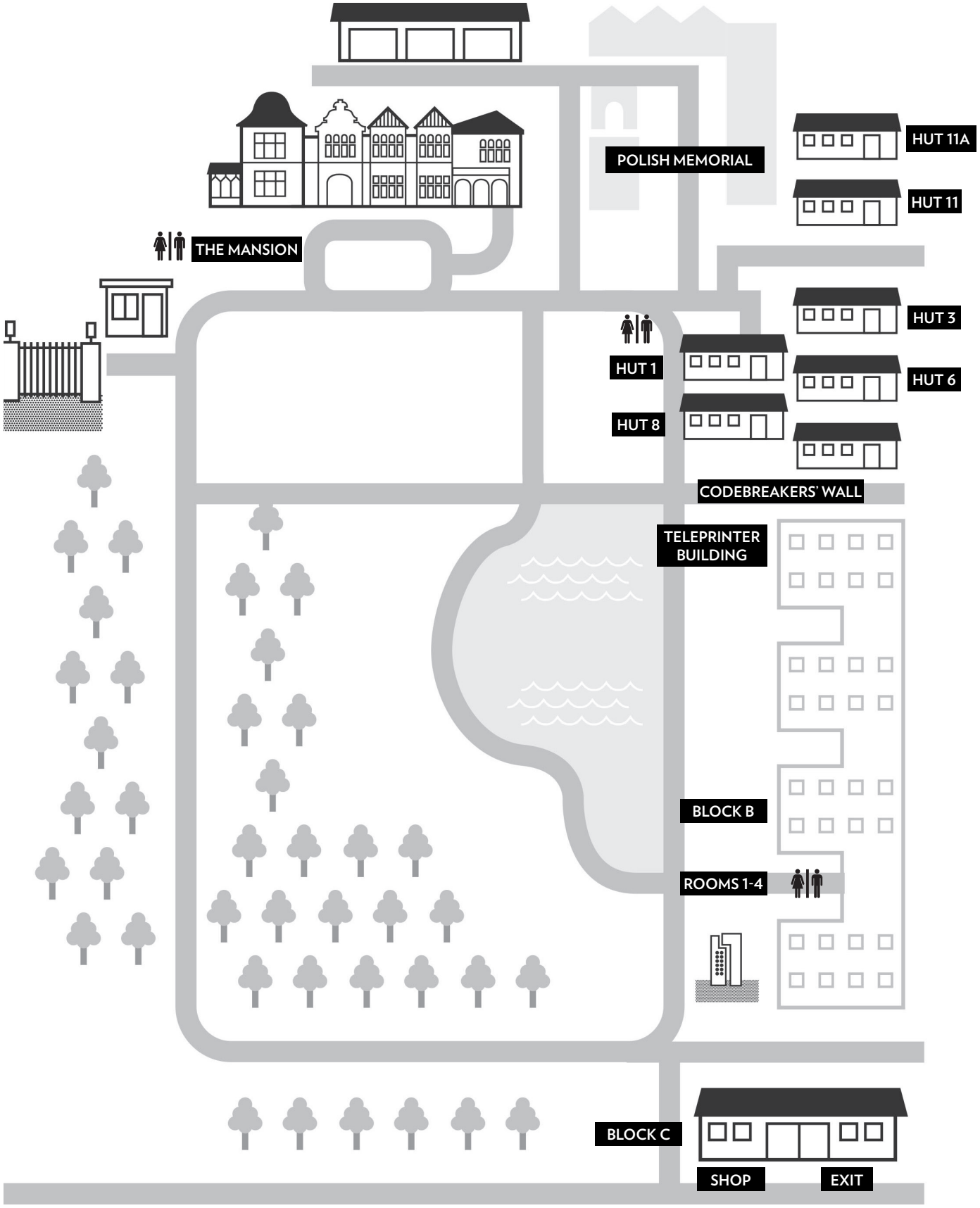
BLETCHLEY PARK
TEACHER NOTES
SELF GUIDED **KEY STAGE 4**

TOP SECRET



PLAN FOR THE DAY

The entrance and exit to Bletchley Park is through Block C.

The Shop is in Block C, and is busiest after 1.30pm.

Toilets can be found in Block C, Hut 8 and in the Mansion. Drinking water is available from any of the cold taps onsite.

Food and drink is only allowed in designated eating areas or outside. Please don't eat in any of the exhibition spaces. There are two cafes onsite: Block C and Hut 4.

During your self-guided time, we suggest you divide into smaller groups to explore inside the buildings. Please stay with your student groups at all times for safeguarding and security.

CURRICULUM LINKS

- History
- Maths
- Computing

BLOCK C

Secrets Revealed

This exhibition explains the impact of the work at Bletchley Park, and is accessed through the red entrance sign.

• What was Churchill's view of Bletchley Park?

'**The geese that laid the golden eggs and never cackled**' is a quote that can be found on a large black-board on an easel on the right hand side, visible as you enter the exhibition. Churchill is referring to the Codebreakers and their successes, which they managed to keep secret and did not receive recognition for at the time.

• What is the difference between a code and a cipher?

A code replaces whole words or phrases, whilst a cipher replaces individual letters.

• In order to help understand intercepted messages, which languages were particularly useful at Bletchley Park?

German (and other European languages) and Japanese. Italian is specifically mentioned in Step 5.

• What are the 6 stages of codebreaking?

1. Intercept your enemies' radio signals
2. Work out how the messages have been encrypted
3. Decipher the messages
4. Translate the messages to English
5. Cross reference message information to build a bigger picture
6. Send on the Top Secret intelligence you've uncovered

• Find the 'Action This Day' memo (in display case to the right of the 6 stages). What was the memo about?

Several of the Codebreakers wrote to Churchill, explaining that their work was being crippled by lack of resources. Churchill wrote a memo to his staff, instructing that the workers at Bletchley Park should have all they needed, and that it should be reported to him when done. This helped the Codebreakers' efforts immensely.

BLOCK B MUSEUM

Turn right out of Block C and walk up towards the next Block—B. The exhibition is down the stairs, and level access is via a ramp outside. You can find the Enigma collection about half way down on the left.

• Why was Enigma difficult to break?

- Different wiring of rotors
- 3 or 4 rotors in use at a time
- Settings changed every day
- Different machines and networks

BLOCK B MUSEUM

Why do you think some Enigma machines are different to others?

Answers could include:

• Made at different times

• The Germans adapted and upgraded Enigma machines up to and throughout the war

• Different branches of the military (and sometimes different networks) had different procedures

The Germans were using Enigmas before and during WW2 to encrypt messages. The machine scrambles each individual letter of a message by a different setting. As you press down one of the keys on the keyboard, a rotor turns and a lamp on the lamp panel lights up. The Enigma machine did not send the message; the message was sent using Morse Code over radio and this was secretly listened to at Wireless Intercept Stations (Y stations). You may like to try the Enigma interactive on the wall.

Alan Turing

• Find 5 key facts about Turing

Answers could include when he lived and died, where he was educated, what he worked on, facts related to his possessions on display, his conviction of a homosexual relationship in 1952 and the post-humous pardon granted in 2009.

HUT 8

Turning right out of Block B, walk towards the Codebreakers' Wall with the lake on your left. After the Wall, you will pass the bike shed and can then enter Hut 8 on your right. Work as a team to find different ways to break the codes. Different rooms explain different approaches.

• Which strategies of codebreaking would you use, and why?

Strategies include cribbing, pinches, banburismus and the Eins catalogue.

Alan Turing was the Head of Hut 8 until 1942, working on German Naval Enigma messages. His office is near the far end on the right.

• Can you find an example of a 'pinch' of cipher settings information?

The students can watch the following film in Hut 8 about the Petard Pinch: goo.gl/qkFHyW

Other examples are displayed.

HUT 6

Please enter this Hut and find yourself in 28th February 1941. Hut 6 was focused on German Army and Airforce Enigma messages. You will see information on your left as you enter and further down on the left.

• What do you think the conditions were like in these huts during WW2?

Answers could include busy, stressful, frustrating, hot in summer, cold in winter, noisy, poorly lit condi-tions, smoky atmosphere.

• What happened on this day?

On 28/2/41, a crucial enemy cipher was broken, from the light blue network—this was the German air force operational key in North Africa.

You will find the following rooms in Hut 6.

Registration Room: Intercepted messages are sorted.

Machine Room: ciphers settings are broken using pencil and paper.

Interception Control Room: staff communicate with Y-stations to ensure all radio stations are covered.

Netz and Crib Rooms: different methods are tried to help break the ciphers.

Decoding Room: once Enigma settings had been broken in the Machine Room the intercepted messages were typed into Typex machines (British cipher machines), adapted to work like Enigma machines. The decrypts were then pushed through a wooden chute with a broom into Hut 3.

• What were Typex machines used for?

Typex machines were the British wheel-based electromechanical cipher machines, a variant of the German commercial Enigma machine. They were developed in the UK in 1934. Once German messages were broken with the help of the Bombe machines, the intercepted messages were decrypted using adapted Typex machines.

HUT 3

The Watch: four watch keepers who were experts in German filled in the gaps in the messages that had come through from Hut 6.

Duty Officers' Room: the messages were prioritised.

Advisers' Room: Hut 3 reports were checked for accuracy in military and technical details.

Intelligence Officers' Room: officers worked on cover stories to conceal the fact that Enigma was being broken.

Administration and Typing Room: reports were typed up and sent to MI6. They were often sent by a (fictitious) spy called Boniface.

Teleprinter Room: At the beginning of the War Hut 3 sent their reports directly to MI6 and a small group of people who knew about the Bletchley Park secret. These messages were enciphered using a Typex machine and then sent by teleprinter.

HUT 11A

• How will the Bombe machine assist with your codebreaking work?

The Bombe machine was designed to assist with and speed up the codebreaking process.

The Codebreakers used clues and common phrases (cribs) to guess some of the message content. They could then use this information to design a menu, a diagram showing linked letters, allowing the Bombe to check possible Enigma settings for that day.

The codebreakers would try the settings given by the Bombe to break the code. If this didn't work, they would run the Bombe again.

• Who invented the Bombe machine?

Alan Turing and Gordon Welchman are credited.

• Why did it help the codebreaking process so much?

A key factor was how much it speeded up the checking of possible settings. A Bombe machine like the model could check 17,576 settings in under 12 minutes. A set of three vertical drums on the Bombe machine represents three rotors in one Enigma machine. Over 200 Bombe machines were built but most were destroyed after the war. The Bombe is not a computer: it carries out systematic searches rather numerical calculations.

• Circle the menu. What is it for?

The menu is the pencilled diagram at the bottom of the message joining up different letters. It is based on links between letters in the cipher text and the crib (guess of the message content). It tells the Bombe operators how to plug up the Bombe, so that when it runs it will check particularly likely settings.

MANSION

Enter the mansion. Turn left and ahead you will find the Veterans' Stories exhibition. Students can read or listen to a Veteran's experience of their wartime work. They can also search for specific Bletchley Park or Y-station Veterans on the Roll of Honour digital screen, or online at

bletchleypark.org.uk/roll-of-honour/search