt TEQ lipid, with levels in infants in a region known to be affected by a nearby source of dioxin release (metals reclamation plant) >100 ppt TEQ. In contrast, formula-fed infants were almost always < 10 ppt TEQ and, in some cases, < 5 ppt TEQ”

This means a threshold value of 50 picograms per kilogram of body weight per day (pg/kg bw/day) (TEQ) means toxic equivalency values

Further studies in 2013 suggest:”The mean daily intake of dioxins by the infant nursed by the primiparous mother and the infant nursed by the multiparous mother lactating from birth until six months of age was 140 and 46 pg TEQ/kg body weight, respectively. Whereas during weaning from seven to twelve months of age, the mean daily intake was 37 and 13 pg” Dioxin profile of human breast milk and dioxin intake by breastfed infants | Health & Environmental Research Online (HERO) | US EPA

2,3,7,8 TCDD-(Tetrachlorodibenzo-*p*-dioxin is a polychlorinated dibenzo-*p*-dioxin sometimes shortened, though inaccurately, to simply 'dioxin')[3] with the chemical

formula $C_{12}H_4Cl_4O_2$. Pure TCDD is a colourless solid with no distinguishable odour at room temperature. It is usually formed as an unwanted product in burning processes of organic materials 2-3-7-8-tetrachlorodibenzo-p-dioxin.pdf (epa.gov)

The mechanism of dioxin toxicity: relationship to risk assessment - PubMed "What are daily exposure levels? Dietary exposure accounts for the major source of the human body burden. Estimates are that daily exposure to TCDD is approximately 0.1 to 0.3 pg TCDD/kg/day, equivalent to approximately 1 to 3 pg TEQ/kg/day…….The question of greater import is what is the risk of current environmental exposure to the general population? Are the subtle effects detected in experimental animals occurring in people today? If so, are these adverse? Results in enzyme induction from both rats and mice would suggest that at current environmental levels (- 1 to 10 TEQ pg/kg/day)" published in 1994

A critical view of the mechanism(s) of toxicity of 2,3,7,8-tetrachlorodibenzo-p-dioxin. Implications for human safety assessment - PubMed (nih.gov)"This paper, based on several studies with different end points of toxicity, supports the notion that 10 pg/kg/day of TCDD represent a safe lifetime exposure level for humans with regard to promotion of cancer, porphyria and chloracne" published in 1989

The 2022 report for the US can be found here Dioxins | US EPA.

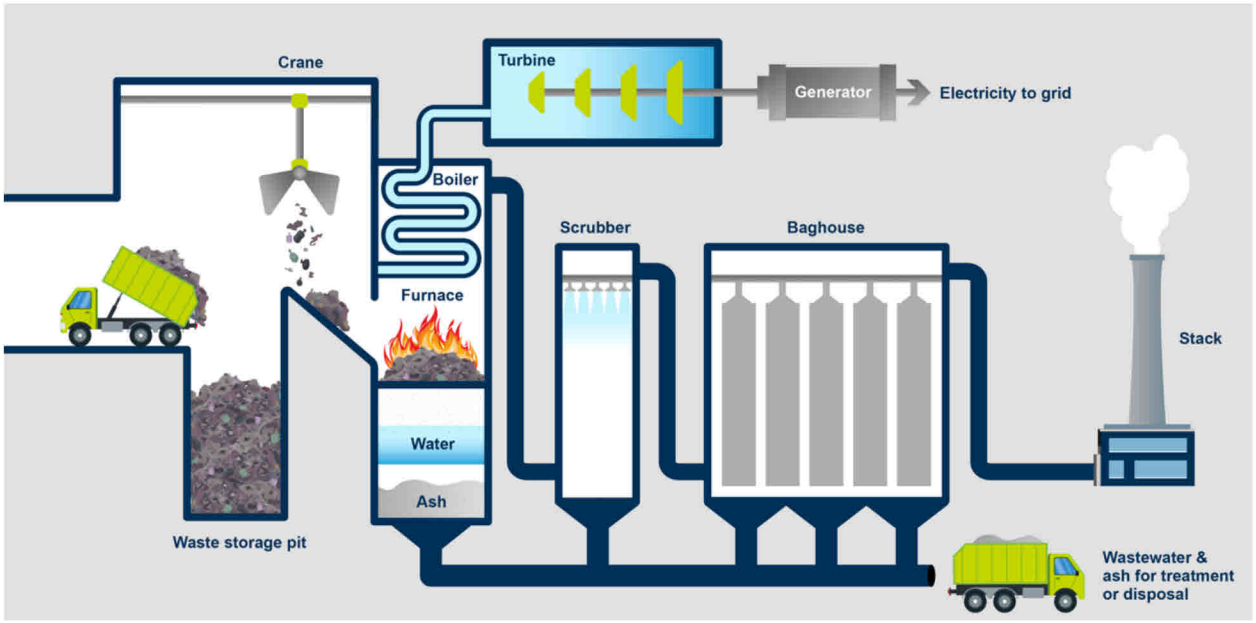
However in The World Health Organization latest 2018 report, Dr Ron Hoogenboom of the CONTAM Panel and chair of the dioxins working group, said: "The Panel has set a new tolerable weekly intake [TWI] for dioxins and dioxin-like PCBs in food of 2 picograms* per kilogram of body weight.The main reasons for the decrease were the availability of new epidemiological and experimental animal data on the toxicity of these substances and more refined modelling techniques for predicting levels in the human body over time."Dioxins and related PCBs: tolerable intake level updated | EFSA

"The critical effect was on semen quality, following pre- and postnatal exposure. The critical study showed a NOAEL of 7.0 pg WHO2005-TEQ/g fat in blood sampled at age 9 years based on PCDD/F-TEQs. No association was observed when including DL-PCB-TEQs. Using toxicokinetic modelling and taking into account the exposure from breastfeeding and a twofold higher intake during childhood, it was estimated that daily exposure in adolescents and adults should be below 0.25 pg TEQ/kg bw/day.The CONTAM Panel established a TWI of 2 pg TEQ/kg bw/week. With occurrence and consumption data from European countries, the mean and P95 intake of total TEQ by Adolescents, Adults, Elderly and Very Elderly varied between, respectively, 2.1 to 10.5, and 5.3 to 30.4 pg TEQ/kg bw/week, implying a considerable exceedance of the TWI.

Toddlers and Other Children showed a higher exposure than older age groups, but this was accounted for when deriving the TWI. Exposure to PCDD/F-TEQ only was on average 2.4- and 2.7-fold lower for mean and P95 exposure than for total TEQ. PCDD/Fs and DL-PCBs are transferred to milk and eggs, and accumulate in fatty tissues and liver".Risk for animal and human health related to the presence of dioxins and dioxin-like PCBs in feed and food | EFSA

And here is a report by the EFSA on the the approaches taken by the ScientificCommittee on Food (SCF), the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and theUnited States Environmental Protection Agency (US EPA)https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2015.4124

Diagram showing how solid waste incineration works



Solid Waste Incineration

Regardless of what is being burned in the planning application for the incinerator (mixed municipal solid waste, plastic, outputs from "chemical recycling"), waste incineration creates and releases harmful chemicals and pollutants, including:

- Air pollutants such as particulate matter, which cause lung and heart diseases
- Heavy metals such as lead and mercury, which cause neurological diseases
- Toxic chemicals, such as PFAS and dioxins, cause cancer and other health problems.

- Wastewater from incineration plants can be problematic and contain high levels of pollutants PFAS and heavy metals.

These chemicals and pollutants enter the air, water, and food supply near incinerators and enter people's bodies when they breathe, drink, and eat contaminants.

Per- and poly-fluoroalkyl substances (PFAS) are a class of persistent, human-made chemicals PFAS synthetic chemicals that are found in many everyday products:

- Food packaging: PFAS are used to keep food from sticking to packaging, such as in pizza boxes, popcorn bags, and takeaway containers
- Cookware: PFAS are used to make cookware non-stick
- Clothing: PFAS are used to make clothing and carpets stain and water-resistant
- Cosmetics: PFAS are used in cosmetics such as hair conditioner, foundation cream, and sunscreen
- Electronics: PFAS are used in electronics such as smartphones
- Firefighting foam: PFAS are used in firefighting foam to make it more effective
- Dental floss: Some dental floss contains PFAS

Incineration has not been proven to safely destroy PFAS. Commercial incinerators do not, and often cannot, measure their PFAS releases, and the limited laboratory testing that has been conducted does not reflect real-world incineration conditions. PFAS chemicals' carbon-fluorine bond is particularly resistant to combustion, making PFAS unusually difficult and dangerous to incinerate. Earning them the nickname "forever chemicals".

The resultant ash, which must be disposed of and may also be toxic, must be transported off-site for disposal. Both transporting waste to the site and removing any residue from the site will generate traffic, noise pollution, and air pollution—both gases and PM2.5/PM10, which are harmful to health.PFASs were found in all sample types except for boiler ash.Distribution of Per- and Polyfluoroalkyl Substances (PFASs) in a Waste-to-Energy Plant—Tracking PFASs in Internal Residual Streams | Environmental Science & Technology" There is a critical need for safe disposal of products containing PFAS.

The report shows that an incinerator will only increase the pollutants in the air, decreasing the quality of already poor air for the people of Dorset.

In the EIA Scoping Report
CANFORD/PRE_APP_DOCUMENTS_OF_PREA22_00049-2790101.pdf

.Operational Chimney Emissions

8.20 *The operation of the EfW CHP Facility will give rise to emissions into the atmosphere. These emissions will include pollutants whose emissions will be regulated by the Environment Agency, as follows:*

- *oxides of nitrogen (NOx);*
- *sulphur dioxide (SO2);*
- *carbon monoxide (CO);*
- *total dust (including PM 10 and PM2.5);*
- *volatile organic compounds (VOCs);*
- *hydrogen chloride (HCl);*
- *hydrogen fluoride (HF);*
- *trace metals (mercury, arsenic, cadmium, cobalt, chromium, copper, lead, manganese, nickel, antimony, tin, thallium and vanadium); and*
- *dioxins and furans (PCDD/Fs)*

8.21 *Other pollutants that will need to be considered include polyaromatic hydrocarbon (PAHs), polychlorinated biphenyls (PCBs) and ammonia (NH3).*

PCDD/Fs: These are a group of chemically related compounds that are byproducts of various industrial processes, such as waste incineration. They are known for their toxicity and persistence in the environment.

While PCDD/Fs and PFAS are persistent environmental pollutants, they have different chemical structures and uses. However, they have not included any PFAS chemical substances in the Planning application documents or reports of MVV .

The GROUND INVESTIGATION REPORT Report No: EX-21-001/GIR has not tested for PFAS chemical substances.

Naming Conventions for Per- and Polyfluoroalkyl Substances (PFAS)

Water Treatment

On Pg6 of the Human Health Risk Assessment states that :

“Exposure via drinking water requires contamination of surface drinking water sources local to the point of consumption. The likelihood of contamination reaching a level of concern in the local water sources and groundwater supplies is extremely low, particularly where there is no large-scale storage **(e.g. reservoirs)** or catchment areas for local water supplies. However, the US EPA’s

HHRAP does include the ingestion of drinking water from surface water sources as a potential exposure pathway where water bodies and watersheds have been defined within the exposure scenario. The ingestion of groundwater as a source of local drinking water is not considered by the HHRAP as it is considered to be an insignificant exposure pathway for emissions derived from combustion processes.
The ingestion of drinking water from surface water sources is only considered a potential exposure pathway where there is a local surface water body which provides local drinking water……."

This is a concern as Bournemouth Water Treatment Plant, Francis Ave, Bournemouth BH11 8NX, is only 1.8 km from the proposed incinerator and has yet to be considered.
X (Easting)404445 ,Y (Northing) 095247

Longham Lakes reservoir stores water for the nearby water treatment works. It's also a source of drinking water for local towns and communities. Total distance: 2.55 km from the proposed incinerator
X (Easting)405905 ,Y (Northing) 097401

Longham Water Treatment Works, Longham Bridge, Ringwood Road, Ferndown BH22 9AA.Total distance: 2.91km from the proposed incinerator
X (Easting)406332 ,Y (Northing) 097212

The **Figures 4.1** pg40 and **4.2** pg42 from the OPERATIONAL AIR QUALITY ASSESSMENT show the concentration levels of PM10 over the Longham Water Treatment Plant Lakes and the river stour 1.84 km away.

These highlight the urgent need for action to protect the health of the community members who frequent the local wild swimming, Colber Bridge Swimming, River Stour - Really Wild Swimming. The River Fishery at Longham, BH22 9AP, Which has a fishing lake is 2.95km from the incinerator site River Fishery at Longham | South West Lakes Trust (swlakestrust.org.uk), has roach, barbel, chub, pike, dace, bream and carp, this is a coarse fishery which is a recreational fishing venue where coarse fish are generally not taken for human consumption.

FIGURE 4.1 PREDICTED 90.4TH PERCENTILE OF 24-HOUR MEAN PM_{10} CONCENTRATIONS FOR THE EFW CHP FACILITY (µg m^{-3}) - 2020

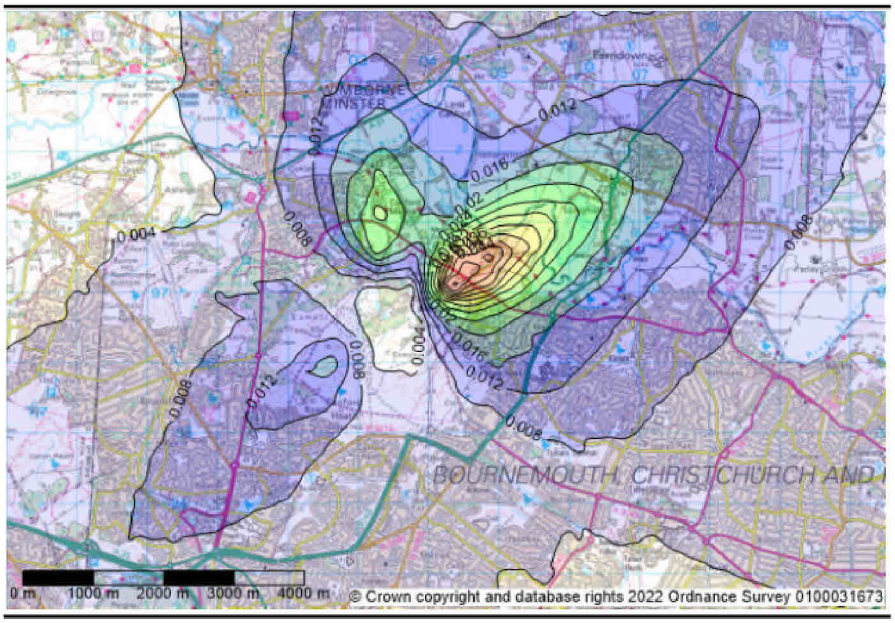
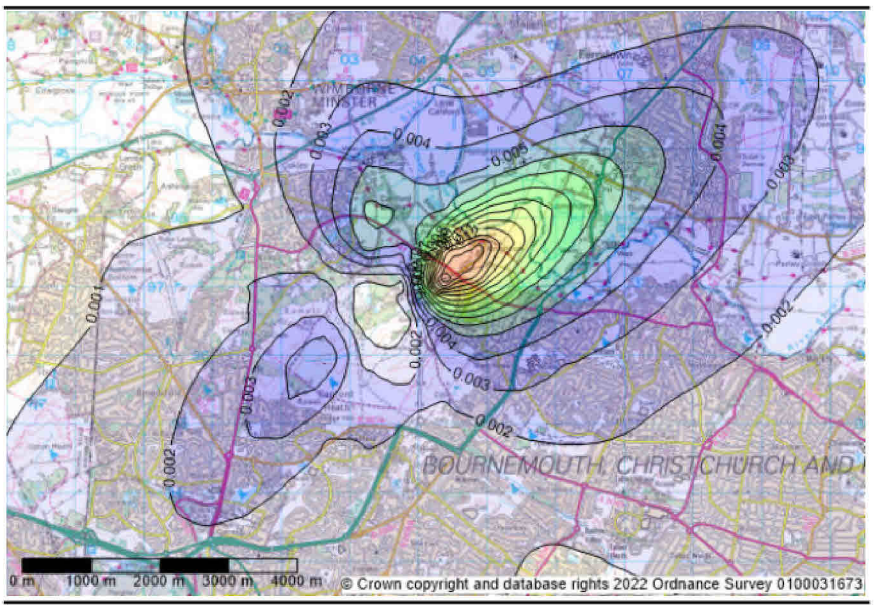


FIGURE 4.2 PREDICTED ANNUAL MEAN $PM_{2.5}$ (AND PM_{10}) CONCENTRATIONS FOR THE EFW CHP FACILITY (µg m^{-3}) - 2020



The Longham site recorded PFAS levels of **147 ng/kg** (nanograms per kilogram) from Sample: Surface Water **(2007)**. The recast of the Drinking Water Directive, which took effect on 12 January 2021, includes a limit of **0.5 µg/l** (nanograms per liter) for all PFAS. This is in line with a grouping approach for all PFAS.**0.5 µg/l** is roughly equivalent to **500** ng/L

Treatment of drinking water to remove PFAS (Signal) | European zero pollution dashboards
It would be good to know what the PFAS levels are in Bournemouth today as "concentrations of PFAs increased significantly after sewage discharges in the harbour."Level of 'forever chemicals' found to rise after sewage spills in protected area | The Independent

PFAS significantly contaminates drinking water. Some types of PFAS have been linked to a range of severe health issues, including testicular and kidney cancer, liver damage, immune suppression, birth defects, pre-eclampsia, and increased cholesterol.

Extensive research demonstrates that exposure to PFAS can harm human health (Agency for Toxic Substances and Disease Registry, 2018; Grandjean, 2018; Sunderland et al., 2019; Temkinet al., 2020)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7906952/

"Humans primarily ingest PFAS through drinking water and food, but also through dust, personal care items, or consumer goods (Straková et al., 2022). PFAS bind to proteins hence they are predominantly found in the livers, blood serum, plasma, or kidneys of living organisms, as well as in urine, placenta, or breast milk (Duffek et al., 2020; Llorca et al., 2010; Xu et al., 2022). Some PFAS are considered suspected human carcinogens (Temkin et al.,2020) and are linked to kidney, ovarian, testicular, and prostate cancers. Some PFAS reduce womens' fertility (Wang et al., 2023), increase the risk of high blood pressure during pregnancy, preeclampsia (placental disease), or lower birth weights of newborns (Borghese et al., 2020). PFAS can damage the immune system (Temkin et al., 2020)"Waste Incineration and the Environment

Once PFAS have entered the environment, it is very challenging to remove them."If drinking water contamination is not managed well, it could lead to bio-accumulation of PFAS in humans and wildlife over the coming years with increasing human blood levels being seen with potentially adverse consequences" Royal Society of Chemistry
pfas-evidence-report.pdf

A Review of PFAS Destruction Technologies"In general, waste byproducts in any incineration include bottom ash, which contains non-combusted products, and gas, containing tiny particles and volatile products [139]. According to Wang et al. [139], regarding PFAS incineration, the resulting ash and gas are both problematic. Ash contains inorganic fluorine and remaining PFAS bound to inorganic compounds such as calcium. Note that ash is typically sent to a landfill or repurposed. Particulates in the gas can be captured with electrostatic precipitators. However, HF is anticipated to be the

main product of PFAS thermal conversion during incineration and is a corrosive/acidic gas. Capturing or removing volatile fluoride-containing byproducts might be an issue. Any untreated PFAS or byproducts from incineration are released directly into the environment [139]. Therefore, the potential risk of secondary air and soil pollution and the return of PFAS into the environment is very high. In addition, incomplete destruction during thermal treatment/incineration could generate an unknown array of byproducts, which might be environmentally problematic. Since current knowledge of the fate of PFAS is limited, there is concern that PFAS incineration can release toxic gases (tetrafluoromethane, hexafluoroethane, fluoro-dioxins, fluoro-benzofurans, and perfluorinated carboxylic acids) [141,142]"

[139] Critical Review of Thermal Decomposition of Per- and Polyfluoroalkyl Substances: Mechanisms and Implications for Thermal Treatment Processes - PubMed

[141]Products obtained in the fuel-rich combustion of PTFE at high temperature - ScienceDirect

[142] Mineralization behavior of fluorine in perfluorooctanesulfonate (PFOS) during thermal treatment of lime-conditioned sludge - PubMed

In the applicants Environmental Statement Chapter 3: Description of the Proposed Development 3.8.6 Furnace temperatures will range from 850°C to **1,250°C**.However, "Most PFAS will break down completely at incineration temperatures around **1,500°C**"How to destroy a 'forever chemical' – scientists are discovering ways to eliminate PFAS, but this growing global health problem isn't going away soon

"Both academic studies and government agency reports have raised concerns that PFAS incineration can release ozone-depleting chlorofluorocarbons, fluorinated greenhouse gases such as tetra-fluoromethane, hexafluoroethane, fluoro-dioxins, fluoro-benzofu-rans, fluorinated aromatic compounds and perfluorinated carboxylic acids (California Department of Toxic SubstancesControl, 2019;Ellis et al., 2001;Feng et al., 2015;Huber et al.,2009;Merino et al., 2016)"Disposal of products and materials containing per- and polyfluoroalkyl substances (PFAS): A cyclical problem - ScienceDirect

PFAS have been shown to accumulate in plants grown in biosolid-amended soils (Yoo et al., 2011). A 2013 study conducted in the U.S. reported that perfluorobutanoic acid and per-fluoropentanoic acid accumulated in lettuce and tomatoes grown in soil amended with biosolids (Blaine et al., 2013). In 2019, the U.S. Food and Drug

Administration reported detections of PFAS in seafood, meat and vegetables, especially leafy greens (United States Food and Drug Administration, 2019). PFAS chemicals were detected in milk from a dairy farm in Maine that had historically applied biosolids to fields (Maine PFAS Task Force, 2020). Applying PFAS-contaminated biosolids on the fields leads to the contamination of crops and livestock, as well as polluted runoff that transfers PFAS pollution further afield (Lasier et al., 2011). In addition to PFAS,other toxic contaminants may be present in biosolids, such as metals and persistent organic pollutants (Kinney et al., 2006).Disposal of products and materials containing per- and polyfluoroalkyl substances (PFAS): A cyclical problem - ScienceDirect

Results of two studies show significantly high concentrations of dioxins, and PFAS in the vicinity of incernators in Europe.
Biomonitoring data shows food across Europe is alarmingly polluted near waste (co)incinerators

In Wessex Waters's response to the planning application, “Capacity at the pumping station and within the wider network is limited, therefore a capacity appraisal and detailed process review is required to understand the scope of the improvement works necessary to accommodate any additional loading in the pumping station and at wider network “ And. “The site is proposing to discharge what is deemed as Trade Effluent. Any trade effluent type flows must be applied for and agreed separately through the applicants’ water retailer with our Trade Effluent team”

Canford EfW CHP Facility Environmental Permit Application
Supplementary Information Report.pdf Table 4-9 design/ no 9
However,there will be an intermittent release from online maintenance activities associated with the regeneration of the ion exchange unit. These effluents will be mixed in a neutralisation tank equipped with pH monitoring prior to discharging to the bottom ash quench system or to sewer under a Trade Effluent Discharge Consent.

5.22 Foul sewer
The only discharge to sewer, other than domestic effluent from amenity areas, could occur during periodic maintenance; in particular, in the water treatment plant. There will be a periodic requirement for the ion exchange unit to be regenerated. This will be accomplished using acidic and alkaline washes. Additionally, the filters will need to be backflushed periodically. Effluent generated from regeneration of the ion exchange unit will be neutralised in a neutralisation tank and preferentially routed to the process water system for re-use in the bottom ash quench, whilst effluent from the backwashing of filters will also be preferentially discharged to the process water system. However, in

scenarios where the process water system is at capacity, these effluents will be discharged to the sewer under a trade effluent discharge consent.pg145

6.3 Emissions to surface water and sewer
Potential discharges could, however, occur during intermittent on-line maintenance of the water treatment plant if filter backwash and effluents from regeneration of the ion exchange unit cannot be routed to the process water system due to this system operating at capacity. In this scenario, these effluents will be routed to a neutralisation tank prior to being discharged to foul sewer under a trade effluent discharge consent.pg166

European Federation of National Associations of Water Services. It is an organisation that represents water service providers in Europe, and provides expertise to the EU on the water sector. In its report it states: “Preventing PFAS from entering wastewater treatment plants through control-at-source measures is the only way to prevent PFAS from being released to the (aquatic) environment through this pathway.”pg 2
“Technologies to remove/destroy PFAS at WWTPs are not ready. The few available lab/pilot studies indicate that additional treatment steps would require very high investments and operational costs. It is, therefore, not realistic to put the burden of preventing the release of PFAS to the environment on wastewater operators. The affordability of water services would be seriously affected”pg12
Draft 20210303 Briefing note PFAS and waste water Rue du Luxembourg 47-51, 1050 Brussels, Belgium 00 3 (0)2 7064080

Under ideal conditions, the complete destruction of PFAS by incineration results in final products such as carbon monoxide, carbon dioxide, water, hydrogen fluoride, etc (Meegodaet al , 2022) However, incomplete combustion can lead to the release of toxic gases such as dioxin, furan, and fluorocarbon emissions as well as other unknown by-products which may be problematic (O’Connor, 2022) In addition, any untreated PFAS are released directly into the environment, so there is a high risk of secondary air and soil pollution (Meegoda et al , 2022)There are limited studies available that relate to PFAS incineration in full-scale operating facilities, so there is much that is still not clearly understood, including the effectiveness of incineration as a PFAS-destruction method and the fate of by-products that are produced(Meegoda et al , 2022) The sustainability and energy intensive nature of this method also needs to be considered.
Pfas-evidence-report.pdf

In this study “The plant is a state-of-the-art facility with absolute compliance with legislative demands on incineration temperature, residence time, and emission limits. The waste fuel was mainly a mix of residual waste from households” However

"PFASs were detected in flue gas for the first time (4.0–5.6 ng m^{-3}). Our results demonstrate that some PFAS are not fully degraded by the high temperatures during WfE conversion and can be emitted from the plant via ash, gypsum, treated process water, and flue gas."[Emission of Per- and Polyfluoroalkyl Substances from a Waste-to-Energy Plant—Occurrence in Ashes, Treated Process Water, and First Observation in Flue Gas | Environmental Science & Technology]
Also in the same study, it appears that the incinerator they were testing has the same process as the planned one at Canford i.e. a mixture of fly ash, bottom ash and sludge/ slurry from the WtE water treatment. according to there BAT Assessment.pdf

Figure 1

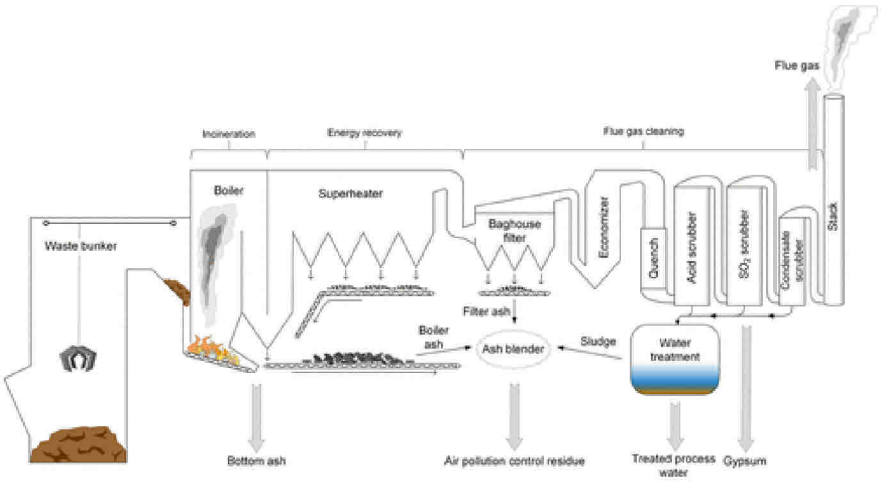


Figure 1. Overview of the waste incineration plant, with sampling points indicated by gray arrows.

My concern is how the PFAS are being measured and how the waste ash, slurry and water are disposed of..

EFSA has set a new safety threshold for the main perfluoroalkyl substances, or PFAS, that accumulate in the body. The threshold – a group tolerable weekly intake (TWI) of 4.4 nanograms per kilogram of body weight per week [PFAS in food: EFSA assesses risks and sets tolerable intake]

As the Proposed migration from the EIA Scoping report states ; CANFORD/PRE_APP_DOCUMENTS_OF_PREA22_00049-2790101.pdf from the [https://boppa.poole.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=_POOLE_DCAPR_268765]

*"***Potential Effects**

13.17

It is anticipated that the Proposed Development could have the following significant effects:

- Impacts on surface water quality – water discharges from the EfW CHP Facility Site could havea potential significant effect on the surface water quality environment (Knighton Stream and theRiver Stour). This could also come from uncontrolled surface runoff from areas in the EfW CHPFacility Site that may be affected by contaminants.
- Impacts on groundwater quality – Uncontrolled water discharges from the EfW CHP Facility Site into the potentially permeable subsurface geology could have a significant effect on the groundwater quality environment.

- Impacts on the foul sewer system – The Proposed Development would result in an increase in foul water flows into the wider CRP and public sewer network, potentially requiring upgrade and/or reinforcement works.

13.18

Proposed Mitigation

The following mitigation will be provided to mitigate the potential effects:

- The design of the CHP connections under Knighton Stream will be informed by BCP Council's requirements.

- A surface water drainage strategy will be developed that ensures that discharges of runoff from the EfW CHP Facility Site would be in line with local and national policy requirements. Sufficient treatment would be included in the strategy to ensure that surface or groundwater quality does not deteriorate post-development. It will also ensure that runoff from the wider CRP and White's Pit do not increase.

- Capacity checks will be carried out on both the private and public sewer systems and upgrades carried out as required"

Several international conventions have a bearing on PFAS.The UK has supported a ban or restrictions on specific PFAS. The Health & Safety Executive (HSE) is responsible for UK REACH, which will focus on PFAS from 2023 to 2025. The HSE will consider regulatory options to prevent the use of PFAS in certain products.

The UK is subject to the Stockholm Convention and the Aarhus Protocol, which restrict the production and manufacture of certain PFAS. The European chemical agency states the regulates Per- and polyfluoroalkyl substances (PFAS) - ECHA

These international treaties are implemented domestically in the UK by the EU POPs Regulation ((EU) 2019/1021),[Regulation - 2019/1021 - EN - EUR-Lex]

These international treaties aim to restrict the production and manufacture of certain PFAS, known as persistent organic chemicals (POPs). POPs are organic substances that persist in the environment and accumulate in living organisms.
In the regulation it states;

(2)*The Union is seriously concerned by the continuous release of persistent organic pollutants ('POPs') into the environment. Those chemical substances are transported across international boundaries, far from their sources, and they persist in the environment, bioaccumulate through the food web, and pose a risk to human health and the environment. Therefore, further measures need to be taken in order to protect human health and the environment against those pollutants;*

(11)*-In line with the Protocol and the Convention, releases of POPs which are unintentional by-products of industrial processes should be identified and reduced as soon as possible, with the ultimate aim of elimination, where feasible. Appropriate national action plans, covering all sources and measures, including those provided for under existing Union legislation, should be developed, updated and implemented, as appropriate, as soon as possible, to reduce such releases continuously and cost-effectively. To this end, appropriate tools should be developed in the framework of the Convention.*

(17) *In order to promote the traceability of waste containing POPs and ensure control, the provisions of the record keeping system established in accordance with Article 17 of Directive 2008/98/EC should apply also to such waste containing POPs which is not defined as hazardous waste according to Commission Decision 2014/955/EU (14)*

Since 2009, perfluorooctane sulfonic acid and its derivatives (PFOS) have been included in the international Stockholm Convention to eliminate their use. PFOS has been restricted in the EU for more than 10 years already, under the EU's Persistent Organic Pollutants (POPs) Regulation.

The Stockholm Convention also regulates the global elimination of perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds. PFOA has been banned under the POPs Regulation since 4 July 2020.

In June 2022, the Stockholm Convention parties decided to include PFHxS, its salts and related compounds in the treaty. The Commission added the substance group in the

EU's POPs Regulation in May 2023 and the regulation entered into force on 28 August 2023. PFAS | Environmental Protection Agency

UK Emissions Trading Scheme: Financial Cost to the Council

The waste consultancy Tolvik estimates it could add around £45 - £77 to the gate fee/cost of incinerators Response to Joint Consultation on UK ETS Scope Expansion: Waste - Tolvik based on an assumption that 47% of the waste would be fossil carbon. For 260,000 tonnes of waste (the capacity of the Canford Magna plant), this would equate to an increased cost of £11.7m - £20 m per year.

https://democracy.greatermanchester-ca.gov.uk/documents/s30470/The%20Management%20of%20Carbon%20Emissions%20from%20Non-Recyclable%20Residual%20Waste.pdf provides an example of how to do a basic calculation taken from Greater Manchester Combined Authority:

"Below is an illustrative example of the potential cost of the UK ETS for the GMCA's residual waste. If GMCA sends a total of 500,000 tonnes to energy from waste (both Raikes Lane EfW and Runcorn EfW) the UK ETS cost could be:

- 500,000 tonnes of residual waste = 500,000 tonnes of CO2 generated
- 50% of that 500,000 tonnes of CO2 is fossil carbon so 250,000 of applicable CO2
- The 2022 average carbon auction price of £75.42/tonne
- UK ETS obligation for GMCA under those circumstances would be £18,855,000 for the year."

That would be a cost of £37.71 per tonne of residual waste incinerated.

From a presentation from the Chair of NAWDO back in March provided the following figures:England cost to councils £216-549 million or around £18-45 per tonne based on 2022/23 Defra figures (43.4% recycling rate, 12.1 Mtpa of residual waste)

If all measures are successfully implemented and recycling reaches 65% the tonnage goes down (e.g. to 7.5 million tonnes of residual) so costs could go down to £130-324m assuming same 46% fossil content estimate - many fossil products removed but could be more carpets and other materials that have to be incinerated due to POPs

https://energyadvicehub.org/uk-ets-expansion-what-this-means-for-the-waste-sector/

Expanding the UK ETS to include waste incineration will obviously raise the price of burning waste,and businesses in the industry have expressed concern that this will make sending waste to landfill cheaper in comparison.

The Government's own target of halving non-recyclable (residual) waste by 2042 including the interim reduction target of 28% by January 2028.
The proposed EfW CHP Facility has an operational lifetime of approximately 40 years

This study provides the first evidence that air pollution causes economy-wide reductions in market economic activity based on data for EuropeThe economic cost of air pollution: Evidence from Europe

Locally, an incinerator has already been granted planning permission in March 2022. Planning Committee.Which is located at Chapel Lane, Parley BH23 6BG (near Bournemouth Airport) with the
capacity of incinerating 50,000 tons of waste per year.

Planning permission has also been granted for Powerfuel Portland Limited Energy Recovery Facility (ERF) at Portland Port. 202,000 tonnes of waste per year.
Secretary of State grants permission for ERF within the port on the Isle of Portland

If the planning permission is successful for MVV in Canford, that will be another 260,000 tonnes of waste per year. Making Dorset an area to import and burn waste and one of the most polluted areas.

For the above reasons, this is why an incinerator at Canford is a concern.
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You may also be interested to read ;Waste Incineration and the Environment
https://arnika.org/en/publications/waste-incineration-and-the-environment

Bio monitoring data shows food across Europe is alarmingly polluted near waste (co)incinerators
https://zerowasteeurope.eu/press-release/biomonitoring-data-shows-food-across-europe-is-alarmingly-polluted-near-waste-coincinerators/

A report from All-Party Parliamentary Group on Air Pollution, December 2021
https://www.pgweb.uk/images/2021/documents/211208-waste-incineration-and-public-Health-appg-air-pollution-report-1-compressed.pdf

And BBC analysis has found the Burning household rubbish in giant incinerators to make electricity is now the dirtiest way the UK generates power.
https://www.bbc.co.uk/news/articles/cp3wxgje5pwo

Hope this helps in your decision,and you find the information informative ,
Kind regards,

Steve Harper

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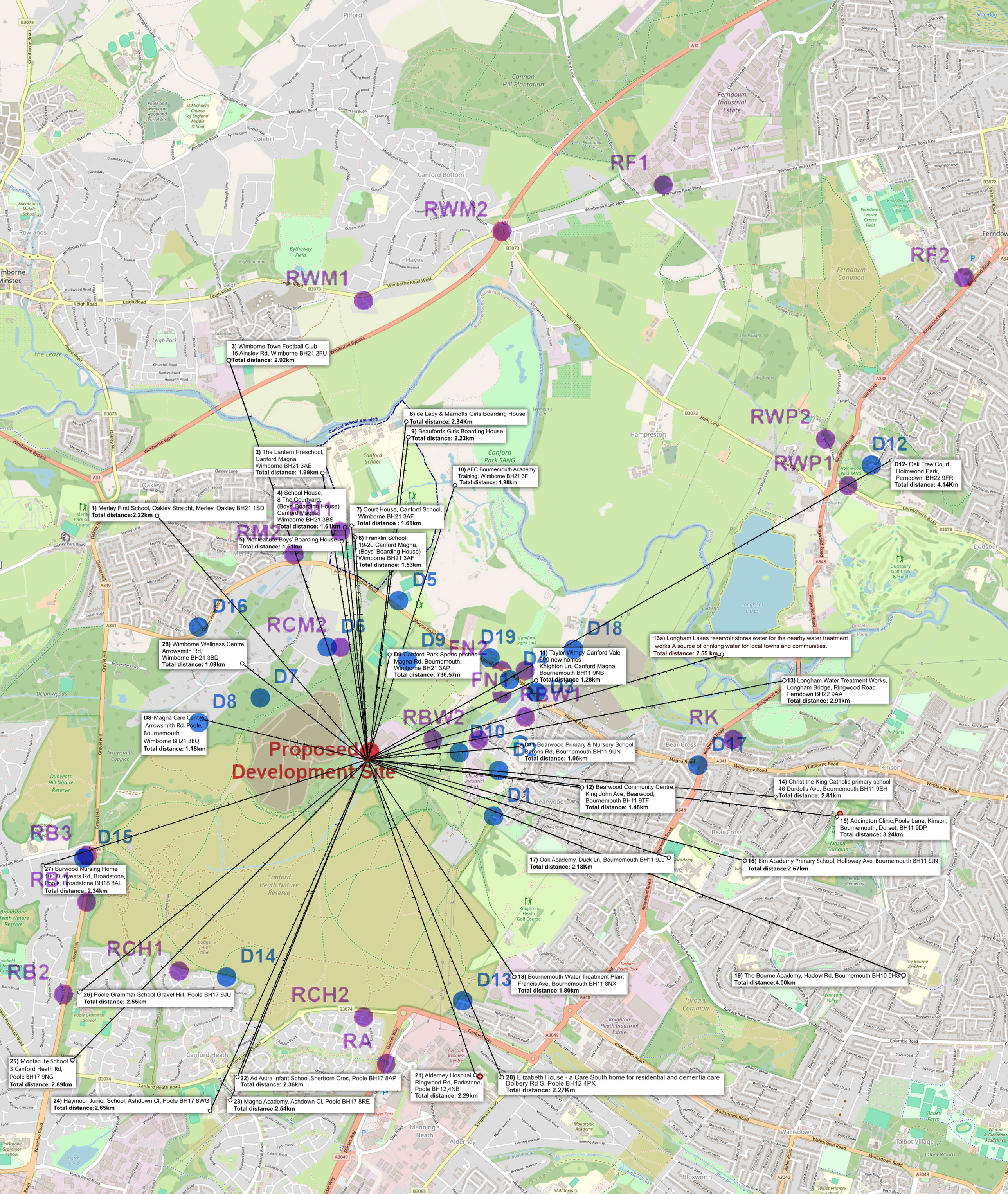
Proposed Development Site
RWM1
RWM2
RF1
RF2
RWP1
RWP2
RM1
RM2
RCM1
RCM2
RCH1
RCH2
RB1
RB2
RB3
RBW1
RBW2
RA
RK
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D16
D17
D18
D19
FN1
FN2
1) Merley First School, Oakley Straight, Merley, Oakley BH21 1SD
Total distance:2.22km
2) The Lantern Preschool, Canford Magna, Wimborne BH21 3AE
Total distance: 1.99km
3) Wimborne Town Football Club 16 Ainsley Rd, Wimborne BH21 2FU
Total distance: 2.92km
4) School House, 8 The Courtyard, (Boys' Boarding House) Canford Magna, Wimborne BH21 3BS
Total distance: 1.61km
5) Monteacute Boys' Boarding House
Total distance: 1.51km
6) Franklin School 19-20 Canford Magna, (Boys' Boarding House) Wimborne BH21 3AF
Total distance: 1.53km
7) Court House, Canford School, Wimborne BH21 3AF
Total distance : 1.61km
8) de Lacy & Marriotts Girls Boarding House
Total distance: 2.34Km
9) Beaufords Girls Boarding House
Total distance: 2.23km
10) AFC Bournemouth Academy Training, Wimborne BH21 3F
Total distance: 1.98km
11) Taylor Wimpy Canford Vale , 690 new homes Knighton Ln, Canford Magna, Bournemouth BH11 9NB
Total distance 1.28km
12) Bearwood Community Centre, King John Ave, Bearwood, Bournemouth BH11 9TF
Total distance: 1.48km
13) Longham Water Treatment Works, Longham Bridge, Ringwood Road Ferndown BH22 9AA
Total distance: 2.91km
13a) Longham Lakes reservoir stores water for the nearby water treatment works.A source of drinking water for local towns and communities.
Total distance: 2.55 km
14) Christ the King Catholic primary school 46 Durdells Ave, Bournemouth BH11 9EH
Total distance: 2.81km
15) Addington Clinic,Poole Lane, Kinson, Bournemouth, Dorset, BH11 9DP
Total distance: 3.24km
16) Elm Academy Primary School, Holloway Ave, Bournemouth BH11 9JN
Total distance:2.67km
17) Oak Academy, Duck Ln, Bournemouth BH11 9JJ
Total distance: 2.18Km
18) Bournemouth Water Treatment Plant Francis Ave, Bournemouth BH11 8NX
Total distance:1.80km
19) The Bourne Academy, Hadow Rd, Bournemouth BH10 5HS
Total distance:4.00km
20) Elizabeth House - a Care South home for residential and dementia care Dolbery Rd S, Poole BH12 4PX
Total distance: 2.27Km
21) Alderney Hospital Ringwood Rd, Parkstone, Poole BH12 4NB
Total distance: 2.29km
22) Ad Astra Infant School,Sherborn Cres, Poole BH17 8AP
Total distance: 2.36km
23) Magna Academy, Ashdown Cl, Poole BH17 8RE
Total distance:2.54km
24) Haymoor Junior School, Ashdown Cl, Poole BH17 8WG
Total distance:2.65km
25) Montacute School 3 Canford Heath Rd, Poole BH17 9NG
Total distance: 2.89km
26) Poole Grammar School Gravel Hill, Poole BH17 9JU
Total distance: 2.55km
27) Burwood Nursing Home 100 Dunyeats Rd, Broadstone, Poole, Broadstone BH18 8AL
Total distance: 2.34km
28) Wimborne Wellness Centre, Arrowsmith Rd, Wimborne BH21 3BD
Total distance: 1.09km
D8-Magna Care Centre Arrowsmith Rd, Poole, Bournemouth, Wimborne BH21 3BQ
Total distance: 1.18km
D9-Canford Park Sports pitches Magna Rd, Bournemouth, Wimborne BH21 3AP
Total distance: 736.57m
D11-Bearwood Primary & Nursery School, Barons Rd, Bournemouth BH11 9UN
Total distance: 1.06km